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The Distributional Effects of Fundamental Tax Revisions

JANE G. GRAVELLE*

Proposed shifts to consumption taxes, including the flat tax, value-added and sales taxes, and direct consumption taxes, would redistribute the tax burden across incomes, across generations, and across taxpayers depending on their sources of income. These effects derive both from the alteration of the rate structure and the change in the tax base. The flat rate taxes should shift the tax burden significantly from high income to middle- and lower-income families. The shift to a consumption base redistributes the burden from the young and future generations to the old. The tax burdens for future high-income classes could fall by half with the flat tax. There is, however, a significant amount of uncertainty with these projected effects, because of the limitations of data and of our understanding of lifecycle behavior.

INTRODUCTION

Plans for fundamental tax revision range from traditional income tax revision to a dramatic shift to a retail sales tax as a replacement for current income taxes. The value-added tax (VAT), the flat tax, and the unlimited savings allowance (USA) tax have also been proposed, all constituting dramatically different tax systems. The first option, the VAT, is a sales tax collected at each stage of production. The flat and

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USA taxes, however, tend to resemble the current income tax in form, if not in substance.

There is little precedent for many of these plans. Many countries have a VAT, although typically not in the form proposed in these plans, and typically not as a substitute for income taxes. Retail sales taxes are commonly used by the States, although few countries choose a retail sales tax at the national level, and no retail sales taxes are levied at the high rates required to replace current U.S. income taxes. A direct consumption tax is used by no country. And the 1986 Tax Reform Act, viewed as one of the most sweeping revisions in history, was a modest proposal compared to current plans.

Virtually all of the tax proposals flatten the rate structure and broaden the tax base in several ways; most also shift the base to consumption rather than income, which has the effect of narrowing the aggregate tax base, and shifting it as well.

The tax revisions were motivated by many reasons, but the two most common ones are to obtain a simpler tax and to create a tax system more conducive to private savings. Ironically, the drawbacks in some cases may be complexity and higher administrative costs. A direct consumption tax is probably more complicated than an income tax, and the retail sales tax is thought by many to be incapable of being administered at high rates, given the difficulty of distinguishing between final and intermediate sales and the incentive to cheat at a high rate. The need to engage in a one-time price inflation is a drawback of the VAT and sales taxes. Any tax reform may be unwelcome to groups who have benefitted by the previous tax system's favoritism. But one of the most serious reservations many people have about these tax revisions is their potential for redistribution of the tax burden, often in ways that are not desirable or even easily predictable.

The consequences of the fundamental tax revisions for redistribution of the tax burden are more far-reaching and complex than perhaps any other proposals in history. These distributional consequences, which are important in the aggregate, and can be dramatic for any particular individual, are extremely difficult to trace because they arise from several different sources. The one most commonly stressed in the popular debate is the flattening of the rate structure. Indeed, perhaps the most widely discussed proposal, which has been introduced by Representative Armey and Senator Shelby, is simply referred to as the flat tax. Popular discussions of these taxes do not seem to recognize

that the flat tax has other, perhaps equally important, dimensions—primarily that it is a shift from an income tax to a consumption tax. Even harder to recognize is that, in trying to avoid the serious problems associated with a major change in the point of collection arising with a sales tax or VAT, the flat tax has the potential to impose a confiscatory wealth tax on certain asset holders. Finally, there are asset price effects that can arise from disequilibrium in markets due to the reallocation of capital as tax burdens are made more uniform. Indeed, housing industry associations, concerned about a possible decline in prices of owner-occupied housing as loss of tax favoritism depresses demand in the housing market, have been among the critics of some of these tax reform proposals.

Current tools of distributional analysis are not adequate to the task. We do not possess the ability, in our concept of tax burden distribution or in the data needed to implement a proper concept, to outline with much precision what the distributional impacts will be. Rather, they can only be defined in general terms, and they arise from some fundamental effects of tax reform proposals. First, most of the tax reform proposals propose a flatter rate and a broader base, in which itemized deductions and a number of special tax provisions will be eliminated. In general, this flatter rate tends to impose lower effective rates at the higher end of the income scale and, other things being equal, favors those with high incomes. In addition, the overall tax burden on capital tends to be reduced, even were the base maintained as an income tax base, because of the elimination of double taxation of capital income in some proposals (the flat tax) or lower rates (the USA tax).

This Article addresses the distributional effects by isolating various parts of tax reform, in order to put together as complete a picture as possible of the distributional consequences. After explaining how the proposals relate to each other, the first step is to consider the combination of rate-flattening, base-broadening, and corporate tax integration contained in the flat tax proposal, without considering the full ramifications of the consumption tax. The next section looks at the consequences of the shift to a consumption base. Remaining sections briefly discuss adjustment costs, behavioral responses, and transition relief.

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2. Some of the material in this paper, particularly the parts describing the proposals and how they work and explaining the burden of a consumption tax relative to an income tax, are taken from Jane G. Gravelle, *The Flat Tax and Other Proposals:*
I. A DESCRIPTION OF THE PROPOSALS

The proposals, beginning with those that differ most from the current income tax, include the retail sales tax, the value-added tax, the USA tax, the flat tax, and income tax reform.

