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# Consumption Taxes: Macroeconomic Effects and Policy Issues

*By C. Alan Garner*

Proposals for fundamental reform of the federal tax code are receiving increased attention in the business press and among economic analysts and policymakers. President Bush has identified tax reform as a top priority, calling for a tax system that is “pro-growth, easy to understand, and fair to all.” Moreover, the President has appointed a commission to consider different approaches to tax reform. One approach might be to improve the current income-based federal tax code, perhaps by broadening the tax base and lowering income-tax rates. However, another approach might be to replace current income taxes altogether with a consumption tax.

Switching the federal tax system from an income tax to a consumption tax could have important macroeconomic effects. Most economists believe that switching to a consumption tax could increase saving and real output per person over the long run, although studies differ on the size of these effects. However, switching to a consumption tax might also require sizable short-run economic adjustments and create challenges for monetary policymakers.

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This article analyzes the macroeconomic effects of replacing the current federal tax system with a consumption tax. The first section provides some background on the goals of tax reform and the basic difference between an income tax and a consumption tax. The second section describes three widely discussed versions of a consumption tax: a national retail sales tax, a value-added tax, and a consumption-type flat tax. The third section examines the macroeconomic effects of adopting a consumption tax. All three proposals could raise U.S. output over the long run, but adopting a consumption tax could have sizable transition effects as well. These transition effects could vary depending on which consumption tax was adopted and how monetary policy responded to the reforms.

## I. BACKGROUND ON TAX REFORM

When considering tax reform options, fiscal policymakers are likely to weigh several important goals of tax policy. This section briefly discusses these goals because tradeoffs among them have a major influence on tax policy in practice. The section also considers the basic economic difference between an income tax and a consumption tax, the treatment of saving.

### *Goals of tax reform*

Fiscal policymakers usually consider various goals for tax policy. Five possible goals are: simplicity, stability, fairness, adequate revenue, and economic efficiency. The macroeconomic effects emphasized in this article fall primarily under the heading of economic efficiency. However, the other policy goals also play an important role in motivating the recent interest in tax reform. Fiscal policymakers often must make tradeoffs between these goals. For example, research described later in this article illustrates some key tradeoffs between economic efficiency and fairness.

*Simplicity.* Tax experts do not dispute that the current federal tax code is extremely complex, although some might argue that complexity is unavoidable. In 2000, the Internal Revenue Code and related regulations contained 9.4 million words, up from about 1 million

words in 1940 (Graetz). This complexity requires extensive record-keeping, large amounts of time devoted to preparing tax returns, and the hiring of expert tax advisors. In 2002, individuals, businesses, and nonprofit organizations spent 5.8 billion hours and over \$194 billion complying with the federal tax code (Moody). Simplifying the tax code could reduce taxpayer frustration and free up resources for more productive uses.

*Stability.* Greater stability of the tax code is another possible goal for tax reformers. Besides being complex, the federal tax code has been modified frequently as fiscal policymakers responded to changing economic circumstances and political pressures. An example is changes in the marginal tax rate, the percent of an additional dollar of income that must be paid in taxes. The federal government's highest marginal tax rate for individuals was 50 percent in 1986. This rate declined to 28 percent in 1988, but was 31 percent in 1990, 39.6 percent in 1993, and 35 percent in 2003. Frequent changes in the tax laws make it difficult for businesses to evaluate investment projects and for households to make long-run plans, such as how much to save for retirement.

*Fairness.* Another goal of tax reformers is to increase the fairness of the tax code. This goal inevitably involves value judgments that are difficult to make scientifically. One notion of fairness is that people or businesses in similar circumstances should be treated equally by the tax laws. The current tax system does not always meet this standard—for example, two companies in different industries but with similar profits may pay vastly different taxes because of tax breaks given to only one of the industries. Fairness also may be an issue if changes in tax policy affect income groups or generations differently. For example, shifting from the current progressive income tax to a consumption tax might reduce the tax burden on high-income households because these households tend to save more of their incomes. Because of differing values, some observers conclude this tax change would be unfair, while others argue that it is the current progressive income tax that is unfair. Although this article will not take a stand on which value system is better, the following sections identify some of these fairness issues.

*Adequate revenue.* Any tax system must raise adequate revenue to meet important public spending priorities. Tax reformers might, in practice, design a new tax system to generate more or less revenue than

the existing tax code. Currently, the large federal budget deficit helps frame this debate, although fiscal policymakers disagree about whether government spending should be cut or revenue raised to narrow the deficit.<sup>1</sup> Economic analysts are often reluctant to specify what levels of public spending and revenue are appropriate. As a result, economic researchers typically analyze a revenue-neutral tax reform in which the new tax system generates the same real revenue as the old system.

