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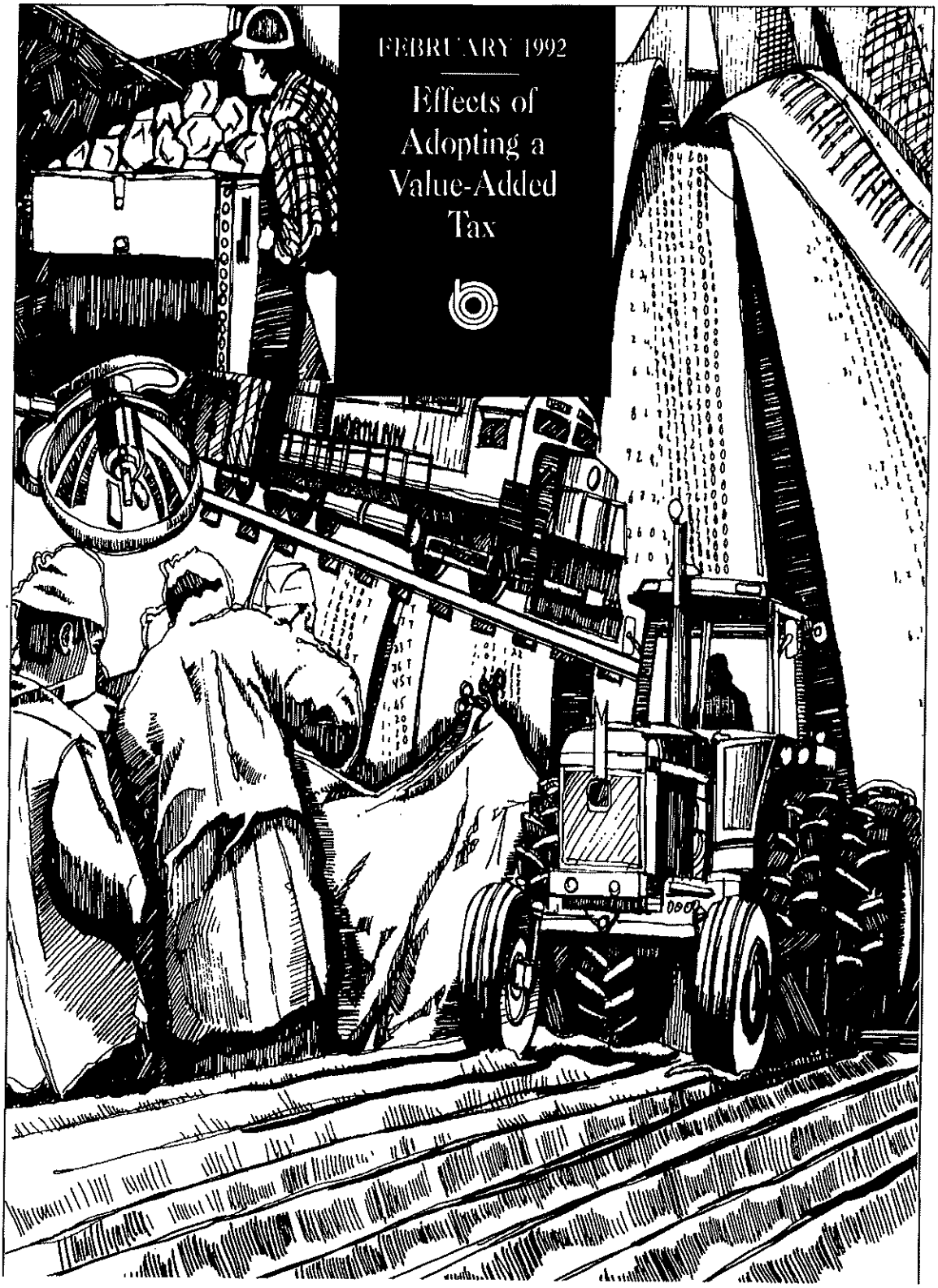

FEBRUARY 1992

Effects of Adopting a Value-Added Tax

EFFECTS OF ADOPTING A VALUE-ADDED TAX

The Congress of the United States
Congressional Budget Office

PREFACE

The United States has continued to rely heavily on the income tax for federal revenue as other nations have turned increasingly to a value-added tax (VAT) for revenue. The United States is now one of the few Western industrialized countries without a VAT and the only one without either a VAT or a national sales tax.

This study, prepared at the request of the House Committee on the Budget, analyzes the effects of using a VAT instead of the current income tax to raise revenue. The study attempts to measure the size of many of the VAT's effects that interest policymakers, including the potential economic costs and benefits.

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Sherry Snyder edited the manuscript. Chris Spoor provided editorial assistance. Martina Wojak prepared the study for publication with the assistance of Kathryn Quattrone.

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CONTENTS

	SUMMARY	ix
I	INTRODUCTION	1
	Issues Surrounding the Adoption of a VAT *1* Analytic Approach and Findings *4*	
II	HOW A VAT WORKS	5
	The European-Style VAT *6* Alternative VAT Structures *14* Conclusions *19*	
III	THE BASE OF A VALUE-ADDED TAX	21
	Defining the Tax Base *21* Taxing Hard-to-Tax Goods and Services *26*	
IV	WHO BEARS THE BURDEN OF A VAT?	31
	Annual Tax Burdens *32* Lifetime Tax Burdens *40* Transitional Burdens *45*	
V	ECONOMIC EFFECTS OF A VAT	49
	National Saving and Domestic Investment *51* The Composition of Domestic Production and International Trade *55* Economic Efficiency *56* Tax Exportation *60* Other Economic Effects *62* Summary *65*	

VI COSTS OF ADMINISTERING AND COMPLYING WITH A VAT 67

Administrative Costs *67*
Implementation Costs *70*
Compliance Costs *70*
Controlling Administrative and Compliance Costs *72*

VII DIRECT CONSUMPTION TAX AS AN ALTERNATIVE TO A VAT 75

Direct Consumption Taxes *75*
Advantages over a VAT *77*
Some Potential Problems *79*

TABLES

1.	Taxing Consumer Purchases Under a Credit-Method Value-Added Tax and a Retail Sales Tax	7
2.	Collecting a Value-Added Tax When a Wholesaler Is Exempt	9
3.	Collecting a Value-Added Tax When a Retailer Is Exempt	10
4.	Collecting a Value-Added Tax for a Zero-Rated Good	12
5.	Collecting a Value-Added Tax for a Traded Good	13
6.	Taxing Consumer Purchases Under a Subtraction-Method Value-Added Tax	15
7.	Collecting a Value-Added Tax for a Zero-Rated Good Under Alternative Versions of the Subtraction Method	17
8.	Examples of Bases for a Value-Added Tax at 1988 Levels of Consumption	22
9.	Distribution of the Burden of a Value-Added Tax and an Income Surtax	35
10.	Distribution of the Burden of a Value-Added Tax Under Alternative Redistribution Schemes	39
11.	Annual and Lifetime Tax Burdens of Canadian Households	44

12. Annual Administrative Costs of Value-Added Taxes in Selected European Countries, 1985 and 1986 69

13. Costs to Businesses of Complying with a Value-Added Tax in the United Kingdom, 1986 and 1987 71

FIGURE

1. How the Burden of a Value-Added Tax and an Income Surtax Varies Over a Lifetime for a Typical Two-Earner Family 42

SUMMARY

A value-added tax (VAT) is a general tax on consumption, much like a retail sales tax. Unlike a retail sales tax, however, the VAT on consumer purchases is collected in stages as these goods and services are produced and marketed. The value added by labor and capital at each stage determines the amount of tax owed at that stage. Collecting the tax this way helps to prevent tax evasion at the retail level and helps to ensure that business purchases, even at the retail level, are not taxed by mistake.

Since its inception in the 1950s, the VAT has been widely adopted by both developed and developing countries. More than 50 countries currently have VATs, including 20 of the 25 industrialized countries that make up the Organization for Economic Cooperation and Development. The United States remains one of the few Western industrialized countries without a VAT and the only one without a VAT or a national sales tax.

Should the United States adopt a VAT as an additional source of revenue? The advantages and disadvantages of a VAT largely depend on the alternative. This study considers the relative merits of a VAT as an additional source of revenue by comparing it with an income surtax on individuals and corporations. An income surtax was chosen for the comparison because it provides a simple way to get more revenue out of the current tax system without altering its basic structure.

Treating the VAT as an additional source of revenue and not as a replacement for an existing tax influences the analysis in two ways. First, the costs of administering and complying with a VAT become an important consideration because these costs would not be offset by savings from eliminating similar costs for another tax. Second, the extent to which the economic effects of a VAT would differ from those of the alternative would be limited by the relatively modest amount of revenue that a supplemental tax would have to supply. The study assumes that, as a supplemental tax, a VAT would be expected to raise about

$150 billion in annual revenue--only a quarter of what the income tax collects and less than 3 percent of national output.

THE FEATURES OF A EUROPEAN-STYLE VAT

Although a VAT can be structured in a variety of ways, most countries have chosen to structure their VAT the same way. This particular structure--called a European-style VAT in this study--is strongly favored over other VAT structures because it is better equipped to tax different goods at different rates, thereby reducing the VAT's burden on the poor and encouraging the consumption of certain goods over others.

The European-style VAT uses the credit method to calculate the tax owed at each stage as goods are produced and marketed. Under the credit method, businesses charge the VAT on the value of their sales to consumers and other businesses, but they receive a credit for the VAT that they pay on purchases from other businesses and remit only the difference to the government. The credit refunds the tax on the value added at prior stages, making business purchases VAT-free. Imposing the VAT anew at each stage by charging tax on the entire value of business sales enables the credit method to tax the value of different goods at different rates. The credit method, however, requires a cumbersome system of invoices to ensure that the VAT charged on business purchases is properly credited. Furthermore, if some businesses are exempt from collecting the VAT, as small businesses often are, then the value of some business purchases may be taxed by mistake.

The European-style VAT uses border tax adjustments to tax the entire value of goods in the country where they are consumed, even when part of their value is produced abroad. By imposing the VAT on imports and removing it from exports, border tax adjustments ensure that the VAT taxes the value of a nation's consumption and not the value of its production.

THE VAT'S ADVANTAGES

A VAT differs from an income surtax in two important ways. First, the VAT would tax consumption instead of income, so it would not discourage saving. Second, an ideal VAT, which taxed a broad consumption base at a uniform rate and granted no preferences, would be a fairly neutral tax. Such a tax would have little effect on economic behavior or on the allocation of resources. In contrast, a surtax levied on the current income tax would exacerbate the misallocation of resources caused by tax preferences, multiple rates, and the problems of measuring income properly under the income tax. These differences give a VAT two economic advantages over an income surtax:

- More income would be saved under a VAT, making more capital available to the economy, which would improve labor productivity and increase national output in the long run.

- Capital and other economic resources would be allocated more efficiently under a VAT, making the nation's output more valuable to society.

Neither advantage appears overwhelming in size, however, when the VAT serves as a supplemental source of revenue.

To gauge the possible size of the VAT's advantages over an income surtax, the effects of raising approximately $150 billion in annual revenue under each alternative were simulated using several general-equilibrium models of a growing economy. Although the simulation results are based on highly stylized representations of the U.S. economy and are sensitive to a variety of assumptions, they indicate how limited the VAT's comparative advantages might be.

Saving

The difference in saving between the VAT and the surtax would be quite small according to the simulations. Compared with the surtax, the VAT would add about 0.4 percentage points to the long-run saving rate. As a result, the nation's capital stock would ultimately be about

5.2 percent larger and the nation's output (measured by its net national product) would ultimately be 0.8 percent higher. Because of the higher saving rate under the VAT, total consumption initially would be lower under the VAT than under the surtax. Eventually, however, consumption would grow to be about 0.5 percent higher than it would be under the surtax--the higher level of consumption in the long run being financed by savings from a lower level of consumption in the short run.

The higher rate of saving under a VAT would lower the cost of capital to U.S. industries, but it would not make all U.S. industries more competitive in world markets because the competitiveness of each industry depends on its comparative cost advantage, not on its absolute cost advantage. Since lower capital costs would benefit capital-intensive industries more than labor-intensive industries, a VAT would make capital-intensive industries such as agriculture, communications, and chemical manufacturing slightly more competitive in world markets, and it would make labor-intensive industries such as textile, apparel, and furniture manufacturing slightly less competitive, compared with an income surtax.

Economic Efficiency

When taxes distort behavior, economic resources are misallocated, causing some of their value to be wasted. Taxes that cause less waste are obviously more efficient sources of revenue. Whether a VAT is more efficient than an income surtax, and by how much, would depend on how broadly and uniformly the VAT taxed consumption. According to the simulations, if the VAT taxed all consumption at a flat rate, the economic benefit from allocating resources more efficiently would be equivalent to a 0.4 percent increase in national output, or about $20 billion annually. But if the VAT was like those actually used in Europe--with multiple tax rates and numerous tax preferences--the economic benefit would probably be negligible.

A broad-based VAT would allocate resources more efficiently than an income surtax, in part because it would not tax saving but for other reasons as well. First, the portion of the VAT's burden that falls on the

value of existing capital, or wealth, would not distort the allocation of resources at all. Second, although a broad-based VAT would have few, if any, tax preferences to distort the allocation of resources, the current income tax is replete with tax preferences, and a surtax would magnify the distortions resulting from these preferences.

Allowing preferences under the VAT would create distortions that would reduce or eliminate the VAT's efficiency advantage over an income surtax. According to the simulations, the loss in efficiency from raising $150 billion in annual revenue with a typical European VAT instead of a flat-rate VAT on all consumption would be about 0.4 percent of national output. The typical European VAT was represented in the simulations by taxing food, utilities, and transportation at a reduced rate, and by taxing housing and most services at a zero rate.

THE VAT'S DISADVANTAGES

Taxing consumption instead of income has disadvantages as well as advantages. Taxing consumption is inherently regressive--that is, the burden of the tax as a share of income is greater for families having lower income. A VAT would be regressive because lower-income families spend more, and save less, of their income. In contrast, exemptions and deductions under the current income tax would insulate low-income families from most of the burden of an income surtax, making it a fairly progressive tax. Taxing consumption is also inherently costly, both to administer and to comply with, because no general consumption tax currently exists at the federal level in the United States. An income surtax, however, would impose few, if any, additional costs for administration and compliance because it would simply augment an existing source of revenue by raising the tax rate. Thus, a VAT has two disadvantages relative to an income surtax:

- The costs of administering and complying with a VAT would be substantial--much higher than for a surtax.

- Compared with a surtax, a VAT would impose a much greater tax burden on the poor.

Administrative and Compliance Costs

To gauge the VAT's potential administrative and compliance costs, CBO examined the size of these costs in Europe and extrapolated them to the U.S. economy based on estimates of the number of U.S. businesses that would have to collect the VAT and the value of sales that would be subject to tax. Although the cost estimates span a fairly broad range and vary considerably depending on which businesses are excluded from collecting the VAT, they indicate how costly operating a VAT in the United States might be.

If the United States had a VAT that was similar to those in Europe, only about a third of U.S. businesses would have to collect the VAT. Under such a VAT, most small businesses (with annual sales below $25,000) and many service businesses (including those providing medical, educational, financial, and charitable services) would be exempt from collecting the tax. Nevertheless, administering the VAT would still cost the federal government about $750 million to $1.5 billion annually, and complying with it would still cost U.S. businesses about $4 billion to $7 billion annually.

The substantial administrative and compliance costs of the VAT--totaling about $5 billion to $8 billion per year--would offset much or all of the economic benefit from the VAT's efficiency advantage over a surtax because the cost of administering and complying with a surtax would be negligible. Although there are ways to design a VAT that would lessen its administrative and compliance costs, most involve unattractive trade-offs with other design objectives such as not taxing business purchases and lessening the VAT's burden on the poor.

Distribution of the Tax Burden

To compare the distribution of the VAT's burden with that of an income surtax, CBO simulated a $100 billion increase in revenue under each alternative and allocated the tax increase among taxpayers based on widely accepted assumptions about the incidence of these taxes. (The incidence of a tax determines who actually bears its burden after

taxpayers adjust their behavior.) The economic status of taxpayers was measured by annual cash income adjusted for family size.

According to the simulations, a broad-based VAT would be regressive, but an income surtax would be progressive. Under the VAT, families in the lowest income quintile would pay an additional 4.8 percent of their income in tax, families in the middle income quintile would pay an additional 2.8 percent, but families in the highest income quintile would pay only an additional 1.5 percent. Under the surtax, families in the lowest income quintile would pay only an additional 0.2 percent of their income in tax, but families in the middle income quintile would pay an additional 1.2 percent and families in the highest income quintile would pay an additional 3.0 percent. More than 90 percent of the families in the lowest income quintile would be better off under the surtax than under the broad-based VAT. On average, these families would pay $430 annually under the VAT, but only $10 annually under the surtax.

Narrowing the VAT's tax base by excluding necessities such as food, housing, utilities, and health care would lessen the VAT's regressivity only slightly, according to the simulations, and reducing income and payroll taxes would hardly offset the VAT's regressivity at all. Although the VAT's burden on the poor could be alleviated by targeting a refundable tax credit toward families near and below the poverty line, providing such a credit would be costly for the federal government to administer and onerous for low-income families to comply with.

The VAT would be less regressive and the surtax would be less progressive if their burdens were measured over a lifetime instead of on an annual basis. Annual consumption and income both vary considerably over a lifetime, but annual consumption typically varies less than annual income. Families tend to save the most during middle age when their earnings peak; they tend to save less (or even dissave by using savings for current consumption) during early adulthood and retirement. As a result, the burden of an income surtax would be greater during their middle years, when income is relatively high, and the burden of a consumption tax would be greater during their early and late years, when income is relatively low. This difference in the timing of tax payments over a lifetime enhances the progressivity of an

income surtax relative to a VAT when tax burdens are measured on an annual basis. Even on a lifetime basis, however, a VAT would still be more regressive than a surtax.

A POSSIBLE ALTERNATIVE TO THE VAT

Like a VAT, a direct consumption tax is levied on consumption, but it is structured in a completely different way. As a consumption-based tax, the direct consumption tax has the same saving and efficiency advantages that a VAT has over an income surtax. Its structure, however, enables the direct consumption tax to overcome some of the VAT's disadvantages.