1. Retail sales taxes.—Retail sales taxes, now commonly used as revenue sources by the States, would impose a tax on products at the final stage of consumption. Senator Lugar has proposed a national sales tax, as have Representatives Tauzin and Shaefer.

2. Value-added tax.—Value-added tax (VAT), in theory, is the same as the sales tax, except that it is collected at each stage of production. It is termed a value-added tax because the tax base for any given firm is receipts minus purchases from other businesses, or value added. Two forms of VAT are commonly discussed: The European style credit-invoice VAT, where firms pay the tax and take a credit for tax on purchases, and a subtraction-method VAT (also sometimes referred to as a business transfer tax), where the cost of purchases from other businesses is deducted from the base before applying the tax. This latter form of VAT has been proposed by Representative Gibbons; such a VAT was also proposed in the previous Congress by Senators Boren and Danforth.

3. USA tax.—Also under discussion is the proposal of Senators Nunn, Domenici, and Kerrey for a combined direct consumption tax (with graduated rates) on individuals and a VAT on firms, called the USA tax (for unlimited savings allowance).\footnote{S. 722, 104th Cong., 1st Sess. (1995).} The direct consumption tax imposes the tax on income used by individuals for consumption purposes, rather than on the products. The USA tax is modified in a number of ways, however, through a series of transition rules that allow firms and individuals to recover the basis of existing assets in some cases, and by other rules that cause the proposal to differ substantially from a pure consumption tax. The USA tax substitutes for both the income tax and the employer’s share of the payroll tax.

was also advanced by former presidential contender Steve Forbes. The flat tax would be imposed on wage income of individuals and in the form of a modified VAT on firms, where wages would be deducted from the base. Thus, the firm tax would be imposed on business receipts minus purchases, including capital and intermediate goods, and wages paid. The basic idea for this type of tax was developed by Robert Hall and Alvin Rabushka, so the tax is sometimes referred to as the Hall-Rabushka tax. There is an exemption from the wage portion, which results in a progressive tax (effective tax rates rise with income).

5. Tax reform.—Finally, Representative Gephardt has proposed a significant revision of the current income tax, through broadening the base and lowering the rates, while maintaining graduated rates.

II. THE TAX BASE

Taxes can be imposed on different bases—in particular, on income, on consumption, or on wages. Taxes may also be flat or graduated. They may be imposed either on products (to be paid by firms), on firms, or on individuals. All these aspects of a tax revision may have some implications for who bears the burden of the tax (for example, via wage income, assets, or capital income) and therefore the distribution of tax changes.

In some cases the nature of the tax being proposed is not transparent, and in all cases the way in which different types of taxes shift the tax burden may not be clear.

The retail sales tax and VAT proposals, as well as the USA tax, are referred to as consumption taxes and have been advanced as consumption taxes by their proponents. However, the flat tax (which is often perceived as an income tax) is also a consumption tax. And the USA tax is not a pure consumption tax because of a series of special exceptions and transition rules.

The relationship between a wage tax and an income tax is reasonably straightforward: Since income consists of wage income and capital income, an income tax can be transformed into a wage tax merely by exempting capital income. The relationship of a consumption tax—which has to do with uses of income rather than sources of income—to these tax bases is more difficult to see. For example, a

consumption tax can also be described as a tax on wages plus a tax on old capital. Even if all income were consumed, so that the aggregate tax bases were identical, there would still be a difference in tax burden between an income and a consumption tax on particular individuals. Similarly, even if total consumption equaled total wages, the tax burden imposed through a consumption tax would be greatly different from that imposed through a wage tax.

A sales tax on consumption goods (that excludes purchases made by businesses) is a tax that is clearly imposed on the expenditure of income (from any source) on consumption. Purchases of capital goods, such as machinery and buildings, are not taxed.

A VAT performs the same function as a sales tax but collects the tax in pieces. Under a European-style VAT, the retailer pays tax on gross sales just as he would under a sales tax, but gets a credit for the tax associated with purchases from his suppliers. The supplier in turn pays a tax on his gross sales, again receiving a credit for his supplies. The supplier’s suppliers, in turn, pay a tax, so that essentially the entire cost of the good is subject to tax. When all the bits of tax paid throughout the entire chain of production are added up, they are the same as a retail sales tax. All firms get a credit for the tax on capital purchases as well.

A subtraction-method VAT is the same as a credit-method VAT, except that rather than paying the tax and getting a credit for intermediate purchases on each purchase invoice, intermediate purchases are subtracted from the base before the tax is imposed.6

The USA tax includes a VAT at the firm level, and it also imposes a direct tax on consumption at the individual level by taxing all income, but deducting savings from the base. The flat tax imposes a tax on wages for individuals, and a VAT with wages deductible for firms.