To replace existing federal income taxes, a new consumption tax would have to produce a large amount of revenue. Total federal receipts were nearly \$1.9 trillion in fiscal year 2004. Most of this revenue came from income and payroll taxes. The largest revenue source was the individual income tax, which contributed 43 percent of federal revenue (Chart 1). The second largest category, social insurance and retirement receipts, generated another 39 percent, primarily from the Social Security and Medicare payroll taxes. Corporate income taxes produced a much smaller share of federal revenue, about 10 percent, and such taxes have gradually been declining over time as a share of federal revenue. The remaining categories, excise taxes and other receipts, accounted for only 8 percent of revenue.

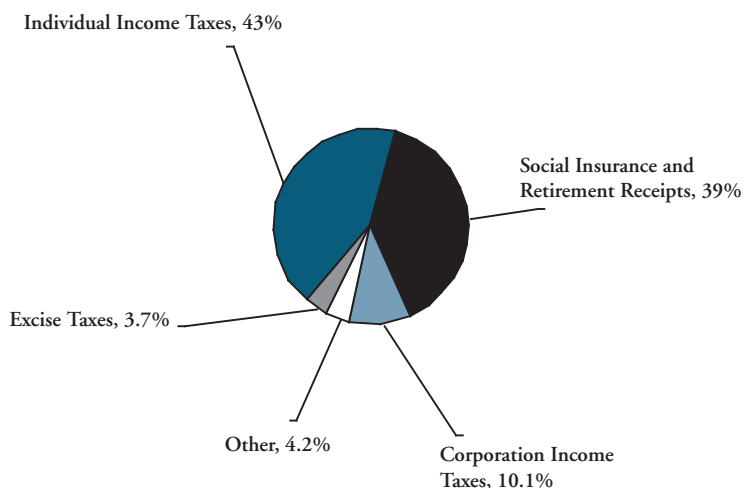
*Economic efficiency.* A final goal for tax reform, and the focus of this article, is economic efficiency. The economy would become more efficient, in the sense of producing more output per person, if reform eliminated tax-related distortions in decisions to work, save, and invest. Economic theory suggests that people respond to incentives, such as after-tax compensation when deciding how much to work and after-tax rates of return when deciding how much to save and invest. High income-tax rates reduce the after-tax rewards to these productive activities. The returns to saving and investing are also reduced by the double taxation of corporate income: returns on corporate investments are taxed once when corporations pay their income tax and again when households pay tax on corporate dividends or realized capital gains.

The goal of economic efficiency can sometimes conflict with other tax reform goals. For example, lowering the marginal income-tax rate for households with the highest incomes might improve the incentives for such households to work and save, but such a change would result in low-income and middle-income households paying a higher fraction of federal taxes.<sup>2</sup> Because similar conflicts between economic efficiency

Chart 1

## COMPOSITION OF FEDERAL RECEIPTS

(2004 percentage by source)



and fairness might occur when switching from an income tax to a consumption tax, tax reformers might introduce special features into a consumption tax to better achieve a goal such as fairness. As will be seen later, adding such features to a tax package can reduce the output gains from tax reform.

*Taxing income or consumption?*

Before considering particular designs for a consumption tax, it is important to understand the fundamental difference between a consumption tax and an income tax. A simple relationship between consumption and income is:

$$\text{Consumption} = \text{Labor earnings} + \text{Current capital income} - \text{Saving}$$

Taxable income is labor earnings plus current capital income. Current capital income is the average rate of return on capital multiplied by existing capital at the start of the period. An income tax is levied on taxable income, but a consumption tax is levied on taxable income minus saving. The key difference between an income tax and a consumption tax, therefore, lies in the treatment of saving. A consumption tax excludes current saving from the tax base.

As a result, consumption and income taxes provide differing incentives to save and invest. Under a consumption tax, households are likely to save more in the present because a consumption tax does not penalize savers. The present value of the consumption tax—the value of current and future tax payments discounted to the present—is the same, whether the household consumes now or later.<sup>3</sup> In contrast, an income tax places a higher tax burden on savers because households pay their tax on taxable income with no deduction for new saving. The capital income received from the new saving will also be taxed as a part of current capital income in some future period. Under the income-based system, households face a higher overall tax burden on capital income and have less incentive for new saving.

But savers do not escape taxation under a consumption tax. If households save in the present, they do not pay tax on the amount of their saving, but the savers or their heirs will eventually pay a consumption tax at some point in the future when they use their accumulated wealth for consumption. Because the saver's assets earn a return over time, there will be more wealth to spend in the future and more taxes on this consumption. In present value terms, this growth over time will offset the possibility that the consumption taxes may be deferred for a long time into the future.

Because income and consumption taxes treat saving differently, tax reform could have important effects on wealth accumulated before the reform. Without special transition provisions, switching from an income tax to a consumption tax would produce a one-time tax on existing wealth. For existing assets, savers were taxed in the past on their income and would be taxed in the future when they consume their wealth. Switching to a consumption tax particularly raises fairness issues about the effects on retirees and older workers because such households own a large share of existing wealth.