Two prominent proposals for a direct consumption tax are the Hall-Rabushka flat tax and Bradford's X-tax. These proposals have the same basic structure. Each has two tax components: a "business tax" on the gross income from existing business capital and a "wage tax" on the income from labor. Together, these components would tax the same base as a VAT, but not at a uniform rate. The wage tax would provide a sizable untaxed allowance based on family size and filing status and would tax wages above the allowance either at a flat rate or under a graduated rate schedule.

A direct consumption tax would have at least three advantages over a VAT. First, it could mitigate the inherent regressivity of a consumption-based tax by making the wage tax progressive. Second, it would tax certain sectors of the economy, such as state and local governments and nonprofit organizations, in a less controversial way by taxing incomes instead of products. Third, it would impose a smaller administrative and compliance burden because it could easily be administered as part of the current income tax. Despite its apparent advantages over a VAT, the direct consumption tax has received very little attention outside of academic circles and has never been used as a source of revenue.

CHAPTER I

INTRODUCTION

A value-added tax (VAT) is similar to a retail sales tax, but it is collected in a different way. Instead of collecting the tax on consumer purchases all at once at the retail level, a VAT collects the tax in stages as goods and services are produced and marketed. The tax at each stage is usually determined by the value added to the product by factors of production such as labor and capital. In theory, a VAT can be structured in a variety of ways. In practice, however, most VATs are structured the same way.

Since its inception in the 1950s, the VAT has been widely adopted by both developed and developing countries. More than 50 countries currently have VATs, including 20 of the 25 members of the Organization for Economic Cooperation and Development. Two recent VAT converts, Canada and Japan, are the largest trading partners of the United States.

Although the United States has periodically contemplated a VAT for a variety of purposes, it has so far resisted adopting one. In 1979, Congressman Ullman proposed a VAT to reduce payroll and income taxes. In 1984, the Treasury considered but rejected a VAT as part of its tax reform plan. In 1985, Senator Roth proposed a VAT--called a business transfer tax--to promote saving. In 1989, Senator Hollings proposed a VAT to reduce the deficit. Recently, Congressman Schulze proposed a VAT--called a unified business tax--to replace the corporate income tax and lower the cost of capital. None of these proposals have garnered much support.

ISSUES SURROUNDING THE ADOPTION OF A VAT

Opposition to a VAT in the United States has been widespread and steadfast. Liberals and conservatives have both opposed it, albeit for

different reasons. Some liberal opponents are concerned that too much of the VAT's burden would fall on the poor and the middle class. Some conservative opponents fear that a VAT could be used as a "money machine" to fund endless growth in government. In addition, states have traditionally opposed the VAT as an unwarranted federal infringement on the sales tax that might cripple their ability to raise revenue. In the face of this widespread opposition, the United States remains the only Western industrialized country without a VAT or a national sales tax.

Conservative opposition to a VAT, however, may be diminishing. The fear among some conservatives that a VAT would be a money machine has been calmed somewhat by recent studies that find little evidence that VATs in Europe have contributed to government growth. Although the relative size of the government sector--measured by the tax share of gross domestic product--did grow in some European countries after a VAT was adopted, such growth occurred with equal frequency in European countries that had not yet adopted a VAT.[1] Moreover, European countries with VATs showed no sign of a growing dependence on them for revenue. Over a decade, the share of revenue from the VAT increased in only a third of these countries.[2]

The opposition of states to a VAT also may be diminishing as they increasingly recognize that their ability to raise revenue is limited more by tax competition with other states than by tax competition with the federal government. Nevertheless, state and local governments remain concerned about the possible administrative burden on them if they had to coordinate their sales taxes with the VAT, and their possible compliance burden if they had to register under the VAT to receive refunds for VAT payments on their purchases.

Many liberals continue to oppose the VAT on distributional grounds, but even their opposition may be softening as they look for ways to fund programs for the economically disadvantaged in the

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1. J.A. Stockfisch, "Value-Added Taxes and the Size of Government: Some Evidence," *National Tax Journal*, vol. 38 (December 1985), p. 549.

2. Alan A. Tait, "VAT Revenue, Inflation, and the Foreign Trade Balance," in Malcolm Gillis, Carl S. Shoup, and Gerardo P. Sicat, eds., *Value Added Taxation in Developing Countries* (Washington, D.C.: World Bank, 1990), pp. 17-18.

aftermath of recent budget accords. Although liberals would probably prefer to fund such programs with taxes on the rich or cuts in the defense budget, they might accept a VAT to fund programs that overwhelmingly benefit the poor--in effect, making the poor pay more for such programs instead of doing without them.

To its supporters, much of the VAT's appeal stems from its likely economic advantages over other taxes such as the income tax. As a tax on consumption, a VAT would not discourage the saving and investment that are crucial to economic growth and national prosperity. As a fairly neutral tax, a VAT would probably allocate economic resources more efficiently than other taxes, causing less economic waste. In addition, some of the VAT's appeal undoubtedly stems from the mistaken impression that a VAT would offer a trade advantage by taxing imports but not exports.

To its critics, whether the economic benefits of a VAT are worth the cost of undertaking one remains in doubt. Like any new tax, a VAT would impose additional administrative costs on the federal government and additional compliance costs on businesses that could wipe out much of the economic benefit from allocating resources more efficiently. Also, a greater reliance on consumption taxes for revenue might not have much effect on the nation's saving rate. Even if it did, the same effect on saving could be achieved in other ways--for example, by raising income tax rates and using the additional revenue to expand saving incentives such as tax-deferred individual savings accounts.

The perception of a VAT as an unfair tax is, perhaps, its most serious liability. Although VAT proponents readily admit that a VAT would impose a relatively heavy burden on the poor, they offer ways to lessen this burden by, for example, eliminating the tax on necessities such as food and health care. VAT critics question whether adjusting the VAT's tax base would do much to mitigate the tax's burden on the poor. They argue that additional income-targeted relief would have to be provided and that providing this relief would add to the cost of administering a VAT. Critics also note that adjusting the VAT base to reduce the burden on the poor would distort the allocation of resources and reduce the VAT's efficiency advantage over other taxes.

ANALYTIC APPROACH AND FINDINGS

This study compares the economic and distributional effects of a VAT relative to those of an income surtax that raises the same amount of revenue. An income surtax on individuals and corporations is used for comparison because it provides a simple way to obtain more revenue from the current tax system without changing its structure. The comparison serves to isolate the specific effects of a VAT from the general effects of a tax increase, but it also highlights important differences between adopting a new tax to raise additional revenue and increasing an existing tax for the same purpose.

The study attempts to quantify many of the VAT's effects that interest policymakers, such as how much higher the saving rate would be under a VAT, how much a VAT would cost businesses and government to operate, and how much of the VAT's burden would fall on the poor. Because many of these effects can be quantified only by using economic models, the study analyzes how particular assumptions employed by the models affect the results--how, for example, the VAT's effects on saving and investment in the United States depend on saving and investment behavior abroad, and how changes in the value of wealth under a VAT affect the distribution of the tax burden.

In short, the study finds that using a VAT instead of a surtax to raise a modest amount of additional revenue would have only minor effects on the U.S. economy: national saving would be slightly higher, the capital intensity of domestic production would be slightly greater, and economic resources would probably be used in a slightly more productive way. But as a new tax, a VAT would be more costly for the federal government to administer and more costly for businesses to comply with. In addition, the VAT's heavier burden on the poor could not be offset much by adjusting its tax base.

Given the apparent limitations and drawbacks of a VAT, the study also looks briefly at another consumption-based tax--one that would be levied directly on earnings, much like an income tax. As an additional source of revenue, this alternative would be easier for the government to administer and easier for businesses to comply with. It also would impose less of a burden on the poor.

CHAPTER II

HOW A VAT WORKS

The value-added tax used in Europe and throughout the rest of the world is similar to a retail sales tax, but with an important difference: whereas a retail sales tax is collected all at once on consumer purchases at the retail level, a VAT is collected in stages as goods and services are produced and marketed. The tax at each stage is usually determined by the value added by labor and capital at that stage.

In theory, a VAT can be structured in a variety of ways that differ in terms of:

- What is taxed (consumption or income);
- How the tax at each stage is calculated (credit method, subtraction method, or addition method);
- How preferences are selectively granted (by exempting businesses or by taxing goods at reduced rates);
- Where the value added to internationally traded goods is taxed (at the point of consumption or at the point of production).

In practice, however, most VATs are structured the same way. They use the credit method to tax the value of consumption goods in the country where they are consumed. Preferences are granted primarily by taxing goods at reduced rates. Although some businesses are exempted from collecting the VAT, exemption seldom occurs before the final distribution stage. This particular structure is referred to as a European-style VAT in this study.

Most countries have chosen the European-style VAT because it accommodates tax preferences--especially multiple reduced rates--better

than other VAT structures. But this type of VAT also has its drawbacks. The credit method must be administered through a cumbersome system of invoices. Furthermore, when businesses before the final distribution stage are exempt from collecting the VAT, tax rates on consumption goods are distorted, causing resources to be misallocated.

Although other VAT structures are possible, they have practical limitations that lessen their public appeal. For example, the subtraction method does not require invoices, but, without invoices, it is difficult to tax consumption goods at different rates. Taxing all consumption goods at the same rate may be unappealing because it discourages the consumption of socially desirable goods such as education and health care and because it is often more burdensome on the poor.

Because the European-style VAT seems to be the most likely choice for the United States, this chapter first describes its structure in detail. It then describes some other VAT structures and explains why their features work well for some purposes but not for others.

THE EUROPEAN-STYLE VAT

A value-added tax is collected in stages as goods and services are produced and marketed. The tax at each stage is determined by the value added at that stage without regard to whether the goods and services will ultimately be purchased by consumers. Consequently, a VAT is levied on sales between businesses as well as on sales to consumers.

Under a European-style VAT, the tax on the value added at each stage is calculated using the credit method. This method requires the use of invoices that show how much VAT businesses pay on their purchases and how much VAT they charge on their sales. The VAT paid on purchases from other businesses is credited against the VAT charged on sales, so businesses remit only the difference to the government. Table 1 shows how a 5 percent VAT on consumer purchases is collected in stages under the credit method. It also shows how a more familiar 5 percent retail sales tax is collected on the same purchases. The illustration is based on a simplified production and distribution

process. It assumes that manufacturers purchase nothing from other businesses and sell only to wholesalers. Wholesalers, in turn, buy only from manufacturers and sell only to retailers. Retailers, in turn, buy only from wholesalers and sell only to consumers. Under a retail sales tax, the tax is collected only on retail sales; manufacturers and wholesalers are not involved in collecting the tax. Retailers collect the entire $50 in sales tax on sales of $1,000 to consumers.

Under the credit method, manufacturers collect $20 in VAT on sales of $400 to wholesalers. Because manufacturers have no purchases from other businesses in this simple example, they have no VAT credits to apply against VAT collections, so they remit the full $20 to the government. Wholesalers collect $35 in VAT on sales of $700 to retailers, but they remit only $15 to the government because they are allowed a $20 credit for the VAT they paid on purchases from

TABLE 1. TAXING CONSUMER PURCHASES UNDER A CREDIT-METHOD VALUE-ADDED TAX AND A RETAIL SALES TAX (In dollars)

		Stage of Production			
		Manu-facturer	Whole-saler	Retailer	Total Tax
	Credit-Method VAT				
1.	Sales (Excluding VAT)	400	700	1,000	
2.	Purchases (Excluding VAT)	0	400	700	
3.	Tax on Sales (5% x 1)	20	35	50	
4.	Credit on Purchases	0	20	35	
5.	VAT Owed (3 - 4)	20	15	15	50
	Retail Sales Tax				
1.	Sales (Excluding sales tax)	400	700	1,000	
2.	Sales Tax Owed (5% x 1)	n.a.	n.a.	50	50

SOURCE: Congressional Budget Office.

NOTE: n.a. = not applicable.

manufacturers. The retailers collect $50 in VAT on sales of $1,000 to consumers, but they remit only $15 to the government because they are allowed a $35 credit for the VAT they paid on purchases from wholesalers. The VAT collected from all three stages totals $50, which is 5 percent of consumer purchases. Because of the VAT credit, businesses effectively purchase goods on a VAT-free basis. After the VAT credit, purchases by wholesalers cost only $400 and purchases by retailers cost only $700--the same as under a retail sales tax.

Even though a credit-method VAT appears to be just a cumbersome way to collect a retail sales tax, this type of VAT is widely used and is generally preferred over a sales tax for two reasons. First, the VAT can prevent taxes from cascading, which often occurs under a sales tax. Second, it can reduce tax evasion.

Sales taxes cascade whenever businesses pay sales tax on purchases that ultimately end up in the value of sales that are then subject to sales tax. In theory, this is not supposed to happen, but in practice it often does.[1] For example, a retailer may pay sales tax on a building renovation purchased from a general contractor or on a delivery truck purchased from an auto dealer. These purchases ultimately make up part of the value of the retailer's sales on which a sales tax is charged again. The VAT's rebate mechanism on business purchases generally prevents such cascading by removing the tax on business purchases. (When some businesses are exempt from collecting the VAT under the credit method, however, cascading can still occur.)

Tax evasion is a problem under a retail sales tax because so many retail sales are cash transactions, which are easy to conceal. The VAT, however, collects much of the tax before the retail sale. Moreover, retailers that claim VAT credits for purchases cannot grossly underreport their sales without risking an audit because their reported sales would be noticeably out of line with their reported purchases.

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1. By one account, 20 percent of the revenue from state sales taxes comes from taxing business purchases. See Department of the Treasury, *Value-Added Tax*, vol. 3 of *Tax Reform for Fairness, Simplicity, and Economic Growth* (November 1984), p. 32.

Granting Tax Preferences Under a VAT

Tax preferences under a VAT take two different forms: businesses can be exempted from collecting the VAT, and goods and services can be taxed at reduced rates. These two forms of tax preference are generally used for different purposes. Businesses are usually exempted to reduce the administrative burden on government and the compliance burden on businesses, whereas goods and services are taxed at reduced rates to reduce the tax burden on consumers. The European-style VAT uses both forms of preference, but the exemption of businesses before the final stage of the distribution process is limited to keep cascading in check.

Exemption of Businesses. Normally under a VAT, businesses must register with the government and collect the tax. Some businesses, however, may be exempted from registering based on their sales volume or line of business. Exempt businesses do not collect the VAT on their sales or receive a credit for the VAT paid on their purchases. Although exemption spares businesses the cost of complying with the VAT, it may not reduce the tax burden on their value added. Under the credit method, the exemption of some businesses before the final

TABLE 2. COLLECTING A VALUE-ADDED TAX WHEN A WHOLESALER IS EXEMPT (In dollars)

		Stage of Production			
		Manu-facturer	Exempt Whole-saler	Retailer	Total Tax
1.	Sales (Excluding VAT)	400	700	1,000	
2.	Purchases (Excluding VAT)	0	400	700	
3.	Tax on Sales (5% x 1)	20	n.a.	50	
4.	Credit on Purchases	0	n.a.	0	
5.	VAT Owed (3 - 4)	20	n.a.	50	70

SOURCE: Congressional Budget Office.

NOTE: n.a. = not applicable.

stage of the distribution process actually increases the tax burden on their value added by breaking the chain of credits that normally exists among registered businesses. As long as the chain remains unbroken, as shown in Table 1, the VAT credit for business purchases at any stage refunds all of the VAT charged before that stage, so business purchases are VAT-free.

The chain of credits is broken whenever an exempt business both purchases from and sells to registered businesses. When this happens, business purchases are not entirely VAT-free, and the VAT cascades the same way a retail sales tax sometimes does. Table 2 (on page 9) illustrates how an exempt wholesaler breaks the chain of credits and causes the VAT to cascade. (The production and distribution process is the same as in Table 1.) This example assumes that the exempt wholesaler competes with registered wholesalers in the same markets. Like the registered wholesalers it competes with, the exempt wholesaler purchases goods from registered manufacturers for $400 (plus $20 in VAT) and sells goods to registered retailers for $700. But unlike registered wholesalers, the exempt wholesaler is unable to claim a credit of $20 for the VAT it paid on its purchases. Its purchases, therefore, are not VAT-free. In total, $70 in VAT is collected from all three stages on $1,000 of consumer purchases ($20 more than without the exemption)

TABLE 3. COLLECTING A VALUE-ADDED TAX WHEN A RETAILER IS EXEMPT (In dollars)

		Stage of Production			
		Manufacturer	Wholesaler	Exempt Retailer	Total Tax
1.	Sales (Excluding VAT)	400	700	1,050	
2.	Purchases (Excluding VAT)	0	400	700	
3.	Tax on Sales (5% x 1)	20	35	n.a.	
4.	Credit on Purchases	0	20	n.a.	
5.	VAT Owed (3 - 4)	20	15	n.a.	35

SOURCE: Congressional Budget Office.

NOTE: n.a. = not applicable.

because the exempt wholesaler breaks the chain of credits and causes $400 of value added to be taxed twice--once at the manufacturing stage and once at the retail stage.

An exempt business does not always break the chain of credits. In general, if the exempt business is at the final stage of the distribution process and sells only to consumers, it will not break the chain of credits. Table 3 illustrates this outcome for an exempt retailer. (The production and distribution process is again the same as in Table 1). The example assumes that the exempt retailer competes with registered retailers in the same market. Therefore, it can sell goods to consumers at the same VAT-inclusive price that registered retailers charge. The exempt retailer purchases goods from registered wholesalers for $700 (plus $35 in VAT), but does not collect a VAT on its sales. In total, only $35 in VAT is collected from all three stages ($15 less than without the exemption) because the $300 of value added at the retail stage was not taxed at all.

In the previous two examples, the tax burden or benefit from exemption fell on the exempt business. This is likely to happen when the exempt business is the exception in its industry as, for example, when only small businesses are exempt from registering. But when an entire industry such as banking is exempt from registering, competition among these exempt businesses shifts much of the burden or benefit to consumers.

Reduced Rating of Goods and Services. Reduced-rated sales are taxed at lower rates at one or more stages of the production and distribution process. Zero rating is the most common form of reduced rating. Zero-rated sales to consumers are not taxed at all because, under the credit method, the value added at all stages is taxed according to the rate at the final stage. Table 4 shows how the tax on a zero-rated consumer good is collected and refunded in stages under the credit method. The example assumes that the zero-rated good cannot be distinguished from taxable goods at the manufacturing stage (which, in this simplified example, is tantamount to assuming that the zero-rated good is manufactured using taxable intermediate goods as inputs). Manufacturers collect $20 in VAT on sales of $400 to wholesalers, but the $20 is refunded to wholesalers as a credit. Because wholesalers and retailers

do not charge a VAT on their sales of the zero-rated good, it can be purchased by consumers VAT-free.