The relationship between income, wage, and consumption taxes can be seen with a couple of simple equalities in the economy, which can be used to demonstrate the nature of these taxes. First, equate the income and expenditure sides of the economy as follows:

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6. The principal differences between the two methods is that the credit method can be easily used to differentiate the tax rates across different types of goods and also may contribute to better compliance since firms report the purchases that generate credits. The subtraction method is easier for firms to comply with, especially if an income tax already exists.
One can now see why the flat tax is a consumption tax. In the aggregate, it taxes wages (to individuals) and it taxes capital income minus investment (or savings)\(^7\) through its modified VAT on firms.\(^8\) Also, one can see that the consumption tax base is smaller than the income base (typically about ninety percent) and that the wage tax base is smaller than both if capital income is larger than investment (typically wages are about seventy-five percent of income).

It should be noted that this splitting and collecting of the tax in pieces causes the tax not to look like a consumption tax to any particular taxpayer. To the individual who has passive investments in stocks and bonds, the flat tax looks like a tax on wages, and to firms it looks more like a tax on income than a VAT, because wages are deducted. Nevertheless, if firms act rationally in making their investment decisions,

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7. In this discussion, we use savings and investment interchangeably. In an open economy, national savings can differ from domestic investment, but this point is not important to the explanation of the consumption tax base. Note also that we consider only the major features of the flat tax; for example, fringe benefits other than pensions are taxed at the firm level, rather than the individual level, so that some portion of compensation is actually taxed to firms.

8. The modified VAT is gross receipts minus wages minus purchases, including capital goods investments, which is capital income minus savings.
the equivalent of consumption taxation will be accomplished for each individual if there were only equity claims to capital.9

In the actual implementation of the Armey-Shelby flat tax proposal, part of labor compensation is taxed to the firm: Non-pension fringe benefits (primarily health benefits) and the employer’s share of the payroll tax, which is now currently deducted.

The USA tax is slightly more complicated, because it imposes two consumption-based taxes. The corporate tax is replaced by an eleven percent VAT, and the individual income tax is replaced by a direct consumption tax. Thus, there is actually a double consumption tax on corporate goods. This double tax is partly offset at the corporate level by allowing a credit against the employer’s share of payroll taxes (now set at 7.65 percent for most employees), so that the corporate VAT is really like a 3.35 percent VAT and a 7.65 percent modified VAT similar to the flat tax approach (imposed on the return to capital minus investment). Alternatively, one could say that there is an eleven percent VAT for corporate production and a 7.65 percent wage tax imposed on noncorporate business, in addition to the direct consumption tax imposed at the individual level. Either way, some differential will be introduced between consumption goods produced by the corporate and the noncorporate sector, but it will be smaller than eleven percent.

Aside from this issue, however, the USA tax actually has a smaller base than a consumption tax base because it allows the value of assets existing at the time the tax is imposed to be deducted from the tax base when converted into consumption. That makes the base fall below the consumption tax base. That effect shifts the tax burden in important ways, as described subsequently.

Before turning to that issue, however, it may be useful to explain how the current income tax can be transformed into the various types of taxes.

III. LINKS BETWEEN THE TAX BASES

It may also be helpful to identify exactly how it is that a tax becomes a consumption tax, and how that condition can be distinguished from the rate structure or the point of imposition, or even general reforms of the income tax base. One can link the tax bases moving from an income tax base to a sales tax with the following illustration, which shows the

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9. As explained later, this conclusion must be modified if there is debt and individuals do not hold equal shares of equity and debt claims, since the burden on debt is shifted to equity when there is no price accommodation to the tax change.
progression from the current income tax to the flat tax, the VAT, and the retail sales tax.

1. From the current income tax to a more broad-based tax.—If we introduced further reforms in the tax base (eliminating most itemized deductions, and so forth), we would have a broad-based income tax. The Gephardt proposal contains revisions along these lines.

2. From the corporate and individual income tax to a single-level income tax.—If we took the current income tax and eliminated taxation of interest, dividends, and capital gains at the individual level, while at the same time disallowing the deductibility of interest, we would have a proposal for corporate tax integration similar to the comprehensive business income tax (CBIT), which was discussed in a Treasury study in 1992. Such a tax would be a single-level income tax, with capital income taxed at the firm level and wage income at the individual level. Graduated rates and exemptions would still be applied to the wage base; capital income could be taxed at the top individual rate or at some other rate.

3. From a single-level income tax to a flat income tax.—If we imposed flat rates, allowing only a flat exemption for individual returns, we would have a flat income tax, with an exemption.

4. From the flat income tax to the flat (consumption) tax.—If we now eliminated depreciation and deductions for inventories currently held when sold, but allowed the deduction of acquisitions of capital assets and purchase of inventories, we would transform the flat income tax into a flat (consumption) tax like the current proposed flat tax.

5. From the flat tax to the VAT.—If we eliminated the tax on wages at the individual level and added wages to the business tax base, we would have a subtraction method VAT. (That would, of course, require sacrificing the individual exemption.)