Although the U.S. tax code is closer to an income tax than a consumption tax, the current system is really a hybrid of the two. To encourage more saving, fiscal policymakers have introduced consumption-tax elements into the current system. Tax-advantaged saving accounts, such as Individual Retirement Accounts and 401(k) retirement saving plans, are examples. Such accounts defer the tax on new saving to the future by allowing households to deduct their saving from their taxable income and to pay no taxes on their current capital income. But savers do face a tax liability when they withdraw funds from the account for consumption. Despite such accounts, the current federal tax system does not remove saving completely from the tax base, and tax reform advocates believe further efficiency gains could be achieved by shifting entirely to a consumption tax.

## II. CONSUMPTION TAX OPTIONS

A consumption tax could be implemented in various ways. Three widely discussed options are a national retail sales tax, a value-added tax (VAT), and a flat tax.<sup>4</sup> Each option is considered only in broad terms because many detailed variants are possible. However, the primary differences among the three options reflect how the tax is calculated and collected.

### *National retail sales tax*

A national retail sales tax is the easiest consumption tax to understand because of its similarity to retail sales taxes at the state and local levels. A uniform sales-tax rate would apply to all retail sales of goods and services to consumers. Retailers would collect the taxes and remit the proceeds to the government, freeing households of any record-keeping responsibilities. Purchases of goods and services by one business from another would be tax-exempt. To provide the broadest possible tax base and thus the lowest tax rate, proponents argue that the tax should apply to all consumer purchases of goods and services, including medicine, groceries, financial services, and even new homes.

In practice, however, fiscal policymakers might exclude such spending categories as groceries or medical services to reduce the impact on low-income households.

An important controversy about a national sales tax is how high the tax rate would have to be. Recent legislation proposed a 23 percent tax rate to replace the individual and corporate income taxes, the Social Security and Medicare payroll taxes, and the federal estate tax.<sup>5</sup> As discussed in the box, critics of a national sales tax argue that the rate would have to be much higher than the proposed 23 percent to fund essential federal outlays. Critics contend such a higher tax rate could encourage widespread tax evasion, which would further reduce government revenue and be unfair to honest taxpayers.<sup>6</sup> Excluding some spending categories from the tax base would also raise the sales-tax rate required to produce any given level of revenue.

### *Value-added tax*

A VAT is an alternative way of taxing final consumption of goods and services.<sup>7</sup> In fact, a VAT is economically similar to a national retail sales tax, but the more indirect method of collecting the VAT makes it less obvious that this is a consumption tax. A VAT would be collected from all businesses rather than just retailers. Most goods and services are produced in stages, and the VAT taxes the value added by businesses at each stage of the process rather than collecting taxes only on the final retail sale to consumers. The value added by a firm in the production process is the value of the firm's sales minus any materials or other inputs purchased from other firms.

A simple example can illustrate the similarity of a national sales tax and a VAT. Table 1 shows three stages in producing potted plants that are ultimately sold to consumers by a flower shop. A nursery purchases \$50 worth of fertilizer from a fertilizer manufacturer and uses that product along with its own labor and other resources to grow potted plants, which are sold to a flower store for \$150. The value added by the nursery is \$100. The flower store adds another \$100 of value and retails the plants for \$250. If a 20 percent VAT were collected at each stage, the tax would yield \$10 of revenue from the fertilizer producer (.20 times the \$50 of value produced at that stage). Similarly, the VAT



### DIFFERING ESTIMATES OF THE NATIONAL SALES-TAX RATE

Proponents and opponents of a national retail sales tax have produced differing estimates of how high the tax rate must be to replace current federal income taxes. Sales-tax rates are normally stated on a tax-exclusive basis, meaning the rate at which tax would be added at the cash register. Thus, a 25-percent tax-exclusive rate applied to a \$100 retail purchase means the purchaser would give \$125 to the retailer, who would send \$25 in tax to the government. Advocates of the national sales tax, however, often quote sales-tax rates on a tax-inclusive basis. Calculated this way, the \$25 tax would be divided by the \$125 given to the retailer, yielding a tax rate of  $25/125 = 20$  percent. Proponents of a national sales tax often prefer this approach because it is similar to the way that income-tax rates are quoted. Both sides agree that the tax-inclusive rate of 23 percent in H.R. 25, a recent legislative proposal for a national sales tax, is equivalent to a 30-percent tax-exclusive rate.

Gale (2005) contends that the 30-percent tax-exclusive rate in H.R. 25 is miscalculated. He argues that this rate does not allow for the increase in nominal government spending that would be needed to keep real government spending unchanged during the transition to a consumption tax. Moreover, he believes that sales-tax rates of this size would increase tax avoidance and evasion, which would erode the tax base and require even higher tax rates to generate adequate government revenue. Gale estimates that with realistic assumptions about tax avoidance, evasion, and legislative adjustments to the tax base, the national sales-tax rate would need to be over 50 percent to generate the same revenue as federal income, payroll, and estate taxes over the next ten years.

This discrepancy in estimated sales-tax rates is large enough to have important economic effects. If a national sales tax were adopted, setting the tax rate incorrectly could cause federal revenue to differ greatly from what fiscal policymakers expected. The discrepancy in tax rates could also have large implications for monetary policy by affecting how much wages or prices would have to adjust as the economy moved from the income tax to a national sales tax.