Taxing Exports and Imports

When goods are produced and marketed in more than one country, the tax imposed by each country under its VAT depends on whether the VATs are being administered on a destination or origin basis. A destination-based VAT taxes the value of internationally traded goods where the goods are consumed; the base of the tax, like that of a retail sales tax, is the value of consumer purchases. An origin-based VAT taxes the value of internationally traded goods where the value is produced; the base of the tax is the value of the domestically produced portion of both consumer purchases and exports.

The difference between a destination-based VAT and an origin-based VAT is illustrated in Table 5. This table repeats the example from Table 1, except that the goods are manufactured in Country A and are sold to consumers in Country B. Both countries tax the traded good at the same 5 percent rate. Under a destination-based VAT, the

TABLE 4. COLLECTING A VALUE-ADDED TAX FOR A ZERO-RATED GOOD (In dollars)

		Stage of Production			
		Manu-facturer	Whole-saler	Retailer	Total Tax
1.	Sales (Excluding VAT)	400	700	1,000	
2.	Purchases (Excluding VAT)	0	400	700	
3a.	Tax on Sales (5% x 1)	20	n.a.	n.a.	
3b.	Tax on Sales (0% x 1)	n.a.	0	0	
4.	Credit on Purchases	0	20	0	
5.	VAT Owed (3 - 4)	20	-20	0	0

SOURCE: Congressional Budget Office.

NOTE: n.a. = not applicable.

TABLE 5. COLLECTING A VALUE-ADDED TAX FOR A TRADED GOOD (In dollars)

		Stage of Production			
		Manufacturer in Country A	Importer in Country B	Retailer in Country B	Total Tax
	Destination Basis				
1.	Sales (Excluding VAT)	400	700	1,000	
2.	Purchases (Excluding VAT)	0	400	700	
3.	VAT Owed to Country A	0	n.a.	n.a.	0
4.	VAT Owed to Country B	n.a.	35	15	50
	Origin Basis				
1.	Sales (Excluding VAT)	400	700	1,000	
2.	Purchases (Excluding VAT)	0	400	700	
3.	VAT Owed to Country A	20	n.a.	n.a.	20
4.	VAT Owed to Country B	n.a.	15	15	30

SOURCE: Congressional Budget Office.

NOTES: The traded good is manufactured in Country A and sold to consumers in Country B. It is taxed at a 5 percent rate in both countries.

n.a. = not applicable.

value added to exported goods by manufacturers is not taxed by Country A, but the importers collect the VAT for Country B on the manufacturers' value added as well as their own. The retailers also collect the VAT on their value added for country B. As a result, $50 in VAT is collected in Country B, where the $1,000 of traded goods are consumed. Under an origin-based VAT, manufacturers collect the VAT for Country A on the value they add to exported goods. Importers and retailers then collect the VAT on the value they add. As a result, $20 is collected in Country A on $400 of value added, and $30 is collected in country B on $600 of value added.

Because a VAT is collected in stages, a border tax adjustment is generally required in order to tax traded goods on a destination basis.[2]

2. The economic effects of border tax adjustments on trade are discussed in Chapter V.

A border tax adjustment refunds the VAT that has accumulated on the production of exports and imposes the VAT that would have accumulated on imports if they had been produced domestically. No border tax adjustment is needed to collect a retail sales tax on a destination basis because a retail sales tax is not collected in stages.

A credit-method VAT is always administered on a destination basis. The VAT on exports is easily refunded by zero rating them. The VAT on imports is usually imposed as a tariff at the border. The tariff on imports is unnecessary, however, as long as importers are all registered businesses because, as registered businesses, they collect the VAT on the value of their imported purchases when they charge a VAT on their sales. Administering a credit-method VAT on an origin basis would require the value of exports to be taxed like other sales and the value of imports not to be taxed at any stage. Imposing the tax on the value of exports is not a problem, but avoiding tax on the value of imports is not easy to accomplish. For example, zero rating imports under the credit method does not work because the value usually ends up being taxed at a later stage.

ALTERNATIVE VAT STRUCTURES

Even though the European-style VAT is used almost exclusively throughout the world, it is not the only way to structure a VAT. Many other VAT structures are possible, and a few have even been used. For example, Argentina, Peru, and Turkey use a credit-method VAT to tax income instead of consumption by requiring businesses to claim the VAT credit for purchases of plant and equipment over time as these investments are used instead of all at once when they are purchased. Israel briefly employed the addition method (which computes the value added at each stage by adding up labor and capital costs) in tandem with its European-style VAT in an unsuccessful attempt to tax financial services more completely. Japan recently adopted a VAT that calculates the tax at each stage without invoices in a manner similar to the subtraction method (described below).

A subtraction-method VAT is a viable alternative to the European-style VAT when it is designed properly. It works well when

all goods are taxed at the same rate. Moreover, exempting businesses under the subtraction method does not cause the VAT to cascade, as it can under the credit method. But zero rating is complicated under the subtraction method, and multiple reduced rates are impossible. Given that most VAT countries have opted for multiple reduced rates, these limitations probably explain why the subtraction method is seldom used.

A Subtraction-Method VAT Without Tax Preferences

Unlike the credit method, the subtraction method does not require invoices that show how much VAT was paid on purchases and charged on sales. Businesses simply subtract their purchases from their sales and pay the VAT on the difference, as illustrated in Table 6. The example is the same as the one in Table 1, except that sale and purchase values are shown on a VAT-inclusive basis instead of on a VAT-exclusive basis. The 4.762 percent tax on the value added at each stage (measured by VAT-inclusive sales and purchases) under the subtraction method is equal to the 5 percent tax on value added (measured by VAT-exclusive sales and purchases) under the credit method.

TABLE 6. TAXING CONSUMER PURCHASES UNDER A SUBTRACTION-METHOD VALUE-ADDED TAX (In dollars)

		Stage of Production			
		Manufacturer	Wholesaler	Retailer	Total Tax
1.	Sales (Including VAT)	420	735	1,050	
2.	Purchases (Including VAT)	0	420	735	
3.	VAT Base (1 - 2)	420	315	315	
4.	VAT Owed (4.762% x 3)	20	15	15	50

SOURCE: Congressional Budget Office.

NOTE: A 4.762 percent tax rate on a tax-inclusive base is the same as a 5 percent tax rate on a tax-exclusive base.

In the example, manufacturers pay $20 in VAT on sales of $420 (including the VAT) because they have no purchases from other businesses to subtract from their sales. Wholesalers subtract purchases of $420 from sales of $735 (including the VAT) and pay $15 in VAT on the difference of $315. Retailers subtract purchases of $735 from sales of $1,050 (including the VAT) and pay $15 in VAT on the difference of $315. At each stage, the subtraction method collects the same amount of tax as the credit method, as shown in Table 1. But the credit and subtraction methods differ fundamentally in the way they determine the VAT refund for business purchases. Under the credit method, the refund is based on the actual tax paid on purchases (as shown on purchase invoices). Under the subtraction method, the refund is based on the amount of tax that would have been paid on purchases, assuming they were fully taxed.

A subtraction-method VAT without any exempt businesses or reduced-rated goods can be administered either on a destination basis (with border tax adjustments) or on an origin basis (without border tax adjustments). As long as no tax preferences exist, border tax adjustments can be computed in a straightforward way because the adjustment is simply a fixed percentage of the value of internationally traded goods. These adjustments can be made at the border or, alternatively, businesses can simply exclude imports from the value of purchases and exports from the value of sales in calculating their VAT payments.

A Subtraction-Method VAT with Tax Preferences

Preferences work differently under the subtraction method than they do under the credit method. For exemption, the outcome is probably better; for reduced rating, it is clearly worse. Under a modified version of the subtraction method, preferences generally work as they do under the credit method, with some limitations.

Exempting a business at any stage under the subtraction method has the same effect as exempting one at the final stage under the credit method: the value added by the exempt business is untaxed. Consequently, exemption under the subtraction method never causes the VAT to cascade as it does under the credit method when the chain of

credits is broken. Instead, exemption always erodes the tax base because the value added that is untaxed at the exempt stage is never taxed at a later stage, as it usually is under the credit method.

Zero rating works poorly under the subtraction method because the subtraction method assumes--often incorrectly--that the VAT has been paid on the purchases used to produce zero-rated goods and services. The top panel of Table 7 illustrates how zero rating can fail under the subtraction method. As in Table 4, the example assumes that zero-rated goods cannot be distinguished from taxable goods at the manufacturing stage. Manufacturers collect $20 in VAT on sales of $420 (including the VAT) to wholesalers. Wholesalers have $700 of zero-rated sales and no taxable sales, but they have $420 of purchases

TABLE 7. COLLECTING A VALUE-ADDED TAX FOR A ZERO-RATED GOOD UNDER ALTERNATIVE VERSIONS OF THE SUBTRACTION METHOD (In dollars)

		Stage of Production			
		Manufacturer	Wholesaler	Retailer	Total Tax
	Subtraction Method				
1.	Sales (Including VAT)	420	700	967	
2.	Zero-Rated Sales	0	700	967	
3.	Purchases (Including VAT)	0	420	700	
4.	VAT Base (1 - 2 - 3)	420	-420	-700	
5.	VAT Owed (4.762% x 4)	20	-20	-33	-33
	Modified Subtraction Method[a]				
1.	Sales (Including VAT)	420	700	1,000	
2.	Zero-Rated Sales	0	700	1,000	
3.	Taxed Purchases (Including VAT)	0	420	0	
4.	VAT Base (1 - 2 - 3)	420	-420	0	
5.	VAT Owed (4.762% x 4)	20	-20	0	0

SOURCE: Congressional Budget Office.

a. Only taxed purchases are subtracted from sales.

for which they receive a $20 VAT refund. Retailers have $967 of zero-rated sales and no taxable sales, but they have $700 of purchases for which they receive a $33 VAT refund. As a result, zero rating goes beyond removing the VAT from the zero-rated good and ends up subsidizing it. (In the example, the subsidy is passed along to consumers.)

The failure of the subtraction method to properly tax zero-rated goods can be corrected by allowing only taxed purchases to be subtracted from sales. This modified method requires businesses to account for taxed and untaxed purchases separately. The bottom panel of Table 7 illustrates the effect of this modification. Retailers no longer subtract $700 in untaxed purchases from their sales, so they no longer receive a $33 VAT refund. Zero rating works as it is supposed to so that, in total, no tax is collected on the zero-rated good.

The modified subtraction method works much like the credit method. In fact, if reduced rating involves only zero rating, the two methods are virtually the same. Thus, for example, exemption under the modified subtraction method causes the VAT to cascade, just as it does under the credit method. Unlike the credit method, however, the modified subtraction method cannot handle multiple reduced rates because it assumes that business purchases of taxed goods were taxed at a uniform rate.

Preferences under the subtraction method make border tax adjustments inaccurate, so a subtraction-method VAT with preferences cannot be administered properly on a destination basis. Border tax adjustments are supposed to refund the VAT that has accumulated on exports and to impose the VAT that would have accumulated on imports if they had been produced domestically. Under the subtraction method, border tax adjustments are imputed by assuming that the value added by domestic industry at every stage was taxed at a uniform rate. But preferences cause the value added at some stages to be taxed at varying rates, making the border tax adjustments inaccurate. A subtraction-method VAT can still be administered on an origin basis, however, because border tax adjustments are unnecessary. Alternatively, the modified subtraction method can be used to administer the VAT on a destination basis as long as multiple reduced rates are avoided.

CONCLUSIONS

Although many VAT structures may be possible, few work well. Even those that work well have drawbacks and limitations.[3] The credit method enables goods to be taxed at different rates, but it requires a burdensome system of invoices. In contrast, the subtraction method does not require invoices, but it only works well when all goods are taxed at a uniform rate.

The desire of many European nations to tax goods at different rates probably explains why the credit method is used so widely despite its burdensome invoice system. The credit method enables the VAT to tax goods at different rates, but it demands that the VAT be administered on a destination basis because the credit method cannot easily prevent the value of imports from being taxed. The credit method also demands that the exemption of businesses before the final stage be limited to minimize breaks in the chain of credits among businesses that cause the VAT to cascade. Thus, the choice of the credit method dictates many features of the European-style VAT.

3. For a further discussion of the compatibility of various VAT features, see Carl S. Shoup, "Choosing among Types of VATs," in Malcolm Gillis, Carl S. Shoup, and Gerardo P. Sicat, eds., *Value Added Taxation in Developing Countries* (Washington, D.C.: World Bank, 1990), pp. 3-16.

CHAPTER III

THE BASE OF A VALUE-ADDED TAX

A value-added tax typically taxes a broad range of consumption goods and services, but it does not tax all consumption. Some goods are excluded from the VAT base because of serious administrative problems in valuing and taxing them. Others are excluded to promote policy objectives such as limiting the tax burden on the poor or encouraging socially desirable activities.

A broader base has two obvious advantages. First, it discriminates less among taxpayers on the basis of their preferences for particular goods and services. Second, a low-rate tax on a broad base changes the relative prices of consumer goods and services less than a high-rate tax on a narrow base, thereby lessening the VAT's effect on consumer choices between taxed and untaxed goods.

DEFINING THE TAX BASE

The broadest conceivable base for a consumption VAT would be the value of all consumption. CBO estimates that total consumption in the United States in 1988 was approximately $3.8 trillion, as shown in Table 8.[1] This measure of total consumption includes the value of many goods and services that are not commonly considered to be consumption because consumers do not purchase them directly in the marketplace. For example, total consumption includes state and local gov-

1. This estimate of the total value of consumption is broader than personal consumption expenditures (PCE) as defined in the national income and product accounts. It includes some forms of consumption provided or financed by employers that are not included in PCE, plus the cost of state and local government services (other than services to businesses and services that PCE already includes). In principle, total consumption should also include part of the cost of federal government services, but these costs are not shown because their inclusion in the VAT base would have no net effect on the federal budget deficit. Any VAT paid by the federal government on its purchases would also be collected by the federal government as tax revenue, so payments and collections would exactly offset each other.

TABLE 8. EXAMPLES OF BASES FOR A VALUE-ADDED TAX AT 1988 LEVELS OF CONSUMPTION (In billions of dollars)

	Consumption	Tax Base: Broad	Tax Base: With Zero-Rated Merit Goods	Tax Base: Less Regressive
Food and Tobacco	632[a]	586[f]	586	252[q]
Clothing	240	240	240	240
Personal Care	48	47[g]	47	47
Housing	502	319[g,h]	319	20[r]
Household Operation	386	385[g]	385	206[s]
Private Medical Care	444	194[i]	0	0
Personal Business	227	96[g,j]	96	96
Transportation	416[b]	406[g,k]	406	329[t]
Recreation	245	240[l]	240	240
Private Education and Research	58	25[m]	0	0
Religious and Welfare Activities	76	48[n]	0	0
Public Medical Care	66[c]	57[o]	0	0
Public Higher Education	61[d]	11[m]	0	0
Other Government Services	373[e]	168[p]	0	0
Total	3,774	2,823	2,320	1,430
Tax Base as a Percentage of Total Consumption		75	61	38
Annual Net Revenue from a 5 Percent VAT[u]		101	83	51

SOURCE: Congressional Budget Office based on national income and product accounts (July 1990).

a. Consumer expenditures on food and tobacco plus business meals.
b. Consumer expenditures on transportation plus the personal use of business automobiles.
c. Purchases of goods and services (including employee compensation) by state and local government hospitals and health facilities.
d. Purchases of goods and services (including employee compensation) by public institutions for higher education.
e. State and local government purchases of goods and services excluding purchases for medical care, higher education, water and sanitation, publicly owned utilities, and transportation.
f. Excludes food produced and consumed on farms, food furnished to employees, business meals, and tips.
g. Excludes the cost of employee compensation for small businesses.
h. Purchases of new residential structures including additions, alterations, major replacements, and maintenance expenditures.
i. Excludes employer contributions to group health insurance and federal expenditures under Medicare and Medicaid.
j. Excludes services furnished without payment by financial institutions and the expense of handling life insurance.
k. Excludes the personal use of business automobiles.
l. Excludes pari-mutuel net receipts.
m. Tuition and fees only.
n. Excludes the cost of employee compensation.
o. Excludes unreimbursed expenses.
p. State and local government purchases (excluding employee compensation, and purchases for medical care and higher education).
q. Excludes food and alcoholic beverages consumed at home and tobacco products.
r. Consumer expenditures on lodging away from home.
s. Excludes household utilities and telephone service.
t. Excludes gasoline and oil.
u. Net of reduced revenues from other federal taxes, based on a 95 percent rate of VAT compliance.

ernment services, such as primary and secondary education, even though they are financed by taxes; the activities of religious and charitable organizations even though they are financed by donations; goods and services provided to employees as benefits; services provided by financial institutions in lieu of higher interest payments or lower interest charges; and the rental value of owner-occupied housing.

Although total consumption is not a practical tax base for a VAT, it provides a starting point from which practical tax bases can be defined. Excluding goods and services from the VAT base increases the tax rate that must be levied on the remaining goods and services to raise a given amount of revenue. Narrowing the base and raising the tax rate distorts consumption choices by making taxed goods more expensive than untaxed goods.

Exclusions Because of Administrative Problems

Taxing total consumption under a VAT is impractical, if not impossible. Goods and services may be hard to tax properly for any of three reasons. First, some consumption may be difficult to value, either because the goods and services are paid for indirectly or because they are consumed over many years. For example, the value of most financial services is difficult to determine because consumers do not purchase them directly. Instead, their value is reflected in the cost of borrowing and the return to lending. Similarly, the value of one year's services from owner-occupied housing is difficult to estimate because the purchase price of a home measures the value of many years of housing services. Second, enforcing the tax on some goods and services may be difficult when they are purchased from small businesses or from "moonlighting" tradespeople and professionals who want to conceal their transactions to avoid paying tax on their value added. Third, complying with the tax on some goods and services may require special bookkeeping. For example, one way to tax employee benefits as consumption would be to deny employers a credit for any VAT that they pay on purchases that benefit their employees. This, however, would require employers to separate purchases of benefits from other business purchases for tax purposes.