6. From the VAT to the retail sales tax.—If we eliminated the tax on all firms producing intermediate goods and simply imposed it at the final point of retail sale, without a deduction for purchases, we would have a retail sales tax on consumption.

Note that this taxonomy does not include all potential taxes. If we skipped the firm-level tax altogether in the flat tax proposal, we would have a tax on wages. If we taxed capital income at the individual level

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(which would include taxing shareholders on their share of corporate earnings), we would have one level of tax at the individual level. If we then allowed the inclusion of sales of assets and loans and the deduction of purchases of assets and repayment of loans, we would have a direct consumption tax.

The USA tax combines a VAT on firms with a direct consumption tax on individuals, which is substituted for the income tax and part of the payroll tax. It thus skips the corporate integration step, thereby imposing a potential double tax on consumption—once at the individual level and once at the firm level. However, it offsets the taxes on old capital at both levels by allowing tax-free recovery of capital, moving in the direction of a wage tax.

To some extent, the choices of tax base, flat or graduated rate, and point of collection are independent. There is an exception: Indirect taxes like the VAT and sales taxes cannot incorporate graduated rates. Aside from that exception, however, individual taxes or firm-level taxes can be imposed on any of the bases.

To assess the distributional effects of these tax revisions, we consider the taxes in stages. The following section examines the distributional effects that arise from the rate and base changes, assuming the tax is still on an income base, that is, it largely encompasses steps (1) through (3).11

The next section examines how the movement to a consumption tax (step 4) is likely to affect the results, and in turn how the movement to a VAT or retail sales tax would likely alter the burden distribution. Other sections consider some of the potential responses that arise from the evening-out of tax rates on different types of capital and transition rules.

IV. DISTRIBUTIONAL EFFECTS OF A FLAT RATE, BROAD-BASED INCOME TAX

The Treasury Department's Office of Tax Analysis12 provided some analysis of the distribution across income levels of the Armey-Shelby flat tax proposal. This proposal would impose a tax rate of seventeen percent on wages and pension distributions at the individual level, allowing a standard deduction ($10,700 for single filers, $21,400 for

11. No data are available for the USA tax, which has graduated rates and is designed to be distributionally neutral, or for the Gephardt tax, which also would be planned to maintain current progressivity.

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joint filers, and $14,000 for head-of-household filers) and additional personal exemptions of $5,000 for each dependent. There would also be a cash flow tax on businesses, levied on gross receipts less purchases of intermediate and capital goods and wages (including pension contributions). Non-pension fringe benefits (such as health insurance) and employer contributions to social security would not be deductible. As noted above, this approach is like a VAT with the wage portion (and pension distributions) split off and taxed to individuals. One can also think of the business tax in two parts: A tax on employee compensation in the form of fringe benefits and payroll taxes, and a tax on cash flow that is like a tax on business income, except that cash flow accounting is used and interest is neither taxed nor deducted.

Treasury’s analysis assigned the burden of the firm-level tax (excluding the compensation portion) as if it were an income tax rather than a consumption tax, allocating it to capital income in general. Thus, their analysis shows us how the features of rate-flattening, base-broadening, and corporate tax integration combine to shift the tax burden. Of course, because the flat tax is actually imposed on a consumption base, the capital income tax rate is lower than the statutory rate, by at least thirty percent. The Treasury found the Armey-Shelby plan to yield inadequate revenues at the proposed levels of wage exemptions and rates. Thus, they prepared two simulations: One that raised the rate to 20.8 percent to be revenue neutral, and a second that maintained the seventeen percent rate and reduced the deductions and exclusions. In this latter calculation, the standard deduction is reduced to $10,200 (joint) and $5,100 (single), and dependent exemptions are reduced to $2,400. These two alternatives illustrate how the trade-off between flatter rates and larger exemptions works. The Treasury study also provides two different types of distributions: One by dollar levels of income, and one by population shares. The former provides more

13. The base of the income tax is \( RK \), where \( R \) is the rate of return and \( K \) is the capital stock. Consumption minus wages is \( (R-g)K \), where \( g \) is the rate of growth in the capital stock (\( gK \) is savings). Assuming that the overall capital income tax is 30%, but that owner-occupied housing, which accounts for about 30% of the stock, is taxed at a zero rate, the overall return on business capital is 8%, assuming a 5% after-tax real return. If the growth rate is 2.5%, then savings is slightly over 30% of the return. See Jane G. Gravelle, The Economic Effects of Taxing Capital Income 294, 300 (1994), for data on tax rates and capital shares. Returns on government securities are also not taxed.
disaggregation at the lower income levels, while the latter provides more
detail at higher income levels. The income concept adopted in the
following tables is a very broad one, corresponding closely to an
economist's concept of income; it is much broader than adjusted gross
income. 14

Table 1 (following page) shows the Treasury data, rearranged in the
form of effective tax rates and distributed by income levels, for current
and proposed law. Both totals, and income taxes, are reported separate­
ly. 15 The second column shows, for each income class listed in the
first column, other taxes (primarily payroll taxes). These taxes are
roughly proportional through much of the income range, falling at the
top levels. Current law income taxes are, by contrast, quite progressive,
with negative tax rates at the lower end. Added together, these taxes
result in a total tax structure that is progressive, although only mildly so
in the higher brackets.