Table 1

## EXAMPLE OF VALUE ADDED TAX

*(dollars)*

Business	Purchases from previous stage	Sales of firm	Value added by firm	VAT revenue collected	Sales tax revenue collected
Fertilizer manufacturer	0	50	50	10	0
Nursery	50	150	100	20	0
Flower shop	150	250	100	20	50
Total	200	450	250	50	50

Notes: These numbers are illustrative only. The example assumes a 20 percent VAT rate and a 20 percent sales-tax rate.

would yield \$20 of revenue from the nursery and \$20 of revenue from the flower shop, for a total tax revenue of \$50. But a 20 percent sales tax at the retail level could also generate \$50 in revenue because that sum equals 20 percent of the \$250 retail sale.

A VAT would probably be easier to enforce than a national retail sales tax. A VAT is more enforceable because it is collected at multiple stages in the production process. Even if the tax is evaded at one stage, tax can still be collected on the value added at other stages. For example, even if the fertilizer producer in Table 1 evades the tax, \$40 of revenues could be collected from the nursery and the flower store. In addition, calculating the VAT creates a paper trail that makes it easier to detect tax evasion.<sup>8</sup>

*Flat tax*

A third widely discussed reform option is the so-called flat tax. A tax is said to be flat when it has a single rate rather than multiple tax brackets. Strictly speaking, then, there could be a flat *income* tax with a single rate for all households and businesses. In the United States,

however, the term “flat tax” is associated primarily with a particular consumption-tax proposal. Like the VAT, this proposal does not look much like a consumption tax at first glance. The flat tax would be collected partly from households and partly from businesses.<sup>9</sup> Households would pay tax on all wage, salary, and pension income, but direct household income from interest, dividends, and capital gains would not be taxed. Businesses would pay tax on their receipts after deducting wages paid, materials purchased from other firms, and business investment spending. In contrast, firms do not deduct wages under a VAT.<sup>10</sup> Taxing all households and businesses at the same rate would eliminate any incentive to shift revenue between households and businesses purely for tax reasons.

One way to see that a flat tax is closely related to the other consumption taxes is to note that the flat tax is essentially a two-part VAT. The business portion of a flat tax is computed in the same way as a VAT except that businesses also deduct labor compensation. The tax on this portion of value added is paid at the household level rather than the business level, but because the tax rate is the same at both levels, the tax equals what would be collected under a VAT.

The government’s total revenue would be the same under either a VAT or a flat tax, with the only difference being how the revenue is collected. Table 2 illustrates the close relationship between a flat tax and a VAT. The first column repeats the value added at the three stages in the production of potted plants. The fertilizer manufacturer’s value added was \$50. For purposes of illustration, suppose three-fourths of this value added came from labor services and the other fourth from the services of the firm’s existing capital and technology. Being a two-part VAT, a flat tax would apply the 20 percent tax rate separately to the \$37.50 of value added by labor and the \$12.50 of value added by the firm’s existing capital and technology. The firm’s workers would pay \$7.50 in taxes to the federal government and the firm would pay \$2.50. However, these taxes provide the same revenue of \$10 that would be collected at this stage of production under a VAT. Likewise, workers and businesses would pay the same total amount of tax at the other two stages of production.

Table 2  
EXAMPLE OF FLAT TAX  
(dollars)

Business	Value added by firm	Value added by factor	VAT revenue collected	Flat tax revenue collected
Fertilizer manufacturer	50		10	
	Labor	37.5		7.5
	Capital	12.5		2.5
Nursery	100		20	
	Labor	75		15
	Capital	25		5
Flower shop	100		20	
	Labor	75		15
	Capital	25		5
Total	250	250	50	50

Notes: These numbers are illustrative only. The example assumes a 20 percent VAT rate and a 20 percent flat tax rate.

A flat tax would be more similar in structure to the current federal tax system than would a national sales tax or a VAT. Like the current system, a flat tax would have both a business tax and a household tax. For businesses, the chief difference is that they would immediately expense new capital goods rather than depreciating them over time. For households, the chief differences are that they would not pay tax on capital income but they would also have fewer deductions than under the individual income tax. The similar structure with fewer deductions suggests a flat tax would be simpler and more enforceable than the current system, but incentives would remain to hide income from the tax collector. The similarity of a flat tax to the current system also might lessen some of the transitional adjustments associated with tax reform.

III. ECONOMIC EFFECTS OF A CONSUMPTION TAX

Although economists have studied many aspects of tax reform, much of the research has focused on the goal of economic efficiency. Recent studies typically find that shifting to a consumption tax would

eliminate some current tax-related distortions and raise real output per person, although the studies differ on the size of these effects. After summarizing the long-run effects of shifting to a consumption tax, this section considers transitional issues, which have not been studied as extensively. Switching to a consumption tax could have large wage or price effects and uncertain interest-rate effects, creating challenges for monetary policymakers during the transition period.