Problems of valuation, enforcement, and bookkeeping limit the size of the VAT base. The broadest base that could readily be taxed under the credit method includes three-fourths of total consumption and would have raised about $101 billion in net revenue in 1988 at a 5 percent rate (see Table 8). This broad base could be taxed under the credit method by:

- Exempting religious and welfare organizations and state and local governments (except for business activities such as public utilities, higher education, and health care).
- Allowing small businesses to be exempt if they choose.
- Exempting rental housing.
- Zero rating sales of housing (except for new construction).
- Zero rating financial services that are provided without a fee.
- Treating business meals and employer-provided fringe benefits as ordinary business expenses for which a VAT credit could be claimed.

Under the broad base, religious and welfare organizations and state and local governments would generally be treated as consumers instead of businesses. By not registering, they would end up paying the VAT on their purchases. Small businesses would have the option of being treated the same way, but those serving registered businesses would generally choose to register to avoid breaking the chain of credits.[2] Housing services from housing units that existed when the VAT was put in place would be excluded from the base, but housing services from newly constructed housing would be taxed under the "prepayment" approach (described later) by taxing the value of new construction, additions, alterations, and maintenance. Most financial services used by consumers would be excluded from the base, but the financial

2. Only service firms with annual gross receipts of less than $100,000 were assumed not to register. The estimated employee compensation of these service firms was excluded from the tax base.

services used by businesses would be included as part of the value added by businesses to goods and services that consumers purchase.

Exclusions for Policy Reasons

In addition to administrative problems, the ability to tax a broad base under a VAT is limited for policy reasons such as a desire not to tax merit goods and a desire to limit the tax burden on the poor.

Merit Goods. Merit goods are those goods and services whose private consumption is thought to benefit society, including education and research, health care, welfare services, and religious and charitable activities. Excluding these goods and services by zero rating them reduces the tax base to 61 percent of total consumption, as shown in Table 8. A 5 percent VAT on this base would have raised about $83 billion in net revenue in 1988.

In order to zero rate merit goods, the organizations that provide them must be registered businesses so they can claim the VAT credit on their purchases. In contrast, as exempt businesses under the broad base, these organizations (including churches, universities, and state and local government entities) could not claim the VAT credit, so their purchases would be part of the VAT base.

Limiting the Burden on the Poor. One concern about a VAT is that it claims a higher percentage of the income of poor families than of wealthier ones because poor families save relatively little of their income. Such a tax is said to be regressive. Most countries with VATs try to lessen the VAT's regressivity by taxing certain goods and services, including food and housing, at a zero or other preferential rate. The less regressive VAT base shown in Table 8 is similar to the VAT base in many countries in that it excludes food consumed at home, household utilities and telephone service, gasoline and oil for motor vehicles, and housing purchases except for purchases of new homes. Excluding these goods and the merit goods from the tax base by zero rating them shrinks the tax base until only 38 percent of total consumption is left, as shown in Table 8. As a result, a 5 percent VAT on this

base would have raised only about $51 billion in net revenue in 1988--about half the revenue from the broad-based VAT.

Methods for lessening a VAT's regressivity are discussed further in Chapter IV. The remainder of this chapter describes some of the difficulties that arise in taxing certain hard-to-tax services under the credit method and explains how these difficulties are usually handled.

TAXING HARD-TO-TAX GOODS AND SERVICES

Ideally, a consumption VAT would tax the consumption of all goods and services, but, for some goods and services, this is not a simple matter. Some hard-to-tax goods and services are routinely excluded from the VAT base, but many others are included and taxed in special ways.

State and Local Government Services

Taxing state and local government services is difficult because they are seldom financed by user fees that reflect their true cost. Instead, much of the cost is financed by general tax revenue. When government services are provided for a fee, however, they are usually taxed under a VAT as if they were privately produced. For example, public rail services are usually taxed on the basis of ticket prices because rail services compete with other forms of transportation services. Publicly provided goods and services retain a competitive advantage to the extent that the fees charged are subsidized, but the VAT does not change the relative prices of publicly and privately produced goods.

When government services are financed by general taxes rather than by user fees, they cannot be taxed under the credit method in the normal way. Therefore, either these services are zero rated or the government entities that provide them are exempted.[3] Zero rating requires government entities to file VAT returns to obtain credits, but it

3. New Zealand has chosen another approach. Taxes paid to local governments are subject to the VAT, and local governments are treated as registered businesses.

makes government services VAT-free.[4] Most often, however, government entities are exempted, which excuses them from filing returns, but requires them to pay the VAT on all purchases of goods and services other than employee salaries. Because no VAT is paid on government salaries, exemption encourages government entities to perform services in-house instead of purchasing the services from registered businesses that can often provide them more efficiently.[5]

Financial Services

Taxing many financial services is difficult because their value cannot be properly assigned to the users. The primary service provided by banking institutions is financial intermediation, which involves borrowing from certain customers and lending to others. (Nonbank financial institutions such as insurance companies also provide this service.) Financial institutions do not charge their customers an explicit fee for financial intermediation. Instead, they charge a higher interest rate on loans than they pay on deposits. This practice makes it impossible to allocate the value of this service properly between borrowers and depositors. Therefore, financial services that involve financial intermediation cannot be taxed under the credit method in the normal way. Rather, these financial services are zero rated, or the financial institutions that provide them are exempted.

When financial services are zero rated, there is no need to value them. Financial institutions simply claim a credit for the VAT they pay on their purchased inputs. But zero rating financial services seriously erodes the VAT base; in 1988, the value of financial services that

4. Another possibility is to exempt governments and zero rate sales to governments. This approach has the same effect as zero rating government sales, but it requires vendors to tax their sales to governments differently from their sales to other customers. This makes the VAT harder for the government to administer and easier for businesses to evade.

5. For a further discussion of the treatment of government entities under a VAT, see Department of the Treasury, *Value-Added Tax*, vol. 3 of *Tax Reform for Fairness, Simplicity, and Economic Growth* (November 1984), pp. 67-70; Charles E. McLure, Jr., *The Value-Added Tax: Key to Deficit Reduction?* (Washington, D.C.: American Enterprise Institute, 1987), pp. 139-140; Alan A. Tait, *Value-Added Tax: International Practice and Problems* (Washington, D.C.: International Monetary Fund, 1988), pp. 75-78.

would have been lost from zero rating them amounted to about $85 billion.

Because zero rating financial services loses so much revenue, most VAT nations zero rate only exported financial services and exempt domestic financial services. Exemption loses less revenue not only because financial institutions are denied a VAT credit on purchases attributable to their exempt sales, but also because exempt institutions break the chain of VAT credits among businesses, which causes the VAT to cascade. The zero rating of exported financial services allows financial institutions to compete in foreign financial markets, but it requires them to separate the purchases used to produce domestic services from the purchases used to produce exported services because the VAT credit is allowed only for the latter.[6]

Durable Consumer Goods

Durable consumer goods such as automobiles are hard to tax properly because they provide consumption services over several years. Although a consumption tax ideally should apply to the value of the consumption services supplied each year, it is virtually impossible to measure the annual value of services from durable consumer goods, so a prepayment approach is used instead. Under this approach, the VAT is levied on the purchase price of a durable good because, in theory, the purchase price properly measures the current value of the services provided by the good over its entire useful life.

One consequence of the prepayment approach is that the services from durable goods purchased before a VAT is imposed are, in effect, zero rated. The owners of these goods avoid the VAT that others must pay to consume similar services from durable goods that are newly purchased. It is possible to tax these goods if and when they are resold, but it is hard to distinguish goods that were previously taxed from those that were not.

6. For a further discussion of the taxation of financial services under a VAT, see Tait, *Value-Added Tax*, pp. 92-100.

When durable consumer goods are purchased on an installment basis, the VAT can be imposed on either the installment payments or the purchase price; the present value of the VAT payments is the same regardless of which method is used. Most countries impose the VAT on the purchase price, but taxing the purchase price creates an opportunity to avoid some of the tax on an installment sale by understating the purchase price and overstating the finance charges. Taxing installment payments instead of the purchase price prevents this kind of tax evasion.

Housing

If all housing services were rented, taxing housing under a VAT would pose few problems: rents could be taxed just like payments for any other service. However, about two-thirds of the nation's housing services--measured in terms of rental value--are provided by owner-occupied housing. Without explicit rental payments, the value of the rental services from owner-occupied housing is not easily gauged, and the tax owed under a VAT is not easily determined.[7]

Most European countries exempt residential rental transactions, but policies vary on how to tax the sale of homes. France and the Netherlands tax the sale price of new homes--essentially taxing housing under the prepayment method for durable consumer goods--but exempt sales of previously owned homes. This method taxes the services from newly constructed housing but not the services from existing housing. Several countries exclude new construction as well as existing housing from the VAT base. The United Kingdom, for example, zero rates sales of new homes and exempts sales of existing homes. Germany exempts all home sales.[8] Both approaches are difficult to administer properly. If new construction is zero rated, it must be distin-

7. See Department of the Treasury, *Value-Added Tax*, p. 73, for other issues regarding the imputation of rents.

8. For more detail about practices in other VAT nations, see Robert F. Conrad, "VAT and Real Estate," in Malcolm Gillis and others, eds., *Value-Added Taxation in Developing Countries* (Washington, D.C.: World Bank, 1990), pp. 96-97; and Organization for Economic Cooperation and Development, *Taxing Consumption* (Paris: OECD, 1988), pp. 183-186.

guished from taxable home maintenance and repairs.[9] If all housing is exempt, contractors must allocate their purchases of materials and other inputs between commercial properties, on which a VAT credit can be claimed, and exempt residential properties, on which a VAT credit cannot be claimed. This requirement increases compliance costs and provides opportunities for tax evasion.

Employer-Provided Goods and Services

Employers provide benefits to their employees, such as health insurance, child care, meals and entertainment, and the use of motor vehicles. Excluding these forms of consumption from the VAT base gives businesses an incentive to provide a greater share of employee compensation in these forms because businesses can claim a credit for the VAT paid to purchase these benefits, making them VAT-free. If employees purchase the same goods and services themselves, the purchases are taxed under the VAT.

In most VAT nations, businesses must impute sales and charge a VAT (based on either the market value or the cost to the business) whenever business-related goods and services are transferred to private use. However, this rule is extremely difficult to comply with and enforce because of the difficulty of valuing the consumption.[10] To limit possible tax evasion, some countries do not allow businesses to claim a full credit for purchased goods and services that are clearly for nonbusiness use or could easily be put to a nonbusiness use.[11]

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9. The distinction between new construction and repairs has been the subject of litigation in the United Kingdom. The British tax authorities provided lists categorizing construction projects as being either construction plus alterations or repair and maintenance work. For example, the installation of central heating was treated as an alteration (and thus was zero rated), but the replacement of existing radiators was treated as repair work and was fully taxed. The British government changed the rules in 1984 so that all work other than the creation of a new building became taxable, but questions of classification remained. See editor's note in Henry Aaron, ed., *The Value-Added Tax: Lessons from Europe* (Washington, D.C.: Brookings Institution, 1981), p. 79; or Tait, *Value-Added Tax*, p. 83.

10. The income tax is also subject to problems of valuing employer-provided benefits. Theoretically, these benefits should be included in the employee's taxable income. In practice, however, many benefits are not taxable, at least partly because they are difficult to value.

11. For further discussion of limiting the business deductibility of a VAT, see OECD, *Taxing Consumption*, pp. 92-93, 169-172.

CHAPTER IV

WHO BEARS THE BURDEN OF A VAT?

The value-added tax has been widely criticized as a regressive tax--one whose burden as a percentage of income falls more heavily on lower-income families than on higher-income families. To counter this criticism, VAT proponents argue that the tax's regressivity can be lessened either by excluding "necessities" such as food and housing from the VAT base or by using some of the VAT's revenue to reduce other taxes that burden the poor.

This chapter uses simulations of the Congressional Budget Office (CBO) tax model to compare the distribution of the VAT's burden, measured on an annual basis, with that of an income surtax. Simulations are also used to determine the extent to which the VAT's regressivity can be offset either by narrowing the VAT base or by reducing other taxes. The simulations show that on an annual basis:

- A broad-based VAT is regressive, but an income surtax is not.
- Narrowing the VAT base by zero rating goods and services that are heavily consumed by the poor reduces the VAT's regressivity only slightly.
- Reducing income and payroll taxes is not an effective way to offset the VAT's regressivity.
- Targeting a refundable tax credit to families near or below the poverty line can largely offset the VAT's burden on the poor.

Some analysts contend that measuring the VAT's burden on an annual basis exaggerates its regressivity. They note that the VAT's burden is less regressive when it is measured over a lifetime rather

than over a year. They also note that, when a VAT is first imposed, part of its burden falls on the value of existing wealth. This burden on existing wealth seems clearly at odds with the common view of a VAT as a regressive tax.

This chapter examines the lifetime and transitional burdens of a VAT and a surtax and concludes that:

- When tax burdens are measured on a lifetime basis instead of an annual basis, a VAT is less regressive, and distributional differences in the burden of a VAT and a surtax are less pronounced.

- Imposing either a VAT or a surtax would cause windfall gains and losses by changing asset values, but the VAT's windfalls would have greater consequences. Under a VAT, the real value of most existing business assets would decline, and, if the construction of new homes was zero rated, the real value of existing housing would also decline.

ANNUAL TAX BURDENS

CBO's simulations show that lower-income families would pay a larger share of their income in tax under a VAT than under an income surtax even when goods and services are selectively excluded from the base of the VAT to reduce its regressivity. These simulations group families into quintiles based on their annual realized cash income, adjusted for family size.[1] Realized cash income includes wages and salaries, self-employment income, rental income, interest and dividends, realized capital gains, and pensions and government transfer payments received in cash. It also includes certain income that has been paid in taxes such as the corporate income tax and the employer-paid portion of the payroll tax, but it excludes unrealized capital gains, employer contributions to pension funds, in-kind government transfer payments, and other noncash income.

1. For a discussion of different definitions of family income and the reasons for using this particular definition, see Chapter IV in Congressional Budget Office, *The Changing Distribution of Federal Taxes: 1975-1990* (October 1987).

Using family income to approximate economic well-being can present a misleading picture unless some adjustment is made for family size. For example, a single person has a much higher standard of living than a family of four with the same income. One alternative is to measure income on a per capita basis. This approach removes all differences based on family size, including economies of scale from living together. Another alternative, which is used in this analysis, is to adjust family income using poverty thresholds as an equivalence scale. This scale indicates, for example, that a family of four needs about twice the income of a single person to maintain the same standard of living. The incomes of families of different sizes are made comparable by dividing each family's income by the poverty threshold for a family of its size.

In the simulations, annual taxes are distributed to families based on assumptions about who bears the burden of each tax. Although some federal taxes are paid by corporations and noncorporate businesses, the economic burden of all taxes ultimately falls on families and individuals. Taxes may reduce family income directly, or they may reduce the purchasing power of income by causing prices to rise. Economists speak of these effects as the incidence of a tax. The incidence of some taxes, particularly the corporate income tax, is controversial. This study makes the following assumptions about the incidence of specific taxes:

- The burden of the individual income tax is attributed to the families who directly pay the tax. The study assumes no shifting of the tax among families.

- The payroll tax burden--including both the employer's and the employee's share--is allocated to employees. This allocation assumes that the burden of the employer's share lowers wages in the long run.

- The burden of the corporate tax is allocated to realized capital income--the sum of net rents, interest, dividends, and realized capital gains. This is the standard treatment if the

supply of investment capital is fixed and domestic capital markets are isolated from international markets.[2]

- The VAT is assumed to raise the price of taxable goods and services, so the burden of the tax is allocated in proportion to family consumption of taxed goods and services.[3] But the higher price of these goods also raises the aggregate price level, triggering changes in indexed taxes, such as the income tax, and indexed transfer payments, such as Social Security benefits and Supplemental Security Income payments. The burden of the VAT is allocated net of the changes in benefits and other taxes that result from the higher price level.

A Broad-Based VAT Versus an Income Surtax

Under the broad-based VAT described in Chapter III, a 3.5 percent tax rate would raise about $100 billion in 1992. The same amount of revenue could be raised with a 16 percent surtax on individual and corporate tax payments. Table 9 compares the distribution of the tax burden of the broad-based VAT with that of the surtax.

According to the simulations, the tax burden of the broad-based VAT is quite regressive on an annual basis. Under the VAT, families in the lowest income quintile would pay an additional 4.8 percent of

2. An alternative assumption is that a portion of the burden of the corporate tax would be shifted to employee compensation. This shift could occur if the tax causes investment to shift abroad, reducing the ratio of domestic capital to labor and thus the return to labor. This treatment is appropriate if the supply of investment capital is highly responsive to taxes and other prices, as in a world economy with interdependent capital markets. Because capital income is a larger share of the total income of higher-income families than of lower-income families, the corporate tax is more progressive when the burden is shifted to realized capital income rather than to employee compensation. The choice between assumptions about the corporate tax has a relatively minor effect on the progressivity of the surtax because the corporate surtax would account for only 20 percent of the total income surtax.

3. The VAT is assumed to increase prices of taxed goods and services only by the amount of the tax. The analysis does not reflect any effects on prices that could occur if intermediate goods and services, such as financial services, are provided by exempt businesses that break the chain of credits.

TABLE 9. DISTRIBUTION OF THE BURDEN OF A VALUE-ADDED TAX AND AN INCOME SURTAX

Family Income Quintile	Income Surtax	Value-Added Tax: Broad-Based	Value-Added Tax: With Zero-Rated Merit Goods	Value-Added Tax: Less Regressive
Average Tax Increase				
In Dollars				
Lowest	10	430	430	350
Second	150	690	670	620
Middle	400	930	910	940
Fourth	780	1,140	1,140	1,200
Highest	3,450	1,720	1,760	1,820
All Families	1,010	1,010	1,010	1,010
As a Percentage of Income				
Lowest	0.2	4.8	4.7	3.9
Second	0.7	3.2	3.1	2.9
Middle	1.2	2.8	2.7	2.8
Fourth	1.6	2.3	2.3	2.4
Highest	3.0	1.5	1.5	1.6
All Families	2.2	2.2	2.2	2.2
Percentage of Families with a Smaller Tax Burden Under the Income Surtax[a]				
Lowest		92	90	76
Second		93	89	80
Middle		87	84	79
Fourth		69	68	68
Highest		29	30	36
All Families		72	70	66

SOURCE: Congressional Budget Office tax simulation model.

NOTE: The income surtax and the three VAT options would each raise $100 billion in revenue.

a. The burden of the surtax is compared with that of the VAT option for the column.

their income in tax, families in the middle income quintile would pay an additional 2.8 percent, but families in the highest income quintile would pay only an additional 1.5 percent.