Table 2 (following Table 1) provides detail by population share,
showing that the same pattern persists up to the very highest income
levels. While the new flat tax is still progressive in general, it is much
less so than the current income tax system. Tax rates at the lower
income levels become positive rather than negative, and as one might
expect, effective tax rates begin to flatten out towards the high end and
actually fall at the highest income levels. Total taxes, formerly
progressive, are now characterized by a slight hump: Highest in the
middle, with lower rates for lower- and higher-income individuals.
Lower rates at the low end reflect the results of exemptions. Lower
rates at the high end reflect two features of the tax that cause rates to
decline: The inclusion of employer payroll taxes in the business tax,
which has no exemption and tends to decline relative to income because
of the ceiling on earnings subject to the payroll tax, and the exclusion
of a lower effective rate on capital income.

14. Family income is combined; unreported income, transfer payments, fringe
benefits, accruals of capital income not currently reported or excluded (including capital
gains), are added back; and adjustments for inflation and accelerated depreciation are
made.

15. Current law estate and gift taxes are excluded from the table, hence the small
overall net reduction in the table for this revenue-neutral plan.
TABLE 1: EFFECTIVE TAX RATES, REPLACING INCOME AND ESTATE TAXES WITH A 20.8% FLAT TAX, BY INCOME CLASS

<table>
<thead>
<tr>
<th>Income Class ($ thousands)</th>
<th>Current Law Other Taxes (%)</th>
<th>Current Law Income Taxes (%)</th>
<th>Current Law Total Taxes (%)</th>
<th>New Law Flat Taxes (%)</th>
<th>New Law Total Taxes (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 - 10</td>
<td>10.2</td>
<td>-2.1</td>
<td>8.1</td>
<td>3.5</td>
<td>13.8</td>
</tr>
<tr>
<td>10 - 20</td>
<td>10.2</td>
<td>-1.4</td>
<td>8.8</td>
<td>4.8</td>
<td>15.0</td>
</tr>
<tr>
<td>20 - 30</td>
<td>10.4</td>
<td>3.0</td>
<td>13.4</td>
<td>7.2</td>
<td>17.6</td>
</tr>
<tr>
<td>30 - 50</td>
<td>10.1</td>
<td>7.2</td>
<td>17.3</td>
<td>9.5</td>
<td>19.6</td>
</tr>
<tr>
<td>50 - 75</td>
<td>10.6</td>
<td>9.2</td>
<td>19.8</td>
<td>11.1</td>
<td>21.8</td>
</tr>
<tr>
<td>75 - 100</td>
<td>10.7</td>
<td>10.5</td>
<td>21.2</td>
<td>12.7</td>
<td>23.4</td>
</tr>
<tr>
<td>100 - 200</td>
<td>8.8</td>
<td>13.1</td>
<td>21.9</td>
<td>14.2</td>
<td>23.0</td>
</tr>
<tr>
<td>200 +</td>
<td>3.0</td>
<td>20.7</td>
<td>23.6</td>
<td>14.0</td>
<td>17.0</td>
</tr>
<tr>
<td>Total</td>
<td>9.4</td>
<td>11.4</td>
<td>20.8</td>
<td>11.8</td>
<td>21.2</td>
</tr>
</tbody>
</table>

SOURCE: DERIVED FROM TREASURY DEPARTMENT (1996) DATA.
<table>
<thead>
<tr>
<th>Income Quintile</th>
<th>Current Law Other Taxes (%)</th>
<th>Current Law Income Taxes (%)</th>
<th>Current Law Total Taxes (%)</th>
<th>New Law Flat Taxes (%)</th>
<th>New Law Total Taxes (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>First</td>
<td>10.1</td>
<td>-2.4</td>
<td>7.6</td>
<td>3.7</td>
<td>13.8</td>
</tr>
<tr>
<td>Second</td>
<td>10.5</td>
<td>2.0</td>
<td>12.5</td>
<td>6.7</td>
<td>17.3</td>
</tr>
<tr>
<td>Third</td>
<td>10.4</td>
<td>7.0</td>
<td>17.5</td>
<td>9.4</td>
<td>19.9</td>
</tr>
<tr>
<td>Fourth</td>
<td>10.4</td>
<td>9.3</td>
<td>19.7</td>
<td>11.2</td>
<td>21.6</td>
</tr>
<tr>
<td>Highest</td>
<td>6.6</td>
<td>15.5</td>
<td>22.1</td>
<td>13.9</td>
<td>20.5</td>
</tr>
<tr>
<td>Total</td>
<td>9.4</td>
<td>11.4</td>
<td>20.8</td>
<td>11.8</td>
<td>19.8</td>
</tr>
<tr>
<td>Top 10%</td>
<td>5.8</td>
<td>17.3</td>
<td>23.1</td>
<td>14.1</td>
<td>19.8</td>
</tr>
<tr>
<td>Top 5%</td>
<td>4.0</td>
<td>19.1</td>
<td>23.1</td>
<td>14.2</td>
<td>18.2</td>
</tr>
<tr>
<td>Top 1%</td>
<td>2.1</td>
<td>22.4</td>
<td>24.1</td>
<td>13.6</td>
<td>15.6</td>
</tr>
</tbody>
</table>