### *Long-run economic effects*

Most research suggests that switching from the current federal income tax to a consumption tax would raise real GDP in the long run. Such studies typically consider a revenue-neutral reform in which the new consumption tax generates as much revenue as the existing system. Long-run studies also assume the economy operates at full employment. Gravelle surveys several studies produced for the Joint Committee on Taxation by researchers using various economic models. In the long run, the change in real output from switching to a broad-based consumption tax ranged from 1.7 percent to 7.5 percent, depending on the particular model.

A more recent study by Altig and others examines the effects of tax reform in a state-of-the-art model of the U.S. economy. Advantages of this model include its carefully specified theoretical foundation and its more realistic representation of the existing federal tax system. Table 3 summarizes the economic results for three specific cases. The table presents long-run percentage differences from a baseline path, which describes how the economy might perform under the current tax system. The first three columns show the long-run increases in real output, the real capital stock, and the labor supply relative to the baseline path. The last column shows the decreases in the real value of existing assets.<sup>11</sup> The long-run results in Table 3 reflect the economic situation existing about 150 years after the initial tax reform.

The first case is a proportional consumption tax. This case depicts the economic effects of any of the consumption taxes described in the previous section. As already discussed, these options are economically similar, differing primarily in how they are implemented. This case omits special provisions that have been proposed in particular tax-

Table 3

**LONG-RUN ECONOMIC EFFECTS OF TAX REFORM***(Percent difference from baseline path)*

<b>Tax reform</b>	<b>Real output</b>	<b>Capital stock</b>	<b>Labor supply</b>	<b>Value of existing assets</b>
Proportional consumption tax	9.4	25.4	4.6	-9.4
Flat tax	4.5	15.0	1.3	-5.9
Flat tax with transition relief	1.9	8.3	-.2	-1.7

Source: Altig and others, p. 587

Note: The table shows long-run percentage differences of the variables from a baseline path reflecting the current federal tax system. Each simulation replaces the individual and corporate income taxes in a revenue-neutral way. The flat tax differs from the proportional consumption tax by adding a standard deduction for wage income and exempting implicit income from owner-occupied housing. The flat tax with transition relief helps owners of existing assets by extending current depreciation schedules for the lifetime of those existing assets.

reform plans to modify how the consumption tax affects the income distribution or the value of existing assets. The first line of Table 3 shows that switching from an income tax to a consumption tax increases real output by 9.4 percent over the baseline path in the long run. The increase in real output reflects greater saving and investment as well as an increase in the labor supply. The capital stock rises 25.4 percent and the labor supply 4.6 percent in the long run.<sup>12</sup>

But as noted earlier, an important effect of a consumption tax is to reduce the value of existing capital relative to new capital. In these simulations, the proportional consumption tax has the largest effect, reducing the real value of existing assets by 9.4 percent in the long run. This loss in value would hurt richer and older people who directly or indirectly own much of this capital. But the decline in the real value of existing assets actually contributes to the positive effects of a consumption tax on real output. The one-time tax on existing assets helps lower

the revenue-neutral consumption tax rate. In addition, the loss of wealth by richer and older households causes these households to work and save more to make up for the loss.

The flat tax in the second line of Table 3 modifies the proportional consumption tax by including a special deduction to reduce the impact on low-income households.<sup>13</sup> Switching from the current tax system to a consumption tax without such a provision would be regressive because low-income households consume a larger percentage of their income than high-income households. Because the deduction reduces tax revenue, this version of the flat tax requires a higher tax rate than would otherwise be necessary. The higher tax rate reduces the incentives to work and save relative to a proportional consumption tax. As a result, real output is only 4.5 percent above the baseline path in this case, compared with 9.4 percent for a proportional consumption tax. The capital stock and labor supply also rise less in this case, and the value of existing assets declines less relative to the baseline path.

Finally, the last line of Table 3 adds transitional relief for the owners of existing capital. A one-time tax on existing capital would fall heavily on older workers and retirees, who might have little opportunity to adjust their saving and retirement plans to make up for the unanticipated loss in wealth. Because many people would regard this situation as unfair, fiscal policymakers might include special transition rules in a tax reform package.<sup>14</sup> However, the consumption tax would require an even higher rate than in the second line of the table to replace revenues lost with the transition rules. As a result, the transition relief reduces the long-run effect of the tax reform on real output to only 1.9 percent, and labor supply declines slightly relative to the baseline path. Altig and others report that the transition relief would largely achieve its goal of protecting existing asset holders, but the gain comes at the expense of smaller welfare gains for other income and age groups.

These simulations illustrate the tradeoffs among various goals for tax reform that face fiscal policymakers. Provisions designed to improve the fairness of a tax reform package may erode the long-term gains in economic efficiency. Adding special transition rules or deductions also may increase the complexity of the tax code. Economic researchers can help identify these tradeoffs and design tax reforms that improve the tradeoffs, but fiscal policymakers still face difficult value judgments.