By comparison, the tax burden of the surtax would not be regressive. In fact, the simulations show that the surtax would be progressive, with higher-income families paying a larger share of their income in tax. Under the surtax, families in the lowest income quintile would pay an additional 0.2 percent of their income in tax, but families in the middle income quintile would pay an additional 1.2 percent, and families in the highest income quintile would pay an additional 3.0 percent.

Although all but the highest income quintile would bear a greater tax burden under the VAT than under the surtax, this does not mean that only high-income families would be better off under the VAT. Within each quintile, taxes vary among families, so some families would pay less tax under the VAT even though, on average, the quintile pays more. As Table 9 shows, about 72 percent of all families would be better off under the surtax--paying less tax under the surtax than under the VAT. Most families in the lowest income quintile would pay less under the surtax and most families in the highest income quintile would pay less under the VAT, but there are exceptions. A few low-income families--chiefly the elderly--would bear a smaller burden under the VAT than under the surtax because they have low expenditures and because part of the VAT's burden would be offset by increases in indexed transfer payments, which would go up because the higher price of taxed goods would raise the overall price level. For a few families, the increased income from transfer payments would exceed their VAT payments. At the other end of the income distribution, some high-income families would pay more under the VAT as a result of occasional big-ticket purchases.

Although the VAT's burden on the poor is much greater than that of the surtax, neither option would alter the overall distribution of taxes very much. Taxes collected in 1992 are expected to total about $1.1 trillion. According to the simulations, families in the lowest income quintile will bear 1.3 percent of this burden; families in the middle income quintile, 11.5 percent; and families in the highest income quintile, 61.9 percent. Raising $100 billion in additional

revenue with the VAT would increase total revenue to $1.2 trillion in 1992, of which families in the lowest income quintile would bear 1.8 percent; families in the middle income quintile, 12.1 percent; and families in the highest income quintile, 59.8 percent. Raising $100 billion with the surtax would also increase total revenue to $1.2 trillion in 1992, of which families in the lowest income quintile would bear 1.2 percent; families in the middle income quintile, 11.2 percent; and families in the highest income quintile, 62.9 percent.

Narrowing the VAT Base

Most countries with VATs seek to lessen the VAT's regressivity by zero rating (or reduced rating) selected goods and services. Under the credit method, zero rating a good or service removes its entire value from the VAT base. Narrowing the VAT base in this way reduces the VAT's regressivity, provided that the zero-rated goods and services make up a larger share of the consumption of lower-income families than of higher-income families.

Zero rating merit goods such as education, health care, and religious and charitable activities would have very little effect on the distribution of the VAT's burden. To raise $100 billion in taxes from this base, as defined in Chapter III, would require a tax rate of 4.4 percent in 1992. The distribution of the burden of this VAT is shown in Table 9. The table shows that zero rating merit goods slightly increases the burden on the highest income quintile and slightly reduces the burden on the other quintiles.

Zero rating necessities such as food, housing, and utilities, on which lower-income families spend a larger share of their income, would slightly reduce the VAT's regressivity. To raise $100 billion in taxes from this base, as defined in Chapter III, would require a tax rate of 6.9 percent in 1992. The distribution of the burden of this VAT is also shown in Table 9. Compared with the broad-based VAT, the less regressive VAT would reduce the burden by $80 on families in the lowest income quintile and by $70 on families in the second income quintile. Families in the other three quintiles would bear a greater burden under the less regressive VAT.

Offsetting the VAT's Regressivity by Reducing Other Taxes

Instead of narrowing the tax base by zero rating merit goods and necessities, the VAT's regressivity could be partly offset by changing other taxes in certain ways. For example, one could raise the tax rate of a broad-based VAT slightly and use the additional revenue to reduce the burden of the income or payroll tax. Alternatively, one could use the additional revenue to provide a refundable income tax credit to families whose income is near or below the poverty line.

Increasing the tax rate of the broad-based VAT from 3.5 percent to 4.0 percent would raise an additional $13 billion in tax in 1992. This additional revenue could be used to pay for any of the following tax changes:

- Increasing the standard deduction under the income tax by 28 percent--a projected increase of $1,000 for a single filer and $1,650 for joint filers;
- Exempting the first $100 in annual wages from the employee-paid portion of the payroll tax; or
- Providing families whose income is below 125 percent of the poverty level with a refundable income tax credit equal to 5 percent of poverty-level income, with higher-income families receiving a progressively smaller credit.[4]

The first two tax changes are general reductions in income and payroll taxes that would be easy to administer under the current tax system. Under either change, the relevant tax would be reduced more on a percentage basis for lower-income families than for higher-income families, but the tax reduction would not be targeted solely toward the lower-income families. In contrast, the third tax change sacrifices administrative ease in order to target the tax credit solely toward the poor and near-poor. The distribution of the burden under each of these tax changes is shown in Table 10.

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4. The maximum credit in 1992 would be $332 for a single person, $425 for a two-person family, $667 for a four-person family, and $890 for a six-person family. For families with income above 125 percent of the poverty level, the credit would be reduced by $5 for every $100 of additional income.

TABLE 10. DISTRIBUTION OF THE BURDEN OF A VALUE-ADDED TAX UNDER ALTERNATIVE REDISTRIBUTION SCHEMES

Family Income Quintile	Less Regressive VAT	Broad-Based VAT with: Income Tax Reduction	Payroll Tax Reduction	Refundable Tax Credit
Average Tax Increase				
In Dollars				
Lowest	350	470	420	-20
Second	620	650	660	620
Middle	940	880	910	1,050
Fourth	1,200	1,110	1,130	1,290
Highest	1,820	1,790	1,780	1,950
All Families	1,010	1,010	1,010	1,010
As a Percentage of Income				
Lowest	3.9	5.2	4.7	-0.2
Second	2.9	3.0	3.1	2.9
Middle	2.8	2.6	2.7	3.1
Fourth	2.4	2.3	2.3	2.6
Highest	1.6	1.6	1.5	1.7
All Families	2.2	2.2	2.2	2.2
Percentage of Families with a Smaller Tax Burden Under the Less Regressive VAT[a]				
Lowest		78	65	5
Second		48	50	46
Middle		36	40	62
Fourth		31	31	51
Highest		26	25	37
All Families		43	41	40

SOURCE: Congressional Budget Office tax simulation model.

NOTE: Each of the VAT options would raise $100 billion in revenue.

a. The burden of the less regressive VAT is compared with that of the VAT option for the column.

Because the refundable income tax credit is targeted specifically toward the poor and near-poor, it would do the most to offset the VAT's regressivity. The credit would more than offset the VAT's burden on the families in the lowest income quintile. On average, these families would receive $20 more under the income tax credit than they would pay under the broad-based VAT. (By comparison, they would have to pay an average of $350 under the less regressive VAT.) Families in the second income quintile would also pay less under the broad-based VAT with the income tax credit than they would under the less regressive VAT. Nevertheless, as Table 10 shows, 5 percent of families in the lowest income quintile and 46 percent of families in the second income quintile would pay less tax under the less regressive VAT than they would under the broad-based VAT with the income tax credit. Typically, these are families whose current annual income is temporarily depressed.

The income and payroll tax reductions would do very little to offset the VAT's regressivity because they are not specifically targeted toward the poor. In fact, because so few low-income families pay income tax, the benefit to these families of a larger standard deduction under the income tax would seldom outweigh the burden of the higher VAT rate that paid for it. As a result, families in the lowest income quintile would pay more, on average, under the broad-based VAT with the income tax reduction than they would under the broad-based VAT alone. The VAT would be less regressive with the payroll tax reduction than with the income tax reduction because more low-income families pay the payroll tax than the income tax, but the benefit of the payroll tax reduction to low-income families would barely outweigh the burden of the higher VAT rate that paid for it. Thus, the average burden on the lowest two quintiles would be smaller under the less regressive VAT than it would be under the broad-based VAT with either the income or payroll tax reduction (see Table 10).

LIFETIME TAX BURDENS

The VAT is much less regressive and the surtax is much less progressive when their burdens are measured over a lifetime instead of on an annual basis. Annual consumption and income both vary consider-

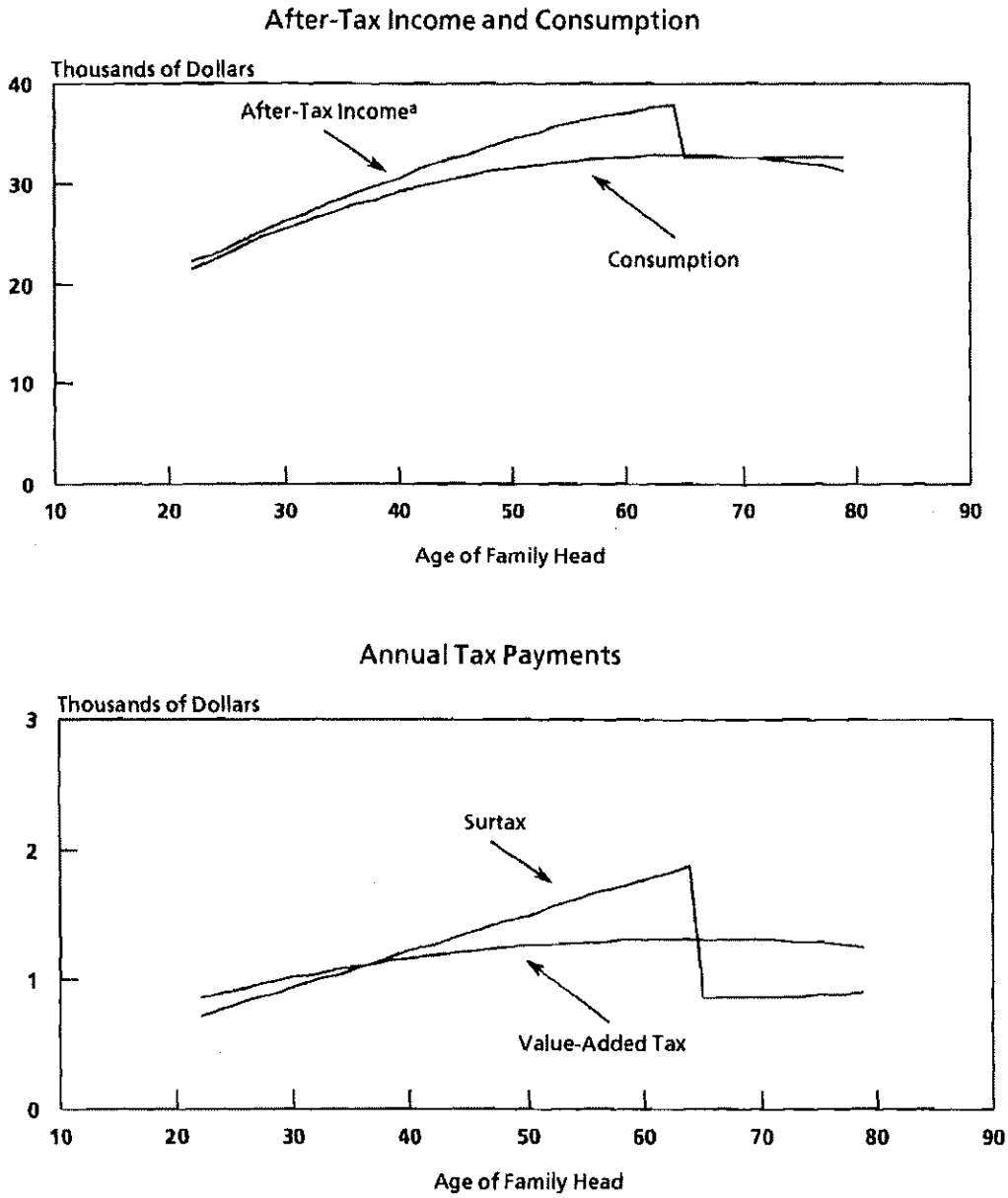
ably over a lifetime, but annual consumption typically varies less than annual income. Families typically save the most during middle age, when their earnings peak, and save less or even dissave during early adulthood and retirement. As a result, the burden of an income surtax would be greater during their middle years, when family income is relatively high, and the burden of a consumption tax would be greater during their early and late years, when family income is relatively low. This difference in the timing of tax payments over a lifetime helps make an income surtax more progressive than a VAT when tax burdens are measured on an annual basis.

The lifetime pattern of consumption and after-tax income under current law for a typical two-earner family is shown in the top panel of Figure 1. (The pattern of after-tax income reflects the benefits of commonly used tax preferences for home ownership and pensions.) Most of the family's saving--the difference between after-tax income and consumption--is done while the family head is middle-aged. In other years, after-tax income and consumption are approximately equal.[5]

The lifetime pattern of tax payments under a broad-based VAT and an income surtax is shown in the bottom panel of Figure 1. Although the lifetime burdens of the VAT and the surtax are equal in present value, the pattern of annual burdens clearly differs. The surtax varies with income and is concentrated during the period of peak earnings; in contrast, the VAT varies with consumption and is spread out more evenly over a lifetime. Because the VAT does not vary much as annual income changes, the VAT's burden appears more regressive when it is measured on an annual basis than when it is measured on a lifetime basis.

5. This saving pattern differs from that of the simple "life-cycle" model of saving. Under the life-cycle model, households would actually dissave during early adulthood and retirement. However, there is little empirical evidence of dissaving during these periods. More complex models assume that the lack of dissaving results from such factors as imperfections in capital markets, uncertainty, and preferences for bequests. For example, see Laurence J. Kotlikoff, "Intergenerational Transfers and Savings," *Journal of Economic Perspectives*, vol. 2 (1988), pp. 41-58; and R. Glenn Hubbard and Kenneth L. Judd, "Liquidity Constraints, Fiscal Policy, and Consumption," *Brookings Papers on Economic Activity* (1986), pp. 1-59.

Figure 1.
How the Burden of a Value-Added Tax and an Income Surtax Varies Over a Lifetime for a Typical Two-Earner Family



SOURCE: Congressional Budget Office.

NOTE: In the example, the lifetime burdens of the VAT and the surtax are equal in present value.

a. After-tax income reflects the benefits of commonly used tax preferences for home ownership and pensions.

Davies, St-Hilaire, and Whalley compared the distributions of annual and lifetime tax burdens of different tax sources in Canada by simulating lifetime earning and consumption patterns based on cross-sectional household data.[6] Using standard assumptions about tax incidence, they found that the burden of consumption-based taxes, which included excise and sales taxes, appeared less regressive from a lifetime perspective than from an annual perspective. They also found that the burden of income-based taxes, which included personal and corporate income taxes, appeared less progressive from a lifetime perspective than from an annual perspective.

According to their results, which are summarized in Table 11, there is much less disparity in lifetime tax burdens among lifetime income deciles than in annual tax burdens among annual income deciles. (The annual tax burden measures the percentage decrease in annual after-tax income resulting from the tax, and the lifetime burden measures the percentage decrease in the present value of lifetime after-tax income resulting from the tax.)

The findings of Davies and his colleagues for Canadian taxes probably apply to U.S. taxes as well. In present-value terms, the burden of a VAT over a lifetime would be approximately proportional to lifetime income, and the lifetime burden of an income surtax would be slightly progressive. Therefore, with the possible exception of the highest and lowest deciles of lifetime income, the average lifetime tax burden for taxpayers in each decile would be about the same under either tax alternative.

Although a typical middle-income taxpayer would bear approximately the same lifetime burden under either a VAT or an income surtax, some taxpayers would fare much better under one alternative or the other, depending on their tastes and circumstances. For example, taxpayers with a strong desire to consume more later in life or to make large bequests would fare better under the VAT because the VAT does

6. Cross-sectional household data from the 1971 Statistics Canada Survey of Consumer Finances were used to construct synthetic longitudinal lifetime profiles of earnings and transfers. Inheritances, bequests, and consumption profiles were then simulated and lifetime tax burdens were calculated. See James Davies, France St-Hilaire, and John Whalley, "Some Calculations of Lifetime Tax Incidence," *American Economic Review*, vol. 74 (1984), pp. 633-649.

not tax the return to saving. Larger families would tend to fare better under the income surtax, however, because the income tax provides tax exemptions based on family size but the VAT does not.

Taxpayers who benefit substantially from income tax preferences would tend to fare better under the income surtax; taxpayers who do not benefit substantially from such preferences would tend to fare better under the VAT. Among the most important preferences affecting the relative lifetime burdens of the two tax alternatives are the preferences for employer-provided pensions and fringe benefits and the preferences for home ownership. Taxpayers who derive substantial benefit from these preferences over their lifetime would almost certainly fare better under the surtax.

TABLE 11. ANNUAL AND LIFETIME TAX BURDENS OF CANADIAN HOUSEHOLDS

	Annual Tax Burden (Average tax rate)		Lifetime Tax Burden (Average tax rate)	
Income Decile	Personal and Corporate Income Taxes	Excise and Sales Taxes	Personal and Corporate Income Taxes	Excise and Sales Taxes
Lowest	5.3	27.2	9.5	15.0
2	4.1	20.3	14.2	14.3
3	8.4	15.8	15.1	14.1
4	11.3	14.6	16.5	13.9
5	13.1	14.0	17.4	13.8
6	14.8	13.4	18.4	13.5
7	15.0	13.5	19.0	13.6
8	16.5	13.2	20.8	13.3
9	18.1	12.8	21.1	13.2
Highest	25.5	8.5	25.6	12.4
All	17.7	12.4	19.4	13.5

SOURCE: Congressional Budget Office using data from James Davies, France St-Hilaire, and John Whalley, "Some Calculations of Lifetime Tax Incidence," *American Economic Review*, vol. 74 (1984).

TRANSITIONAL BURDENS

In the short run, changes in taxes can affect wealth as well as income. Imposing a tax can change the value of existing capital assets, causing windfall gains or losses for their owners. For example, adopting an investment tax credit would reduce the value of existing machinery by lowering the after-tax cost of new machinery. Similarly, repealing the mortgage interest deduction for owner-occupied housing would reduce the value of existing homes by raising the after-tax cost of housing services.

Although the windfall gains and losses from a tax change may be sizable, they have received less attention than other distributional effects. One reason for this is that the windfalls on existing asset holdings are a transitional effect: they tend to disappear over time as existing assets wear out, as existing financial contracts expire, and as capital is reallocated in response to investment changes. Another reason is that most distributional analyses measure tax burdens in terms of the change in after-tax cash income. Since tax-induced changes in the value of assets do not affect current cash income, they are outside the scope of these analyses.