Source: Derived from Treasury Department (1996) data. Quintiles begin at $15,604, Second; $29,717, Third; $48,660, Fourth; $79,056, Highest; $108,704, Top 10%; $145,412, Top 5%; and $349,438, Top 1%.
Tables 3 and 4 (following pages) show the results for the lower tax rate and lower exemption. The very lowest income levels would still pay about the same tax since they tend to still have most of their income excluded, and the lower rate makes up for most of the lost exemptions. Higher taxes tend to be imposed at the more moderate income levels, where loss of exemptions and deductions are more important than the lower rate. Somewhere between $75,000 and $100,000, or for the top twenty percent of the population, the lower rate becomes more important, and tax burdens fall. The shape of the overall tax burden is twisted further in favor of lower rates at the high levels. The top one percent of the population pays at lower rates than virtually any group.

As the exemptions become smaller and the tax becomes lower, the burden shifts away from higher-income individuals, and one can see that a purely flat tax with no exemptions would be a regressive tax, and therefore a regressive Federal total tax, since the other remaining taxes are regressive. The tax could be made more progressive, on the other hand, by increasing exemptions and raising rates. Choosing a single rate does, however, constrain the shape of the distribution.

How does one interpret these changes in distribution? It has been common for many years for government agencies and press reports to express these changes as percentage changes in tax liability. This approach is misleading for understanding distributional implications, particularly when applied to taxes that are currently imposed at very low rates. A fall in tax of one dollar is a 100 percent reduction when the initial tax is only one dollar, but a change in tax liability of one dollar is of little import in considering distribution. Thus, a proportional reduction in taxes, from a system that is already progressive, would provide a more uneven distribution of disposable income.

The more revealing measure for determining how the income distribution has changed is the percentage change in after-tax income, and this measure is now commonly reported along with percentage change in tax liability by the Treasury Department. If all individuals have the same percentage change in disposable income, then the shares of available income have not changed and relative distribution has not changed.

Tables 5 and 6 (following Table 4) report both of these measures for each tax rate: Table 5 by income class, and Table 6 by population share. While there are dramatic changes in tax liability, a more reasonable
## Table 3: Effective Tax Rates, Replacing Income and Estate Taxes With a 17% Flat Tax, by Income Class

<table>
<thead>
<tr>
<th>Income Class ($ thousands)</th>
<th>Current Law Income Taxes (%)</th>
<th>Other Taxes (%)</th>
<th>Current Law Total Taxes (%)</th>
<th>New Law Flat Taxes (%)</th>
<th>New Law Total Taxes (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 - 10</td>
<td>10.2</td>
<td>-2.1</td>
<td>8.1</td>
<td>3.8</td>
<td>13.9</td>
</tr>
<tr>
<td>10 - 20</td>
<td>10.2</td>
<td>-1.4</td>
<td>8.8</td>
<td>6.2</td>
<td>16.5</td>
</tr>
<tr>
<td>20 - 30</td>
<td>10.4</td>
<td>3.0</td>
<td>13.4</td>
<td>8.8</td>
<td>19.3</td>
</tr>
<tr>
<td>30 - 50</td>
<td>10.1</td>
<td>7.2</td>
<td>17.3</td>
<td>11.1</td>
<td>21.5</td>
</tr>
<tr>
<td>50 - 75</td>
<td>10.6</td>
<td>9.2</td>
<td>19.8</td>
<td>12.3</td>
<td>23.0</td>
</tr>
<tr>
<td>75 - 100</td>
<td>10.7</td>
<td>10.5</td>
<td>21.2</td>
<td>13.1</td>
<td>23.4</td>
</tr>
<tr>
<td>100 - 200</td>
<td>8.8</td>
<td>13.1</td>
<td>21.9</td>
<td>13.5</td>
<td>21.9</td>
</tr>
<tr>
<td>200 +</td>
<td>3.0</td>
<td>20.7</td>
<td>23.6</td>
<td>11.9</td>
<td>14.9</td>
</tr>
<tr>
<td>Total</td>
<td>9.4</td>
<td>11.4</td>
<td>20.8</td>
<td>11.8</td>
<td>21.2</td>
</tr>
</tbody>
</table>

Source: Derived from Treasury Department (1996) data.
Table 4: Effective Tax Rates, Replacing Income and Estate Taxes with a 17% Flat Tax, by Income Quintile