*Transitional economic issues*

Although the long-run efficiency gains from a consumption tax are widely touted, Chairman Greenspan has noted that “getting from the current tax system to a consumption tax raises a challenging set of transition issues.” These issues have not been studied as carefully as the long-run effects and may be more difficult to analyze with available economic models. Adjustments in wages, prices, and interest rates are especially important from the standpoint of monetary policymakers.

*Wages and prices.* Replacing the income tax with a flat tax poses smaller challenges for wage and price adjustment than either a national sales tax or a VAT. Because the structure of the flat tax is similar to the current income tax, large adjustments in consumer prices or wages would probably not be necessary. After-tax and before-tax wages would be similar before and after the tax reform, and nominal prices would be roughly unchanged (Zodrow 2002).

A national sales tax or a VAT, in contrast, would require the average price of consumer goods and services to rise relative to production costs and wages.<sup>15</sup> A national retail sales tax is the simplest case to understand because the tax is imposed entirely at the retail level. Consumers would pay a substantially higher price for goods and services after adding in sales taxes at a rate that could easily be 30 percent or higher. Because wages are a large fraction of production costs, the price paid by consumers would increase relative to the wage rate received by workers. However, in the case of a revenue-neutral tax reform, the decline in the income-related taxes paid by households would offset the rise in consumption taxes, leaving households with the means to purchase the higher-priced goods and services. Under a VAT, consumer prices would increase relative to wages because of taxes imposed at various stages in the production process rather than just the final retail sale.

An important question from the standpoint of short-run macroeconomic adjustment is how the increase in consumer prices relative to wages occurs. One possibility is that the after-tax consumer price level would rise by the full amount of the consumption tax while wages remain constant. Another possibility is that the after-tax consumer price level would be constant while wages decrease. Most discussions of transitional tax-reform issues assume the first case.<sup>16</sup> When a VAT has been



introduced abroad, authorities typically permitted an upward adjustment in the after-tax consumer price level, although efforts were generally undertaken to ensure that this one-time adjustment did not become a sustained inflationary process (Tait).

Alternatively, the necessary increase in consumer prices relative to wages could be accomplished by holding the price level constant and reducing the wage level. Many economists, however, believe that wages are “sticky” in the downward direction. Workers are reluctant to take a wage cut, and efforts to reduce the wage rate might cause many workers to leave their jobs. The result could be a large temporary increase in the unemployment rate and lower levels of spending and output. Gravelle cites simulations with large-scale econometric models that do not assume the economy always operates at full employment. In three of the four simulations cited, real output decreased initially in response to fundamental tax reform. Although other economists have criticized such models and might not accept their conclusions, the simulations emphasize the need for further research on the short-run employment and output effects of fundamental tax reform.

Moreover, replacing all federal income taxes with a national sales tax or VAT would require much larger price and wage adjustments than other countries experienced when adopting VATs. Foreign VAT rates have typically been no more than 10 percent because the countries kept other revenue sources, such as an income tax. In most cases, the country also eliminated other consumption-type taxes, which offset some of the upward price-level pressures. Thus, the price adjustments required by fundamental U.S. tax reform would be outside the range of historical experience.

*Interest rates.* The transitional effects of tax reform on interest rates have been debated by economists. The most common view is that switching from an income tax to a consumption tax will lower the pretax interest rate. In a simple model of interest rates, the equilibrium interest rate is determined by the supply of and the demand for credit. Golob shows how fundamental tax reform could affect both of these factors. Because a consumption tax provides stronger incentives for new saving than does an income tax, fundamental tax reform might be expected to increase the supply of credit to financial markets. In addition, fundamental tax reform proposals eliminate the tax deductibility

of interest expenses, which would be expected to lower the demand for credit. Although the effect on the quantity of credit is unclear, both of these effects should lower the pretax equilibrium interest rate.<sup>17</sup>

Although this is the most commonly held view, Feldstein noted that tax reform might raise interest rates over the long run. Current tax law favors debt finance over equity finance because corporations can deduct their interest payments. Feldstein has argued that fundamental tax reform would increase the relative return to equity, which in turn could put upward pressure on interest rates to maintain financial equilibrium. Although he recognizes there are complex effects working in different directions, Feldstein concludes that, on net, “the shift from an income tax to a consumption tax is more likely to raise interest rates than to lower them.” Thus, there is some uncertainty about even the long-run change in interest rates as a result of fundamental tax reform.<sup>18</sup>

### *Monetary policy issues*

Shifting from an income-based federal tax system to a consumption tax could also pose challenges for U.S. monetary policymakers. Monetary policy decisions would have an important effect on both short-run and long-run adjustments of the consumer price level and other nominal variables. Policymakers also might influence—or be influenced by—short-run adjustments in real economic activity, interest rates, and other financial variables during the transition period.