Windfalls Under a VAT

Imposing a VAT would cause the real value of most business assets to decline, but some assets such as housing could increase in real value, depending on how the VAT base was defined. Owners of business capital would suffer windfall losses on their asset holdings because imposing a VAT would reduce the cost of capital goods relative to that of consumption goods. (A VAT lowers the VAT-inclusive cost of capital goods relative to that of taxable consumption goods.) If a business asset was worth one unit of consumption before the imposition of a VAT, it would be worth only $1/(1+(b*v))$ units of consumption immediately after the imposition of a VAT, where v is the VAT rate and b is the fraction of total consumption that is subject to tax.

If purchases of housing were zero rated under a VAT, then homeowners would fare no better under a VAT than owners of business

capital. They would suffer the same windfall loss because, just as with other capital goods, the VAT would reduce the real value of their house, measured in terms of the consumption that could be purchased instead.[7] But homeowners would enjoy a windfall gain on their mortgage debt because the VAT would also reduce the real value of the outstanding principal measured in terms of consumption. Thus, the size of the windfall loss would depend on the value of home equity and not on the value of the home itself. For a homeowner with $20,000 in home equity, a 5 percent VAT on a base that included half of total consumption would impose a windfall loss of about $500.

If, instead, purchases of newly constructed housing were taxed under a VAT but existing housing was exempt, then homeowners would enjoy a windfall gain. Because new and existing housing are very close substitutes, existing housing would sell at the VAT-inclusive price of new housing despite being tax-exempt. Thus, the real value of existing housing measured in terms of consumption would increase as a result of a VAT; an existing house worth one unit of consumption before a VAT was introduced, would be worth $(1+v)/(1+(b*v))$ after it was introduced. For a homeowner with a $100,000 house, a 5 percent VAT on a base that included half of total consumption would provide a windfall gain of about $2,400.

The windfall gains or losses from alternative tax treatments of housing under a VAT present a policy dilemma. Although zero rating housing under a VAT would favor the consumption of housing services by all taxpayers, it would penalize the current owners of the existing housing stock. Alternatively, if new construction was taxed like other consumption purchases, the exemption of existing housing would confer a benefit on current homeowners. To some extent, these windfalls would be offset by tax-induced changes in the VAT-exclusive price of housing services relative to that of other consumption. The increased demand for housing caused by zero rating should raise the VAT-exclusive price of housing services relative to that of taxed consumption goods, thereby increasing the corresponding value of the housing stock. Similarly, the decrease in demand from fully taxing

7. The decline in the real value of homes would not result in a decline in their nominal value if the general price level rose sufficiently.

new construction should decrease the VAT-exclusive price of housing services relative to that of untaxed consumption goods, thereby reducing the corresponding value of the housing stock.

Windfalls Under an Income Surtax

Imposing an income surtax generally would not reduce the real value of existing assets in the way imposing a VAT would.[8] Capital owners, however, would still suffer windfall losses on any tax-deferred income from existing assets because this income will eventually be taxed at a higher rate.[9] For example, owners of fully depreciated rental properties would suffer a windfall loss because previously earned income that was sheltered by accelerated depreciation would be taxed at a higher rate under the surtax. Owners of corporate stock would suffer a similar windfall loss on accrued capital gains.

The imposition of a surtax would provide a windfall gain for owners of tax-favored assets such as tax-exempt bonds and owner-occupied housing. The value of these existing assets would initially increase relative to that of other assets because the surtax would not reduce their after-tax return. However, as new capital was attracted to tax-favored investments, the pretax return to these assets would decline and their value would gradually return to normal.

8. Even though the surtax would lower the after-tax return to capital, the lower return alone would not change the relative value of existing capital measured in terms of consumption.

9. For a theoretical discussion of windfalls on tax-deferred income, see George R. Zodrow, "The Windfall Recapture Tax: Issues of Theory and Design," *Public Finance Quarterly*, vol. 16 (1988), pp. 387-399.

CHAPTER V

ECONOMIC EFFECTS OF A VAT

The value-added tax has been widely praised both as a "pro-growth" tax that does not inhibit the accumulation of capital and as a "neutral" tax that does not distort the allocation of capital among its alternative uses. In contrast, the income tax has been roundly criticized as a tax that not only discourages the accumulation of capital, but also distorts the use of capital. Two features of these taxes are primarily responsible for the different effects they have on the economy. First, the VAT does not tax the return to saving and new investment, but the income tax does. Second, the income tax fails to tax the return to new investment at a uniform rate.

Because of these two features, a VAT could have a less detrimental effect on the economy than an income surtax, but the VAT's economic advantages over an income surtax would depend on how the VAT was levied. To realize its advantages, the VAT would have to tax a broad consumption base at a nearly uniform rate.

Although a VAT and an income tax differ in other ways, the economic effects of these differences are unimportant. Nevertheless, some of these differences are erroneously perceived as having important economic consequences. For example, because border tax adjustments under the VAT impose the tax on imports and remove it from exports, a VAT is mistakenly thought to offer a trade advantage that will improve the balance of payments. Similarly, because the tax under a VAT is added to the purchase price of goods and services, a VAT is mistakenly considered to be a serious source of inflation.

This chapter analyzes the economic effects of a VAT by comparing them with those of a surtax on individual and corporate income taxes that would raise the same amount of revenue--about $150 billion annually. The comparison highlights how a VAT differs from current tax policy in its effects on the economy because the surtax approximates an

across-the-board increase in taxes (other than payroll taxes for Social Security and Medicare) under current tax policy.[1] It also highlights the obvious: the way in which $150 billion in annual revenue is raised has only minor effects on an economy whose annual output exceeds $5 trillion.

The analysis relies on economic models to compare the economic effects of a VAT and a surtax and to quantify the size of some of the differences. Most of the models are general-equilibrium models of a growing economy that comprises producers and consumers who differ from each other in what they produce or consume. The models simulate, in a highly stylized way, how economic resources such as capital and labor are allocated among industries and how produced goods are allocated among consumers. They also simulate the accumulation of capital from saving. The models differ in how they represent particular sectors of the economy and in how responsive they expect economic behavior to be to particular price changes.

The simulation results from these stylized models of the economy are seldom entirely satisfactory for analyzing the likely differences between a VAT and a surtax in the real world. For example, the models may ignore the effects of the rest of the world on the U.S. economy, or they may assume that a VAT would tax all consumption when, in reality, it would not. The Congressional Budget Office therefore adjusted the simulation results--in some cases using simulations of other models--to approximate better the real extent of the economic differences between using a VAT and using a surtax to raise about $150 billion annually. Based on the simulation results, CBO concludes that the most important economic differences would be as follows:

- Additional savings of about 0.4 percent of national output would be achieved under the VAT in the long run because of the higher after-tax return to saving. As a result, the stock of capital would ultimately be about 5.2 percent larger and national output about 0.8 percent greater than they would have been under the surtax.

1. The individual and corporate income taxes account for 85 percent of general revenue (excluding payroll taxes) under the current federal tax system.

- The cost of capital to U.S. industries would be lower under the VAT than under the surtax, but this lower cost would not make all U.S. industries more competitive in world markets because the competitiveness of specific industries is based on their comparative, not absolute, cost advantage. In fact, compared with a surtax, a VAT would make capital-intensive industries slightly more competitive and labor-intensive industries slightly less competitive.

- A broad-based VAT with a uniform tax rate would allocate economic resources more efficiently than an income surtax, reducing economic waste annually by the equivalent of about 0.4 percent of national output. But a typical VAT with a less comprehensive base and multiple tax rates would misallocate economic resources as badly as the surtax--albeit in a different way.

- Any benefit to domestic well-being from the VAT's greater efficiency might well be offset by the VAT's failure to shift as much of its burden to foreigners as a surtax does.

Thus, relative to a surtax, a VAT would raise the national saving rate a little, but it would not necessarily improve overall domestic well-being.

NATIONAL SAVING AND DOMESTIC INVESTMENT

Income that is saved gets invested, expanding the economy's stock of capital. The stock of capital includes tangible assets (such as inventory, plant and equipment, commercial buildings, and housing) and intangible assets (such as the knowledge gained from research and development), but it does not include financial assets (such as stocks and bonds) because they are merely claims on the returns to tangible and intangible assets.

On a worldwide basis, the amount of saving always equals the amount of investment. Moreover, income taxes reduce saving and investment equally. On a national basis, however, national saving

(which includes saving by U.S. citizens and the retained earnings of U.S. corporations) need not equal domestic investment (which includes investment in tangible and intangible capital used in the United States). Moreover, U.S. income taxes need not reduce national saving and domestic investment equally. This section first analyzes how the effects of a VAT and a surtax on saving would differ, assuming that national saving and domestic investment are affected equally. It then considers whether such an assumption is reasonable.

National Saving

National saving would be higher under a VAT than under a surtax because the VAT would not lower the after-tax return to saving by taxing it. The difference in national saving would be greater if, as some economic models assume, the decline in the value of existing capital from imposing a VAT primarily hurts consumers who have a lower-than-average willingness to save a change in wealth, but empirical evidence suggests that this is unlikely.

From the consumer's perspective, deciding how much to save involves a trade-off between current and future consumption. The rate of return to saving determines the price of future consumption relative to that of current consumption. An income surtax increases the relative price of future consumption by reducing the after-tax return to saving. As a result, consumers save less, increasing current consumption and decreasing future consumption. The VAT does not reduce the return to saving, so it does not affect the choice between current and future consumption by changing their relative prices. Because consumers would defer more current consumption under a VAT than under an income tax, the rate of saving would be higher and the stock of capital would be larger.

The likely difference in the rate of saving between a VAT and a surtax can be gauged using an economic model of a steadily growing economy in which overlapping generations of consumers make deci-

sions about saving to allocate consumption over their entire lives.[2] In this model, the size of the difference in saving depends not only on how much saving responds to a change in the relative price of future consumption, but also on how saving is affected by the distribution of the tax burden among consumers with different propensities to save after-tax income. To gauge the difference in saving, CBO replaced about a quarter of the current income tax with a 6 percent VAT on all consumption.[3] In the model, this tax change approximates the effect of using a VAT instead of an income surtax to collect about $150 billion in revenue a year. The model shows that, compared with a surtax, the VAT increases the long-run saving rate by slightly more than 0.5 percentage points. As a result, the capital stock is 7.9 percent larger, output (measured by net national product) is 1.5 percent higher, and consumption is 1.2 percent higher, in the long run.

The difference in saving between a VAT and a surtax is likely to be less pronounced in reality than in the simulations because the simulations distribute the portion of the VAT's burden that falls on existing capital among consumers in a way that strongly affects aggregate saving. A portion of the VAT's burden falls on existing capital because this capital ultimately provides future consumption, which is then taxed under the VAT. In the model, older consumers bear much of this tax burden because they own much of the capital stock, which they relinquish during retirement to pay for consumption. This burden on older consumers boosts aggregate saving in the model because, with fewer years remaining over which they can spread a change in lifetime consumption in response to a change in wealth, older consumers are assumed to have a lower-than-average propensity to save a change in wealth. Thus, when the value of their wealth falls when a VAT is im-

2. Several versions of this model have been used to compare the economic effects of alternative taxes. See, for example, Lawrence Summers, "Taxation and Capital Accumulation in a Life Cycle Growth Model," *American Economic Review*, vol. 71 (September 1981), pp. 533-554; Alan J. Auerbach and Laurence J. Kotlikoff, *Dynamic Fiscal Policy* (New York: Cambridge University Press, 1987); and Jane G. Gravelle, "Income, Consumption, and Wage Taxation in a Life-Cycle Model: Separating Efficiency from Redistribution," *American Economic Review*, vol. 81 (September 1991), pp. 985-995.

3. The simulations in this section were done for CBO by Jane Gravelle of the Congressional Research Service using her variant of the Auerbach-Kotlikoff model. The elasticity of intertemporal consumption, which determines how much saving responds to a change in its rate of return, was assumed to be 0.25, which is within the range of recent empirical estimates. For a description of the simulation model, see Gravelle, "Income, Consumption, and Wage Taxation in a Life-Cycle Model." For a summary of recent empirical estimates of the elasticity of intertemporal consumption, see Auerbach and Kotlikoff, *Dynamic Fiscal Policy*, pp. 50-51.

posed, older consumers drastically curtail their current consumption--at least according to the simulations.

In reality, the VAT's burden on older consumers is unlikely to boost aggregate saving for two reasons. First, empirical studies suggest that the elderly's propensity to save does not differ much from that of other consumers.[4] Second, part of the VAT's burden on older consumers would be offset by increases in Social Security payments, which are indexed to maintain their purchasing power. In the model, the effect on aggregate saving from allocating the VAT's one-time burden on existing capital to older consumers can be removed by a complex set of income transfers that redistribute this one-time burden evenly among all consumers. When the one-time burden is redistributed this way, the VAT increases the long-run saving rate by slightly less than 0.4 percentage points. As a result, the capital stock is only 5.2 percent larger, output is only 0.8 percent higher, and consumption is only 0.5 percent higher, in the long run. This result is more indicative of the likely difference in saving between a VAT and a surtax.

Domestic Investment

Like national saving, domestic investment would be higher under a VAT than under a surtax. The size of the difference in domestic investment between a VAT and a surtax need not match the size of the difference in national saving when U.S. savers can invest their money abroad and when foreign savers can invest theirs in the United States, but these differences are likely to be very similar in size.

Under the U.S. income tax, the rules for taxing U.S. investment abroad and foreign investment in the United States are complex and confusing. Nevertheless, as a general rule, the U.S. corporate income tax is primarily a "source-based" tax that taxes the return to equity-financed capital *used* in the United States regardless of who owns it,

4. For example, see Sheldon Danziger, Jacques van der Gaag, Eugene Smolensky, and Michael K. Taussig, "The Life-Cycle Hypothesis and the Consumption Behavior of the Elderly," *Journal of Post-Keynesian Economics*, vol. 2 (Winter 1982-1983), pp. 208-227. For a survey of studies on the saving behavior of the elderly, see Michael D. Hurd, "Research on the Elderly: Economic Status, Retirement, and Consumption and Saving," *Journal of Economic Literature*, vol. 28 (June 1990), pp. 606-629.

whereas the individual income tax is primarily a "resident-based" tax that taxes the return to capital *owned* by U.S. residents regardless of where it is used.

Under the surtax, higher corporate income tax rates would reduce domestic investment more than national saving, but higher individual tax rates would reduce national saving more than domestic investment.[5] Higher corporate income tax rates would reduce domestic investment more than national saving because they would lower the after-tax return to foreign saving invested in U.S. corporations, but would not lower the after-tax return to U.S. corporate saving invested in foreign corporations. Higher individual income tax rates would reduce national saving more than domestic investment because they would lower the after-tax return to U.S. personal saving invested both at home and abroad, but not the after-tax return to foreign saving invested in the United States. Because the different effects of the corporate and individual income taxes on national saving and domestic investment tend to offset each other, a surtax would reduce national saving and domestic investment by approximately the same amount.

THE COMPOSITION OF DOMESTIC PRODUCTION AND INTERNATIONAL TRADE

The larger stock of capital in the United States from the greater domestic investment under a VAT would affect what is produced in the United States and how it is produced. The lower cost of capital to U.S. industries under a VAT would generally favor the production of capital-intensive goods over labor-intensive goods. It would also favor automated production methods over manual production methods. But the lower cost of capital under a VAT would have only a small effect on the composition of domestic production for two reasons. First, the relative cost of capital and labor would not differ much under the two tax alternatives if only $150 billion in annual revenue was raised. Second, the difference in the relative cost of capital and labor would not have

5. For a general-equilibrium analysis of the effects of capital taxation on national saving and domestic investment, see John Mutti and Harry Grubert, "The Taxation of Capital Income in an Open Economy: The Importance of Resident-Nonresident Tax Treatment," *Journal of Public Economics*, vol. 27 (August 1985), pp. 291-309.

much effect on the relative prices of most goods because most goods are produced using capital and labor in similar proportions.

The difference in the composition of domestically produced goods under a VAT and a surtax also would affect the composition of trade because goods that became relatively more expensive to produce at home would increasingly be imported, and goods that became relatively less expensive to produce at home would increasingly be exported. Therefore, compared with a surtax, a VAT would make the composition of imports more labor-intensive and the composition of exports more capital-intensive. It also would make the United States rely more heavily on the rest of the world for the labor-intensive stages of production, such as manual assembly, while it devoted more resources to the capital-intensive stages.

The amounts of capital and labor needed to produce a good include not only the capital and labor used directly in its production, but also the capital and labor used to produce the intermediate goods that go into its production. The relative proportions of capital and labor needed to produce specific goods and services can be estimated from the sales and purchases of goods among industries.[6] According to CBO's estimates, the most capital-intensive goods in the U.S. economy include agricultural products, petroleum products, chemicals, and capital-intensive services such as communications, utilities, and real estate. A VAT would slightly favor the production of these goods. The most labor-intensive goods in the U.S. economy include textiles and apparel, furniture, rubber and leather products, electrical equipment, and most services. The production of these goods would fare slightly better under an income surtax.

ECONOMIC EFFICIENCY

As mentioned earlier, an income surtax would distort the choice between current consumption and future consumption by reducing the after-tax return to saving, but a VAT would not. On this basis alone, a

6. For a description of the method used by CBO, see Stephen P. Dresch, An-loh Lin, and David K. Stout, *Substituting a Value-Added Tax for the Corporate Income Tax* (Cambridge: Ballinger Publishing Company, 1977), pp. 53-62.

VAT would appear to be the more neutral tax, but a VAT and a surtax would distort economic behavior in other ways. For example, both taxes would distort the choice between work and leisure by reducing the relative value (purchasing power) of wages: a surtax would reduce the relative value of wages by taxing them directly, whereas a VAT would reduce the relative value of wages by taxing them indirectly as they are used to make purchases.

When taxes distort behavior, economic resources are misallocated, which reduces the output of producers and the satisfaction of consumers. The loss in economic well-being from the misallocation of resources is called the excess burden of a tax. The excess burden of a tax measures how much the loss to taxpayers exceeds the amount of revenue raised. Taxes that cause a smaller excess burden are said to be more efficient.