<table>
<thead>
<tr>
<th>Income Quintile</th>
<th>Current Law Income Taxes (%)</th>
<th>Other Taxes (%)</th>
<th>Current Law Total Taxes (%)</th>
<th>New Law Flat Taxes (%)</th>
<th>New Law Total Taxes (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>First</td>
<td>10.1</td>
<td>-2.4</td>
<td>7.6</td>
<td>4.6</td>
<td>14.7</td>
</tr>
<tr>
<td>Second</td>
<td>10.5</td>
<td>2.0</td>
<td>12.5</td>
<td>8.3</td>
<td>18.7</td>
</tr>
<tr>
<td>Third</td>
<td>10.4</td>
<td>7.0</td>
<td>17.5</td>
<td>10.9</td>
<td>21.3</td>
</tr>
<tr>
<td>Fourth</td>
<td>10.4</td>
<td>9.3</td>
<td>19.7</td>
<td>12.3</td>
<td>23.1</td>
</tr>
<tr>
<td>Highest</td>
<td>6.6</td>
<td>15.5</td>
<td>22.1</td>
<td>12.7</td>
<td>19.9</td>
</tr>
<tr>
<td>Total</td>
<td>9.4</td>
<td>11.4</td>
<td>20.8</td>
<td>11.8</td>
<td>19.8</td>
</tr>
<tr>
<td>Top 10%</td>
<td>5.8</td>
<td>17.3</td>
<td>23.1</td>
<td>12.6</td>
<td>18.3</td>
</tr>
<tr>
<td>Top 5%</td>
<td>4.0</td>
<td>19.1</td>
<td>23.1</td>
<td>12.3</td>
<td>16.3</td>
</tr>
<tr>
<td>Top 1%</td>
<td>2.1</td>
<td>22.4</td>
<td>24.1</td>
<td>11.3</td>
<td>13.4</td>
</tr>
</tbody>
</table>

Source: Derived from Treasury Department (1996) data. Quintiles begin at $15,604, second; $29,717, third; $48,660, fourth; $79,056, highest; $108,704, top 10%; $145,412, top 5%; and $349,438, top 1%.
**Table 5: Percentage Changes in Taxes and Income, Replacing Income and Estate Taxes with a Flat Tax, by Income Class**

<table>
<thead>
<tr>
<th>Income Class ($ thousands)</th>
<th>Percentage Change in Tax Liability (20.8% rate)</th>
<th>Percentage Change in After-tax Income (17% rate)</th>
<th>Percentage Change in Tax Liability (17% rate)</th>
<th>Percentage Change in After-tax Income (17% rate)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 - 10</td>
<td>70.7</td>
<td>-6.2</td>
<td>73.0</td>
<td>-6.4</td>
</tr>
<tr>
<td>10 - 20</td>
<td>70.4</td>
<td>-6.8</td>
<td>86.3</td>
<td>-8.4</td>
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<tr>
<td>20 - 30</td>
<td>31.7</td>
<td>-4.9</td>
<td>43.9</td>
<td>-6.8</td>
</tr>
<tr>
<td>30 - 50</td>
<td>13.4</td>
<td>-2.8</td>
<td>22.0</td>
<td>-4.7</td>
</tr>
<tr>
<td>50 - 75</td>
<td>9.7</td>
<td>-2.4</td>
<td>15.2</td>
<td>-3.8</td>
</tr>
<tr>
<td>75 - 100</td>
<td>10.4</td>
<td>-2.8</td>
<td>12.1</td>
<td>-3.2</td>
</tr>
<tr>
<td>100 - 200</td>
<td>5.0</td>
<td>-1.4</td>
<td>1.6</td>
<td>-0.4</td>
</tr>
<tr>
<td>200 +</td>
<td>-28.1</td>
<td>8.7</td>
<td>-37.4</td>
<td>11.5</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>1.9</td>
<td>-0.5</td>
<td>20.8</td>
<td>11.8</td>
</tr>
</tbody>
</table>

*Source: Treasury Department (1996).*
TABLE 6: PERCENTAGE CHANGES IN TAXES AND INCOME, REPLACING INCOME AND ESTATE TAXES WITH A FLAT TAX, BY INCOME CLASS