Unless the legislative branch provides explicit instructions, Federal Reserve policymakers would have to decide whether to accommodate a one-time increase in the after-tax consumer price level if policymakers were to adopt a national sales tax or VAT. Although analysts have commonly assumed that higher consumer prices would be allowed, Bradford (1996) noted that whether a consumption tax would lead to an increase in prices or a decrease in wages depends on “the institutions of wage- and price-setting and on monetary policy.” Either approach would involve difficult decisions affecting nominal price or wage contracts and the real value of existing assets.<sup>19</sup>

Monetary policymakers would also face challenges in interpreting and managing the economy during the transition to a consumption tax. After households and businesses realized that fundamental tax reform

was likely, economic behavior might shift in complicated ways. Consumers might engage in anticipatory buying of storable consumer goods if after-tax prices were expected to rise because of a national sales tax or VAT. The housing market might also be affected if a proposed consumption tax were to apply to new home purchases. A surge in consumer spending might produce a temporary boom as the effective date of the consumption tax approached. But at the same time, businesses might postpone purchases of capital goods until after the consumption tax takes effect in order to fully expense their new investments. Policymakers might find it difficult to assess the underlying strength of the economy and set an appropriate course for policy during this transition period.

To minimize the transition difficulties, fiscal policymakers should set the consumption tax rate appropriately at the outset. In this regard, the large disagreements about the required tax rate under a national sales tax appear important. If the statutory rate were set too low initially to cover essential federal outlays, efforts to enact a higher tax rate might set off another wave of anticipatory consumer spending. An anticipated increase in the consumption tax rate with no compensating transition provisions could have the same effects as the initial introduction of a consumption tax, creating incentives to consume more and invest less prior to the rate increase.

Finally, monetary policymakers would face challenges in interpreting short-run movements of interest rates and nominal asset prices. As noted earlier, economists do not agree about the long-run impact of fundamental tax reform on interest rates, creating uncertainty about whether interest rates should move up or down over the long term. Moreover, anticipatory buying by households could create a short-term boom that might prompt stabilizing increases in interest rates even if the long-term direction of rates should be downward.

Fundamental tax reform would, thus, pose challenges for monetary policymakers and their staffs. The challenges might become clearer when more details are known about the exact provisions of the new consumption tax, including any transition relief granted to existing asset holders. But the economic effects of such a fundamental policy

shift might still be hard to predict accurately with existing empirical models because behavioral regularities observed in the past would be likely to shift in important ways (Lucas).

#### IV. CONCLUSION

Most observers would probably agree that the current federal income tax is too complex and distorts saving and investment decisions. Three consumption taxes have been widely discussed as alternatives: the national retail sales tax, the VAT, and the flat tax. Such consumption taxes can provide greater incentives for working and saving, although they raise a variety of difficult issues, such as their effects on the income distribution and the value of existing assets.

With respect to economic efficiency, most research suggests switching to a consumption tax could raise the capital stock and real output per person over the long run. Providing tax breaks for low-income households or adding transition relief for the owners of existing capital, however, is likely to lower the output gains. Moreover, the transition to a consumption tax would pose challenges for monetary policymakers. Replacing the income tax with a national sales tax or VAT might require large changes in the price level or nominal wages. Adopting any consumption tax might also create short-run challenges for policymakers because of the need to analyze and possibly respond to anticipatory consumer behavior and changing financial asset prices.

## ENDNOTES

<sup>1</sup>Although the federal government often runs deficits, deficits that are too large and persistent may hurt economic performance. Most research finds that large federal deficits hurt economic growth by reducing national saving and raising interest rates, which ultimately can lower the nation's capital stock and GDP per worker. Based on a survey of existing research, Gale and Orszag conclude that "a sustained 1 percent of GDP rise in projected deficits would raise current [long-term] yields by between 20 and 60 basis points, holding other factors constant."

<sup>2</sup>Although many studies find that switching from the current income tax to a consumption tax would be regressive, there is considerable disagreement about how to measure this effect. Proponents of a consumption tax often contend that some households at the bottom or top of the income distribution are there for only short periods because of temporary factors, such as illness, or because of their stage in the life cycle. They argue that apparent inequities from a consumption tax tend to average out over one's lifetime. The extent to which a consumption tax is regressive will also depend on specific features of the tax plan, such as whether the tax includes special rebates or exemptions for low-income families.

<sup>3</sup>Strictly speaking, this principle is true only for the risk-free return used as the discount rate in computing this present value. Bradford (1996) pointed out that a consumption tax will impose a net tax on any return for risk bearing. In contrast, under an income tax, both the risk-free return and the risk premium are taxed similarly when the income is received.

<sup>4</sup>The Council of Economic Advisers considered a fourth option, the consumed income tax. This article will not analyze the consumed income tax because it has not figured as prominently as the other options in recent tax reform discussions.

<sup>5</sup>Americans for Fair Taxation, Kotlikoff, and Will advocate a particular proposal for a national retail sales tax. This proposal was introduced in Congress as H.R. 25, the "Fair Tax Act of 2003." This plan would also phase out the Internal Revenue Service and rely on state revenue departments to collect a national sales tax.

<sup>6</sup>Evading a retail sales tax is relatively easy for some consumer goods and services. For example, many services can be purchased with cash and are difficult for revenue authorities to monitor. Many states do not tax such consumer services for this reason. In addition, because retail sales to businesses would not be taxed, there would be an incentive to convert personal spending to business spending, where possible.