An excess burden occurs whenever taxpayers adjust their behavior to avoid a tax they would otherwise have to pay--for example, when employees accept more of their compensation as fringe benefits in order to avoid some income tax. The more taxpayers reduce their income or forgo preferred consumer goods in order to avoid a tax, the more serious the misallocation of resources becomes. The most efficient tax, therefore, is the one that taxpayers are least willing or least able to avoid by adjusting their behavior. A tax that cannot be avoided at all is called a lump-sum tax and is very efficient. A tax levied retroactively on past economic behavior is an example of a lump-sum tax because past economic behavior, by definition, cannot be changed to avoid the tax. In reality, few taxes are entirely lump-sum, but some taxes are partly lump-sum because a portion of their burden cannot be avoided.

Although a VAT is commonly perceived to be more efficient than an income surtax solely because it does not tax the return to saving, it may not be more efficient for this reason. After all, to raise the same amount of revenue, a VAT must tax labor and existing capital more heavily than a surtax to make up the revenue lost by not taxing sav-

ing.[7] Although the higher tax on existing capital does not impose an excess burden, the higher tax on labor does by discouraging work in favor of leisure. Therefore, a VAT would be more efficient than a surtax only if its smaller excess burden on saving was not entirely offset by its larger excess burden on labor. This rather simple analysis, however, completely overlooks other distortions that would affect the excess burden of each tax. These other distortions occur because neither tax would tax its respective base in a comprehensive manner.

If a VAT taxed a broad consumption base at a uniform rate, it would probably be more efficient than an income surtax for two reasons. First, part of the VAT's burden would fall as a lump-sum tax on the value of existing capital: the burden would fall on existing capital because it would ultimately be used for future consumption; the burden would fall as a lump-sum tax because, no matter how long future consumption was delayed, the present value of the tax on it would remain unchanged. The lump-sum tax on existing capital greatly enhances the VAT's efficiency.[8] Second, the current income tax is not as efficient as it might be, which lessens the efficiency of a surtax. The efficiency of the current income tax suffers from the misallocation of resources caused by its numerous tax preferences, its inability to tax the real return to capital as it accrues, its failure to integrate corporate and individual income taxes, and even its graduated rate schedule. If the VAT failed to tax a broad consumption base at a fairly uniform rate, its efficiency would also suffer.

The size of the difference in excess burden under a VAT and an income surtax can be simulated using an economic model of a steadily growing economy. To take account of the many economic distortions

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7. The VAT imposes a tax burden on labor because wages are ultimately used to purchase taxed consumption goods. The VAT reduces the amount of taxed consumption that wages can purchase.

8. The importance of this lump-sum tax to the efficiency of a consumption tax can be demonstrated by comparing the efficiency of a consumption tax to that of a wage tax. The comparison shows how the lump-sum tax affects efficiency because the burdens imposed by a wage tax are the same as those imposed by a consumption tax without the lump-sum tax on existing capital. Auerbach and Kotlikoff estimate that replacing a 15 percent tax on all income with a uniform tax on consumption would reduce the excess tax burden by about 0.2 percent of national output annually, and that replacing the same income tax with a uniform wage tax would increase the excess tax burden by about 0.2 percent of national output annually. The wage tax is less efficient than the consumption tax because, without the lump-sum tax on existing capital, the tax burden on labor must be greater, which further distorts the choice between work and leisure and adds to the excess burden. See Auerbach and Kotlikoff, *Dynamic Fiscal Policy*, pp. 77-82.

that would occur under the surtax and the many distortions that would also occur under the VAT if it did not tax all consumption at a uniform rate, CBO relied on simulations of a model developed by Ballard, Scholz, and Shoven, which represents the effects of taxes on different industries and on different consumers in detail.

Ballard, Scholz, and Shoven simulated the change in excess burden from replacing part of the individual income tax with a broad-based VAT. The simulations showed that adopting a 6.5 percent VAT on all consumption to reduce individual income tax rates on a proportional basis would lessen the excess burden of the entire tax system by the equivalent of 1.0 percent of national output annually.[9] The simulated tax change approximates the effect of using the VAT instead of an income surtax on individuals and corporations to raise slightly more than $150 billion in annual revenue, but it misestimates the likely difference in excess burden in several minor ways. First, the results slightly understate the likely difference because the simulations used the VAT revenue to reduce income tax rates on individuals, but not on corporations. Second, the results slightly overstate the likely difference for two reasons: the simulations imposed the VAT on all consumption, despite the fact that even a broad-based VAT would exclude the consumption of certain goods and services; and the simulations relied on a model that was calibrated to represent the 1973 U.S. economy, which had higher marginal tax rates and a higher saving rate than the current U.S. economy.

The simulations may significantly overstate the likely difference in excess burden between a VAT and an income surtax because they assumed that the choice between current and future consumption was very responsive to the after-tax return to saving. This responsiveness caused consumers to greatly reduce saving for future consumption in order to avoid some of the surtax. But recent empirical evidence suggests that saving behavior is not as responsive as the simulations portray it to be. According to simulations of another model, making saving behavior less responsive reduces the difference in excess burden be-

9. Charles L. Ballard, John K. Scholz, and John B. Shoven, "The Value-Added Tax: A General Equilibrium Look at Its Efficiency and Incidence," in Martin Feldstein, ed., *The Effects of Taxation on Capital Accumulation* (Chicago: University of Chicago Press, 1987), pp. 453-456, 466-469.

tween the VAT and the surtax by 0.6 percent of national output.[10] Thus, using a broad-based VAT instead of an income surtax to raise $150 billion in annual revenue would probably reduce the excess burden of the entire tax system by only about 0.4 percent of national output rather than by 1.0 percent.

Typical tax preferences under the VAT would make the likely difference in excess burden between a VAT and a surtax even smaller. According to simulations of the Ballard-Scholz-Shoven model, using a typical European multiple-rate VAT instead of a flat-rate VAT to reduce individual income tax rates would increase the VAT's excess burden by about 0.4 percent of national output.[11] Thus, unless VAT preferences were kept to a minimum, the difference in excess burden between a VAT and a surtax might well be negligible.

TAX EXPORTATION

Although a VAT with only a few preferences may well be more efficient than an income surtax, the domestic benefit from greater efficiency may be offset because less of the VAT's burden is borne by foreigners. The burden of a tax need not fall entirely on the residents of the taxing jurisdiction. Part of the burden may be shifted to consumers, workers, and capital owners outside the jurisdiction. This shift in the tax burden is referred to as "tax exportation."[12] In a technical sense, tax exportation involves the redistribution of real income or wealth from those outside a jurisdiction to those within a jurisdiction as a result of a tax the jurisdiction imposes. Taxes can be exported either by improving the terms of trade or by preempting another jurisdiction's tax base.

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10. These simulations were done for CBO by Jane Gravelle of the Congressional Research Service using her variant of the Auerbach-Kotlikoff model. The substitution elasticity of intertemporal consumption, which was assumed to be about 1.0 in the Ballard-Scholz-Shoven model, was reduced to 0.25, which is within the range of recent empirical estimates of this elasticity.

11. The multiple-rate VAT used in the model taxed food, utilities, and transportation at a reduced rate, and taxed housing and most services at a zero rate.

12. Tax exportation is usually discussed in the context of state and local taxes, but federal taxes can be exported too.

Improving the Terms of Trade

Because the U.S. economy is so large, taxes that affect the supply and demand for internationally traded goods in the United States can also affect the relative prices of these goods (the terms of trade) throughout the world. When a U.S. tax raises the average world price of U.S. exports relative to U.S. imports so that fewer exports are needed to purchase a given amount of imports, part of the burden of the tax is exported through the terms of trade.

The relative price of capital-intensive goods, both at home and abroad, would be slightly lower in the long run under a VAT than under a surtax. The size and direction of the resulting change in the terms of trade depend on the relative capital intensity of U.S. exports and imports. If exports are more capital-intensive than imports on average, then a VAT would have a less favorable effect than a surtax on the terms of trade, so relatively less of the VAT's burden would be exported. However, if imports are more capital-intensive than exports on average, then a VAT would have a more favorable effect than a surtax on the terms of trade, so relatively more of the VAT's burden would be exported.

Economists generally agree that any effect on the terms of trade would be small for the United States because U.S. exports and imports appear to have nearly the same capital intensity on average. However, there is some disagreement on this issue. For example, simulations of a general-equilibrium trade model by Whalley suggest that the adverse effect on the terms of trade might be large enough to offset the entire efficiency gain from adopting a VAT.[13]

Preempting Another Jurisdiction's Tax Base

Taxes can also be exported by preempting the taxing authority of another jurisdiction. As a tax on domestic consumption, a VAT is not a preemptive tax. But, as a tax on the return to domestic investment

13. John Whalley, "Discriminatory Features of Domestic Factor Tax Systems in a Goods Mobile-Factors Immobile Trade Model: An Empirical General Equilibrium Approach," *Journal of Political Economy*, vol. 88 (December 1980), p. 1195.

(some of which is owned by foreign investors), a surtax can be. Whether the burden of a surtax is actually exported through preemption largely depends on the degree of international capital mobility. The more willingly investors shift their investments among countries to earn a higher return, the more a surtax will reduce investment at home and increase investment abroad, thereby undermining tax exportation.

Goulder, Shoven, and Whalley have simulated the effect on tax exportation of adopting a 10 percent VAT to reduce other taxes, including the income tax. The simulation results show that about half of the gain in domestic welfare from improved economic efficiency under a VAT is offset by a decline in tax exportation.[14] The decline occurs because foreign-owned capital is pushed out of the U.S. business sector by an increase in U.S. saving and by a shift in the use of U.S.-owned capital from the owner-occupied housing sector to the U.S. business sector. This outflow of foreign-owned capital from the U.S. business sector causes a decline in preemption under the income tax, which reduces the economic well-being of the U.S. population. The decline in preemption, however, may not be as large as the simulations suggest. According to one analyst, the simulations assumed capital was so mobile internationally that only a 10 percent decline in the return to capital used in the United States would have caused half of the U.S. capital stock to move overseas in the long run.[15]

OTHER ECONOMIC EFFECTS

The most important economic differences between a VAT and an income surtax stem from the difference in the way they tax saving and new investment. Although the two taxes differ in other ways, the eco-

14. Specifically, the simulations show that the gain in domestic well-being from a consumption-based VAT when capital is assumed to be internationally mobile is only half as large as the gain from the same VAT when capital is assumed to be internationally immobile. See Lawrence H. Goulder, John B. Shoven, and John Whalley, "Domestic Tax Policy and the Foreign Sector: The Importance of Alternative Foreign Sector Formulations to Results from a General Equilibrium Tax Analysis Model," in Martin Feldstein, ed., *Behavioral Simulation Methods in Tax Policy Analysis* (Chicago: University of Chicago Press, 1983), pp. 360-362.

15. David G. Hartman, "Comment," in Feldstein, *Behavioral Simulation Methods in Tax Policy Analysis*, p. 366.

nomic effects of these differences are unimportant. Some of these differences, however, are mistakenly thought to have important economic consequences.

Border Tax Adjustments and the Balance of Trade

The border tax adjustments allowed under a VAT are commonly perceived as providing a trade advantage, but these adjustments do not improve the balance of trade. As noted in Chapter II, a VAT can be levied either on an origin basis (goods are taxed where they are produced) or on a destination basis (goods are taxed where they are consumed). A destination-based VAT requires a border tax adjustment, which imposes the VAT on imports and rebates the VAT on exports. The General Agreement on Tariffs and Trade allows border tax adjustments for commodity taxes such as a VAT, but not for factor taxes such as the corporate and individual income taxes, which tax the return to labor and capital.

Intuitively, it seems that imposing a tax on imports and refunding it on exports would create a cost advantage for domestic industries that would in turn improve the balance of trade. However, without changes in other macroeconomic policies, any apparent cost advantage resulting from border tax adjustments would be quickly offset by an adjustment in the exchange rate. Suppose, for example, that a 5 percent destination-based VAT (with border tax adjustments) replaced a 5 percent origin-based VAT (without border tax adjustments) and that the domestic price level was unchanged. The border tax adjustments would make imports 5 percent more expensive than domestic goods in domestic markets, and exports 5 percent less expensive than foreign goods in foreign markets. To eliminate the resulting imbalance in foreign currency markets, the value of the domestic currency would have to appreciate 5 percent relative to the value of foreign currencies. The appreciation of the domestic currency would restore the initial terms of trade (the relative prices of imports and exports) without any change in the balance of trade.[16]

16. For a further discussion of border tax adjustments under alternative exchange-rate and monetary policies, see Jane G. Gravelle, "International Tax Competition: Does It Make a Difference for Tax Policy?" *National Tax Journal*, vol. 39 (September 1986), pp. 375-379.

Although border tax adjustments do not improve the balance of trade, they can affect the composition of trade when the VAT does not tax traded goods at a uniform rate. For example, suppose a VAT did not tax some traded goods. Without border tax adjustments, the relative prices paid by consumers for taxed and untaxed goods would reflect the relative prices of these goods in world markets, but the relative prices received by domestic producers would be distorted. The price distortion would favor the domestic production of untaxed goods and discourage the domestic production of taxed goods. As a result, net exports of untaxed goods would be larger and net exports of taxed goods would be smaller. Border tax adjustments ensure that the relative prices facing domestic producers properly reflect relative prices in world markets so that trade distortions do not occur.[17]

Tax-Inclusive Prices and Inflation

Taxes lower real disposable income either by lowering nominal after-tax payments to factors of production, such as labor and capital, or by raising nominal tax-inclusive prices for goods and services. Because the VAT is added to the price of products, some people worry that it would lead to inflation. In contrast, an income surtax is not viewed as inflationary because it is subtracted from payments to factors of production.

Because a VAT is added to the price of products, adopting one would cause an initial jump in the aggregate price level because price indices such as the consumer price index (CPI) are computed on a tax-inclusive basis. For example, adopting a 5 percent VAT whose tax base included 60 percent of consumption would initially increase the CPI by about 3 percent.

The increase in the price level, however, would not necessarily lead to further inflation, depending on the monetary response by the Federal Reserve. Many experts believe that the Federal Reserve

17. For a further discussion of the effects of border tax adjustments on trade, see Bob Hamilton and John Whalley, "Border Tax Adjustments and U.S. Trade," *Journal of International Economics*, vol. 20 (May 1986), pp. 377-383; and Gene M. Grossman, "Border Tax Adjustments: Do They Distort Trade?" *Journal of International Economics*, vol. 10 (February 1980), pp. 117-128.

would adjust the money supply in a way that maintains nominal income. Under this scenario, CBO finds that macroeconomic models generally predict little inflation beyond the initial price jump. Only one model predicts additional inflation from a near-term, wage-price spiral, and this inflation dissipates fairly quickly.[18]

The experience with inflation in other nations that have adopted a VAT appears to be mixed and not particularly relevant to the United States. Although adopting a VAT seemed to lead to inflation in a few countries, most countries experienced little or no effect beyond the initial price jump.[19] In many countries, however, a VAT replaced other commodity taxes--often without any increase in total revenue--so the inflationary effect should have been minimal. Adopting a VAT as an additional source of revenue--the likely scenario in the United States--would undoubtedly have a different effect on inflation than would substituting a VAT for other commodity taxes.

SUMMARY

The economic effects of a VAT and an income surtax differ mainly because a VAT does not tax the return to national saving or domestic investment, but an income surtax does. Because of this difference, adopting a VAT instead of a surtax would affect the accumulation and allocation of capital in the United States and throughout the rest of the world. National saving and domestic investment would be higher under the VAT, and domestic production and exports would be more capital-intensive in the long run. These differences would be small, however, because the return to saving and the relative cost of capital and labor would not differ by much under the two alternative taxes.

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18. CBO used three commercial econometric models to simulate the macroeconomic effects of two deficit reduction strategies--one that raised revenue with a broad-based energy tax, and one that raised revenue with income taxes. The macroeconomic effects of a VAT and a broad-based energy tax would be similar because both are broad-based indirect taxes. Two models predicted no price-level difference between the two strategies after the initial price jump from the energy tax. The third model predicted additional inflation from the energy tax over a three-year period. See Congressional Budget Office, "Economic Effects of Deficit Reduction" (A Report to the National Economic Commission, 1988), p. 6.

19. Alan A. Tait, *Value-Added Tax: International Practice and Problems* (Washington, D.C.: International Monetary Fund, 1988), pp. 191-213.

A VAT would probably be more efficient than a surtax because part of the VAT's burden would fall on the value of existing capital as a lump-sum tax. A VAT would also be more efficient because the income tax on which a surtax would be levied is not a very efficient income tax. However, the likely tax preferences under a VAT would mitigate much of the VAT's efficiency advantage. Moreover, any benefit to domestic well-being from the VAT's greater efficiency might be offset by the VAT's failure to shift as much of its burden to foreigners. In addition, as the next chapter shows, the added costs of administering and complying with a VAT would also reduce any domestic benefit from greater economic efficiency.

CHAPTER VI

COSTS OF ADMINISTERING AND COMPLYING WITH A VAT

As a new source of revenue, a value-added tax would impose additional administrative costs on the federal government and additional compliance costs on businesses. By contrast, an income surtax would impose few, if any, additional costs for administration or compliance because it would simply augment an existing source of revenue by raising the tax rate. Thus, in judging the relative merits of a VAT, the benefits of increased saving and greater economic efficiency need to be weighed against the additional costs for administration and compliance.

The administrative and compliance costs of a VAT would be substantial--about $5 billion to $8 billion per year. Moreover, these costs would be largely independent of the amount of revenue raised by the VAT. This independence obviously makes the VAT a poor choice as a minor revenue raiser because the administrative and compliance costs would be so large relative to the amount of revenue raised.

A VAT would also be a poor choice as a temporary revenue raiser because it would require considerable time and effort to set up. The Internal Revenue Service (IRS) would have to prepare guidelines and regulations, design and set up systems to process payments, hire and train additional service and enforcement staff, and educate people about the tax. To do this, the IRS would temporarily have to reassign tax enforcement staff from revenue-generating activities, causing the revenue from these activities to decline.

ADMINISTRATIVE COSTS

When the Department of the Treasury undertook its study of tax reform in 1984, it estimated that administering a VAT in the United States would require 20,000 additional IRS employees and cost about

$700 million per year.[1] In making its estimate, the Treasury assumed that the VAT would be administered in a fairly unique way. Contrary to the common practice in Europe, nearly all U.S. businesses would be required to register under the VAT. As a result, the IRS was expected to process VAT returns from approximately 20 million registered businesses on a quarterly basis. The IRS also was expected to audit VAT returns at about the same rate as it audited business income tax returns--about 2.2 percent each year--even though audit rates are much higher for European VATs. This lower rate kept the need for additional tax examiners to only 7,000.