<sup>7</sup>Bartlett and Graetz are recent proponents of a VAT for the United States.

<sup>8</sup>Under the widely used "invoice-credit" method of collecting a VAT, the nursery would need an invoice showing the tax charged by the fertilizer producer to calculate correctly the tax on its own value added. Without such a record, the nursery would pay higher taxes than it really owed. The nursery owner would thus have a strong incentive to ensure that the fertilizer producer paid taxes and provided correct documentation. Such practical advantages explain why the VAT is a widely used tax outside the United States.

<sup>9</sup>Hall and Rabushka developed the most influential proposal for a consumption-type flat tax. The description in this subsection is based primarily on their plan. Armev and Bradford (2004) present other proposals for a flat tax.

<sup>10</sup>Unlike the current income tax, flat tax proposals would not allow firms or households to deduct interest expenses. Other popular deductions, such as those for charitable contributions and state and local taxes, would no longer be permitted in order to broaden the tax base and keep the tax rate low.

<sup>11</sup>Altig and others use a computable general equilibrium model that approximates the current federal tax system by including Social Security, Medicare, and various tax preferences. The model does not, however, capture efficiency gains that might occur if eliminating tax preferences produces a more efficient allocation of capital across different industries. The model assumes perfect foresight and full employment. Table 3 summarizes economic responses over the longest period reported by the researchers, but their article presents results for shorter periods as well. In addition, they give results for two cases that are not considered here, a proportional income tax and Bradford's X tax.

<sup>12</sup>In the simulation by Altig and others, real output also rises in the short run. The short-run effect comes primarily from an increase in the quantity of labor supplied. Higher saving and investment have a small short-run effect because the higher saving rate produces only a small percentage increase in the capital stock at first. As time passes, the capital stock grows relative to the labor supply, increasing workers' productivity and aggregate real output. In this model, the increase in the labor supply in response to a proportional consumption tax results from the higher after-tax wage earned by workers but also from the rise in the after-tax return to saving. Workers have an incentive to save more in the early years of the simulation and to defer leisure so that they can reap the rewards from this higher rate of return. The greater wealth in later years reduces the labor supply somewhat relative to the baseline, but the long-run increase in the capital-output ratio outweighs this effect.

<sup>13</sup>Altig and others implement this provision by including a standard deduction of \$9,500. This case also excludes housing wealth from the consumption tax on the view that policymakers would be likely to exempt housing from any one-time capital tax. The effect of a consumption tax on the income distribution has been debated in the literature, but that debate is beyond the scope of this article. Feenberg, Mitrusi, and Poterba provide evidence that a consumption tax would be regressive.

<sup>14</sup>This simulation assumes that pre-reform depreciation rules are extended for capital in place at the time of the tax reform. Because asset owners would no longer lose the depreciation allowances expected under current law, existing assets would decline less in real value. As noted earlier, any reform that introduces a consumption tax would reduce the value of existing wealth. Table 3 considers a flat tax, which would fall primarily on equity owners, while a national sales tax or VAT would have somewhat different distributional impacts.

<sup>15</sup>This discussion focuses on fundamental tax reform in which a national sales tax or VAT replaces all federal income and payroll taxes. The adjustment issues would be smaller if a low consumption-tax rate were enacted to replace a small part of the current tax system or to supplement existing revenue sources.

<sup>16</sup>The increase in consumer prices could account for part of the decline in the real value of existing assets during the transition to a consumption tax. Nominal assets such as bonds and bank accounts would lose real value as the price level rose. With no increase in consumer prices, the decline in the real value of existing assets would occur through other channels. For example, the decrease in wealth would fall on equity owners as corporations lost expected depreciation allowances and the prices of tax-free investment goods declined relative to taxable consumer goods and services (Zodrow 2002). In practice, the increase in the price of consumer goods and services relative to wages could occur through a combination of consumer price increases and nominal wage decreases.

<sup>17</sup>This discussion assumes that saving is highly responsive to after-tax returns. Switching to a consumption tax would initially raise the after-tax return on savings. A strong saving response would gradually reduce the rate of return on capital goods and the associated interest rate on debt used to finance such goods. The interest rate should eventually return back to its previous after-tax level to give savers about the same return for deferring consumption. However, this rate would be below the pretax rate of return existing before tax reform.

<sup>18</sup>The degree of international capital mobility could also have an effect on the interest-rate adjustments associated with tax reform. With a high degree of international capital mobility, switching from an income tax to a consumption tax might not change the pretax interest rate because new saving could flow freely to investment projects abroad. As a result, the after-tax return to savers would remain higher than under the income-based tax system (Zodrow 1997).

<sup>19</sup>Bull and Lindsey argue that an announced policy of nonaccommodation by the central bank might encourage greater wage and price flexibility in the transition to a consumption tax. They also note, however, that the short-run effects may ultimately determine the political feasibility of fundamental tax reform.

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