Although the Treasury's cost estimate is certainly plausible given its assumptions, it is not indicative of the cost of administering a European-style VAT in the United States. To administer their VATs, European countries typically employ one agent for every 150 to 250 registered businesses, which allows them to audit about 10 percent to 15 percent of the registered businesses annually.[2] Italy employs only one agent for every 726 registered businesses, but no country has just one agent for every 1,000 registered businesses, as the Treasury proposed for the United States.

In 1985 and 1986, the typical cost of administering a European VAT ran about $100 to $200 annually per registered business and averaged about 0.4 percent to 1.0 percent of VAT revenue (see Table 12). These costs were largely independent of the amount of revenue raised. So unless the United States adopted a VAT with a tax rate that approached the 15 percent rate that is typical in Europe, administrative costs as a percentage of revenue would not be as low in the United States as they are in Europe.

The cost per registered business provides a better way to gauge the cost of administering a European-style VAT in the United States. Un-

1. Department of the Treasury, *Value-Added Tax*, vol. 3 of *Tax Reform for Fairness, Simplicity, and Economic Growth* (November 1984), pp. 113, 124, and 128.

2. Alan A. Tait, *Value-Added Tax: International Practice and Problems* (Washington, D.C.: International Monetary Fund, 1988), p. 250; and Milka Casanegra de Jantscher, "Problems in Administering a Consumption Tax," in Charls E. Walker and Mark A. Bloomfield, eds., *The Consumption Tax: A Better Alternative?* (Cambridge, Mass.: Ballinger Publishing Company, 1987), pp. 304-305.

TABLE 12. ANNUAL ADMINISTRATIVE COSTS OF VALUE-ADDED TAXES IN SELECTED EUROPEAN COUNTRIES, 1985 AND 1986

	Total (Millions of U.S. dollars)	Per Registered Business (U.S. dollars)	As a Percentage of VAT Revenue
Belgium (1986)	102	175	1.09
Denmark (1985)	57	155	0.69
Finland (1985)	21	235	0.41
France (1985)	224	n.a.	0.40
Ireland (1985)	21	196	1.08
Italy (1985)	147	105	0.49
Norway (1985)	19	67	0.32
Portugal (1986)	16	48	1.00
Sweden (1985)	31	68	0.35
United Kingdom (1986)	294	200	0.95

SOURCE: Congressional Budget Office using data from Organization for Economic Cooperation and Development, *Taxing Consumption* (Paris: OECD, 1988), p. 204.

NOTE: n.a. = not available.

der such a VAT, most small businesses (with annual sales below $25,000) and many service businesses (including medical, educational, financial, and charitable services) would have been exempt from registering. Therefore, only about 7 million U.S. businesses would have been registered in 1988 out of a total of more than 21 million businesses.[3] At an annual cost of $100 to $200 per registered business, the cost of administering a European-style VAT in the United States would have been about $750 million to $1.5 billion in 1988--as much as twice the Treasury's cost estimate for its VAT. Thus, even with only a third of all U.S. businesses registering, a European-style VAT would still be quite costly to administer.

3. The total number of businesses is based on the number of income tax and information returns filed in 1987 and 1988 by corporations, partnerships, sole proprietorships, and selected tax-exempt organizations charging fees for services.

IMPLEMENTATION COSTS

In addition to being costly to administer, a VAT would be costly to set up. The IRS would have to prepare forms and instructions, promulgate regulations, design and automate systems to process payments and reconcile them with returns, educate the general public about the VAT, and hire and train additional service and enforcement staff.[4] The Treasury Department estimated that the IRS would need at least 18 months to set up a VAT. The IRS would have to hire and train about 12,000 additional staff during this period and 8,000 more during the following two years.

Training so many new staff would undoubtedly disrupt the enforcement of other taxes, causing tax collections from enforcement to decline. The General Accounting Office estimated that, in training about 1,100 newly hired examiners for the income tax, the IRS would lose almost $1 billion from enforcement activities.[5] The IRS estimated that the loss would be closer to $0.5 billion.[6] Given that about 7,000 of the 20,000 new staff needed to administer the VAT would be examiners, the cost of disrupting other enforcement activities to carry out a VAT could add up to several billion dollars in forgone collections. This would be a one-time cost, however.

COMPLIANCE COSTS

Businesses as well as government would bear additional costs under a VAT. Businesses would have to collect the VAT for the federal government, keep records of their VAT payments and collections, and prepare VAT returns. Although the costs of complying with a VAT are difficult to gauge, they appear to be substantial.

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4. The tasks involved in implementing a VAT are described more fully in Tait, *Value-Added Tax*, part 3.

5. General Accounting Office, *Potential Audit Revenues Lost While Training New Revenue Agents*, Report GAO/GGD-90-77 (April 1990).

6. Internal Revenue Service, *Evaluation of the IRS System of Projecting Enforcement Revenue*, Publication 1501 (November 1989).

TABLE 13. COSTS TO BUSINESSES OF COMPLYING WITH A VALUE-ADDED TAX IN THE UNITED KINGDOM, 1986 AND 1987

Size of Business (Annual taxable sales per business in U.S. dollars)	Compliance Costs as a Percentage of Taxable Sales
0 to 30,000	1.940
30,000 to 75,000	0.780
75,000 to 150,000	0.520
150,000 to 750,000	0.420
750,000 to 1.5 Million	0.260
1.5 Million to 15 Million	0.040
15 Million or More	0.003

SOURCE: Congressional Budget Office using data from Cedric Sandford, Michael Godwin, and Peter Hardwick, *Administrative and Compliance Costs of Taxation* (Bath, England: Fiscal Publications, 1989), p. 116.

NOTE: Sales amounts have been converted from British pounds to U.S. dollars and rounded.

Small businesses would face relatively high compliance costs because they lack economies of scale in complying with taxes. Table 13 shows how VAT compliance costs for businesses in the United Kingdom vary with their volume of taxable sales. During the 1986-1987 period, compliance costs were only 0.003 percent of taxable sales for large businesses with annual sales of more than £10 million ($15 million), but they were nearly 2 percent of taxable sales for small businesses with annual sales under £20,500 ($30,000).[7]

To relieve the VAT's compliance burden on the smallest businesses, European countries routinely exempt them from registering. The sales threshold for registration, however, varies considerably among countries. For example, only businesses with annual taxable sales over $30,000 must register in the United Kingdom, but businesses with just $2,000 of taxable sales have to register in the Netherlands. A high sales threshold allows many businesses to claim exemption. In the United States, for example, a $25,000 sales threshold

7. Cedric Sandford, Michael Godwin, and Peter Hardwick, *Administrative and Compliance Costs of Taxation* (Bath, England: Fiscal Publications, 1989), p. 116.

would relieve more than 10 million businesses from registering and complying with a VAT.

Even with a $25,000 sales threshold for registration, the cost of complying with a European-style VAT would still be substantial. Based on the compliance cost factor for the United Kingdom, the cost of complying with a VAT in the United States would have been about $4 billion to $7 billion in 1988.[8] About 90 percent of the cost would have been incurred by small and medium-sized businesses with annual sales under $1 million.

CONTROLLING ADMINISTRATIVE AND COMPLIANCE COSTS

Although a VAT can be designed to hold down administrative and compliance costs, doing so often involves trade-offs with other objectives such as minimizing the tax on merit goods, lessening the VAT's burden on the poor, and preventing the VAT from cascading. Especially in Europe, the pursuit of these other goals has added to the administrative and compliance costs of the VAT.

Taxing at a Uniform Rate

One way to lessen both the administrative and the compliance costs is to keep the VAT simple by taxing as many goods as possible at the same rate. Most European VATs, however, have at least two positive rates in addition to a zero rate. Luxury goods are commonly taxed at a higher-than-normal rate in order to shift more of the VAT's burden to high-income consumers. Similarly, necessities are commonly zero rated to reduce the VAT's burden on the poor. But European countries are slowly moving toward having fewer rates as they begin to recognize the high administrative and compliance costs associated with multiple rates.[9] Moreover, countries that have recently adopted

8. The compliance cost estimate assumes that, in addition to small businesses with annual sales under $25,000, businesses providing medical, educational, financial, and charitable services would be exempt and would not register under the VAT.

9. Tait, *Value-Added Tax*, p. 249.

VATs--notably Japan, Canada, and New Zealand--have opted for a single positive rate.

Exempting Small Businesses

Another way to lessen both administrative and compliance costs is to exempt small businesses from registering under the VAT. These businesses greatly increase the costs of administration and compliance but generate little revenue. In the United Kingdom in 1977, 50 percent of the administrative costs and 40 percent of the compliance costs were attributed to registered businesses with annual sales below £50,000 ($75,000), even though these businesses collected only 5 percent of the VAT revenue.[10] Many of these small businesses, however, choose to register even though they could be exempt. For example, when the United Kingdom raised the sales threshold for its small-business exemption in 1977 and 1978, only a fifth of the businesses that became eligible for exemption chose to be exempt. One reason for choosing to register is that exempt businesses that sell to registered businesses bear the burden of the VAT on their purchases. When the burden of the VAT exceeds the cost of complying with it, small businesses prefer to be registered. Although exempting small businesses reduces the administrative and compliance costs of a VAT, it causes the VAT to cascade because exempt businesses break the chain of credits among registered businesses. From the government's standpoint, cascading is undesirable because it distorts prices and misallocates resources, thereby reducing economic efficiency.

Simplifying the Administrative Process

In an effort to reduce the compliance costs borne by small businesses, several countries have simplified the way small businesses compute their tax payments under the VAT. For example, in place of the standard credit method, small businesses may be allowed to use the subtraction method or a special method that imposes a flat rate on either

10. Cedric Sandford and Michael Godwin, "VAT Administration and Compliance in Britain," in Malcolm Gillis and others, eds., *Value-Added Taxation in Developing Countries* (Washington, D.C.: World Bank, 1990), p. 208.

purchases or sales.[11] Countries also may allow small businesses to delay the remittance of their VAT collections or to keep part of them as a way to compensate these businesses for their high compliance costs.[12] But compensating small businesses for their compliance costs does not reduce the social cost of compliance; it merely shifts the burden of this cost to others.

Many countries coordinate the administration of the VAT with the administration of other taxes such as the income tax. Usually done to improve enforcement, it can also reduce the administrative and compliance costs. The extent of the coordination varies among countries. In some countries, the income tax and the VAT are administered by different staff within the same department, and coordination involves little more than an exchange of information. In other countries, the same staff administer both taxes and routinely conduct joint audits.[13]

11. Organization for Economic Cooperation and Development, *Taxing Consumption* (Paris: OECD, 1988), pp. 159-161.

12. For a description of these compensation schemes, see OECD, *Taxing Consumption*, pp. 305-309.

13. For a summary of how countries coordinate the administration of the VAT and the income tax, see OECD, *Taxing Consumption*, pp. 199-202.

CHAPTER VII

DIRECT CONSUMPTION TAX AS AN ALTERNATIVE TO A VAT

The principal advantage of a value-added tax over an income surtax is its ability to raise revenue more efficiently and without taxing saving, but the VAT has shortcomings as well. The costs of administering and complying with a VAT are sizable. In addition, the burden of a VAT is regressive, falling more heavily on lower-income taxpayers. Although a VAT can be made less regressive by taxing certain consumption goods at reduced rates or by providing special income tax credits, these adjustments add complexity and increase the costs of administration and compliance.

An alternative to the VAT is a direct consumption tax, which taxes consumption by directly taxing income from labor and existing capital. Taxing consumption this way appears to overcome some of the VAT's more serious shortcomings but retains the VAT's principal advantage. Like a VAT, a direct consumption tax would not tax saving, but it would be less regressive than a VAT and easier to administer as a supplemental source of revenue.

DIRECT CONSUMPTION TAXES

One way to tax consumption is to tax the income from labor and existing capital. Such a tax is called a "direct" consumption tax because it is levied directly on factor incomes rather than indirectly on goods and services.[1] Consumption can be taxed this way because the present value of future consumption equals the present value of future labor income plus the present value of the future gross income from existing capital. Hence, a tax on the income from labor and existing capital is, in effect, a prepayment of tax on the consumption that it affords.

1. The direct/indirect terminology comes from the national income and product accounts, which classify taxes on factor incomes as direct taxes and taxes on products as indirect taxes.

Two prominent proposals for a direct consumption tax are the flat tax by Robert Hall and Alvin Rabushka and the X-tax by David Bradford.[2] These proposals have the same basic structure. Each has two tax components: a "business tax" on the gross income from existing business capital and a "wage tax" on the income from labor. The proposals differ only slightly in the way they implement the wage tax.

The Business Tax

The business tax component of a direct consumption tax is essentially an origin-based, subtraction-method VAT with an additional deduction for employee compensation. It would be imposed at a flat rate on a base consisting of gross business receipts (net of indirect taxes paid to federal, state, and local governments), less purchases of intermediate inputs and capital goods, less employee compensation. Only business activities within the United States would be taxed.

If a business's deductions exceeded gross business receipts, then the negative tax amount would either be refunded or carried forward to offset positive taxes in future years. Any amount carried forward would accrue interest until it was used, thereby preserving its value in present-value terms. At an interest rate of 10 percent, for example, a business that had a negative tax liability of $100 in a given year would have a $110 credit to offset any positive tax liability the following year.

In principle, the deduction for new investment eliminates the tax burden on new investment because the tax benefit of this deduction equals the expected present value of the subsequent tax burden on the investment's gross return. The deduction for employee compensation eliminates the tax burden on labor. Therefore, only the return to existing business capital remains to be taxed under the business tax component of a direct consumption tax. The return to existing nonbusiness capital, such as housing, is not taxed.

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2. For a description of the flat tax, see Robert E. Hall and Alvin Rabushka, *The Flat Tax* (Stanford: Hoover Institution Press, 1985), pp. 40-68. For a description of the X-tax, see David F. Bradford, "On the Incidence of Consumption Taxes," in Charls E. Walker and Mark A. Bloomfield, eds., *The Consumption Tax: A Better Alternative?* (Cambridge, Mass.: Ballinger Publishing Company, 1987), pp. 244-253. For a description of other direct consumption taxes, see David F. Bradford, *Untangling the Income Tax* (Cambridge, Mass.: Harvard University Press, 1986), pp. 75-99.

The Wage Tax

The wage tax component of a direct consumption tax is levied on the employee compensation that was deducted from the business tax base. The base of the wage tax would include wages, salaries, and pension receipts. This base, however, would not be taxed at a flat rate as the base of the business tax was. Under the Hall-Rabushka proposal, each taxpayer would be granted an allowance based on family size and filing status. The allowance would be untaxed, but the remaining wage base would be taxed at the business tax rate. The X-tax proposal would include graduated tax rates up to the business tax rate in addition to the allowance. The allowance and the graduated rate structure both make the wage tax more progressive.

The use of a progressive wage tax instead of a truly proportional one makes the direct consumption tax different from a subtraction-method VAT. This feature, along with separate wage and business tax components, enables the direct consumption tax to overcome some of the VAT's basic shortcomings.

ADVANTAGES OVER A VAT

A direct consumption tax has at least three advantages over a VAT. The most obvious advantage is that the inherent regressivity of a consumption-based tax can be mitigated through the wage tax. The allowance and graduated rates of the wage tax can be set to achieve the desired degree of progressivity for the consumption-based tax as a whole. In contrast, the only way that a credit-method VAT can be made less regressive (without relying on transfer programs or other taxes) is by taxing selected consumption goods and services at a preferential rate, which makes the tax more complex and creates price distortions among goods. Furthermore, the preferential tax treatment of selected goods is less effective than the wage allowance in reducing re-

gressivity because the tax benefit is not targeted as well toward low-income taxpayers.[3]

The second advantage of a direct consumption tax is that it can tax certain sectors of the economy in a more familiar and presumably less controversial way by taxing incomes instead of products. For example, state and local governments and nonprofit organizations could be exempted from paying the business tax--just as they are exempted from paying the current income tax--without much erosion of the tax base. Less erosion would occur because, in addition to the intermediate inputs, the labor used by state and local governments and nonprofit organizations to produce their services would still be taxed.

Other sectors, such as financial services, could also be exempted if they proved difficult to tax under the business tax. Exemption is less problematic under a direct consumption tax than under a credit-method VAT because there is no chain of credits to be broken by exemption. Although a subtraction-method VAT offers the same advantage, much more of the tax base would be lost from exemption under a subtraction-method VAT than under the business tax because the subtraction-method VAT would exclude the sector's labor income as well as the gross return to its existing capital.

The third advantage of a direct consumption tax is that it would impose a smaller administrative and compliance burden. For the most part, only those individuals and businesses who must file an income tax would have to file a business or wage tax return.[4] Low-income taxpayers and exempt businesses generally would not have to file. Furthermore, because the business and wage taxes would be based on standard income tax accounting concepts, they could easily be administered as an add-on to the current income tax.

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3. Granted, the regressivity of a credit-method VAT is reduced whenever a consumption good that comprises a greater share of the purchases of lower-income families is given preferential treatment. However, because the purchased amount per family of a preferentially treated good is almost always greater for higher-income families, they receive a greater tax benefit per family.

4. Partnerships, which by law must file an information return under the income tax, would be considered businesses under a direct consumption tax and would have to file a business return.

A direct consumption tax might have other advantages as well. It might be less objectionable to state governments because it would not be perceived as an infringement upon state sales taxes. Also, industries would probably have less incentive to seek preferential treatment because the business tax base in each industry is only a small share of its value added. Finally, the tax burden on recipients of government transfer payments would probably be less haphazard because the burden would not depend on whether or not particular transfer payments were indexed for inflation.[5]

SOME POTENTIAL PROBLEMS

Although a direct consumption tax appears to overcome the VAT's most serious problems, other problems remain as intractable as ever. The direct consumption tax is no better equipped than the VAT to tax employer-provided fringe benefits, the personal use of business assets, or the services of existing owner-occupied housing. Moreover, a direct consumption tax has never been established and might suffer problems of its own. For example, if the wage tax had graduated rates, business owners presumably would have an incentive to characterize their business income as wage income to reduce their tax burden under a direct consumption tax. Such problems have not yet received much attention. Thus, although a direct consumption tax appears to be a promising alternative to a VAT, many details still require scrutiny.

5. For a further discussion of the possible advantages of a direct consumption tax over a VAT, see George R. Zodrow, "A Direct Consumption Tax as an 'Add-On' Tax," *Tax Notes* (March 21, 1988), pp. 1395-1400.

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