<table>
<thead>
<tr>
<th>Income Quintile</th>
<th>Percentage Change in Tax Liability (20.8% rate)</th>
<th>Percentage Change in After-tax Income (20.8% rate)</th>
<th>Percentage Change in Tax Liability (17% rate)</th>
<th>Percentage Change in After-tax Income (17% rate)</th>
</tr>
</thead>
<tbody>
<tr>
<td>First</td>
<td>80.9</td>
<td>-6.7</td>
<td>92.0</td>
<td>-7.6</td>
</tr>
<tr>
<td>Second</td>
<td>37.7</td>
<td>-5.4</td>
<td>50.7</td>
<td>-7.2</td>
</tr>
<tr>
<td>Third</td>
<td>13.7</td>
<td>-2.9</td>
<td>22.3</td>
<td>-4.7</td>
</tr>
<tr>
<td>Fourth</td>
<td>9.8</td>
<td>-2.4</td>
<td>15.1</td>
<td>-3.8</td>
</tr>
<tr>
<td>Highest</td>
<td>-7.4</td>
<td>2.1</td>
<td>-12.0</td>
<td>3.5</td>
</tr>
<tr>
<td>Total</td>
<td>1.9</td>
<td>-0.5</td>
<td>1.9</td>
<td>-0.5</td>
</tr>
<tr>
<td>Top 10 %</td>
<td>-14.4</td>
<td>4.2</td>
<td>-20.7</td>
<td>6.2</td>
</tr>
<tr>
<td>Top 5 %</td>
<td>-21.3</td>
<td>6.4</td>
<td>-29.5</td>
<td>8.9</td>
</tr>
<tr>
<td>Top 1%</td>
<td>-36.1</td>
<td>11.7</td>
<td>-45.2</td>
<td>14.7</td>
</tr>
</tbody>
</table>

assessment of distribution effects can be seen by examining the percentage changes in after-tax income, where it is apparent that all of these proposals redistribute income from the poor to the rich. The largest reductions in after-tax income occur in the lower income classes, although which classes have the largest effects depends on the choice of tax rate and exclusion.

These changes would be characterized in some cases as dramatic. Even with the higher rate and larger exemptions, the top one percent of the population (Table 6) has its income increased by twelve percent; with lower tax rates, the increase is fifteen percent.

V. THE EFFECTS OF SHIFTING TO A CONSUMPTION BASE: CONCEPTUAL ISSUES

A much more challenging issue is posed when one considers the shift from an income-tax base to a consumption-tax base. Although the aggregate tax base may look very similar to that of an income-tax base, the burden of the tax is quite different.

Before considering the quantitative issues, it is important to establish an understanding of the fundamental shifting and burden measures of a consumption tax. To simplify, first consider a direct consumption tax, such as the individual USA tax.

A. A Direct Consumption Tax

Essentially, a consumption tax is a tax on wages plus old capital, including any earnings present or future by the holder of old capital from the time the tax is imposed until the asset is sold. One can see this effect by disaggregating the consumption tax base, whose aggregate relationship obscures another activity that is going on in the economy—the sale and purchase of assets. Given a consumption tax imposed in the form of, say, a sales tax on consumer goods, we could redefine the consumption tax base as:

\[
\text{Consumption} = \text{Wages} + \text{Old Asset Sales} - \text{Old Asset Purchases} + \text{Capital Income} - \text{Investment}
\]

This relationship can be used to show why a consumption tax is a tax on wages plus old capital. Consider a highly simplified illustration of an economy with only two groups of people, the old and the young. In a given period, when the consumption tax is imposed, the old people own all of the capital initially, which they then use for consumption by selling the capital to the young (they also consume the capital income).
Thus, their tax base is old asset sales plus capital income from capital. The young have only wages, but they save, buying the existing capital from the old, and, if the economy is growing, also spending some of their wages on newly manufactured capital goods. They pay a tax on their wages which are used for consumption, but not on their wages which are used for asset purchases. Thus, their part of the tax base is wages minus old asset purchases, minus investments in newly manufactured assets.

Hence, splitting up the above tax base into two parts:

1. Consumption of the Old = Old Asset Sales + Capital Income
2. Consumption of the Young = Wages - Old Asset Purchases - Investment

The consumption base can now be seen to include the existing capital stock. Of course, at the same time, the wage base of the young is reduced by purchases of that existing capital stock in addition to new investment. But the young essentially only pay a tax on wages. They defer the tax on the part of those wages that is not immediately consumed, until it is consumed. For example, in this simple model, when the young become old the next year, their capital assets will be sold and taxed along with any interest earned, when it is turned into consumption. The present value of this tax is the same as if the wages were taxed when earned, so that the effect is the same as wage taxation for the young, except that part of it is collected (with interest) in the following year. Another way of thinking about this is that young individuals pay a tax on their wages, but then they receive a tax benefit on their savings (just as in the case of an IRA). This tax is repaid with interest the next year. In present-value terms, they are indifferent between paying the full tax on wages now and paying part of the tax now and deferring part and paying it with interest in the next period.16

This example also illustrates how the tax burden is shifted in moving from an income tax to a consumption tax. Under the income tax, the tax base for the old was much smaller, because only the return to capital (interest, dividends, etc.) was taxed, and not the return of capital. Under a consumption tax both of these are taxed. Moreover, the tax rate will be slightly higher, because the overall tax base is smaller.

16. For a mathematical proof, see Gravelle, supra note 2.
The young have their taxes lowered, however. They are effectively exempted from any tax on their earnings from savings, and this exemption is large enough to offset the slightly higher tax rate imposed.

The timing of the exemption of new capital from the tax is crucial in achieving a smooth flow of tax revenue. If a tax were directly imposed on wages and old capital, the initial year’s tax base would be enormous, since the capital stock is three to four times the size of the economy, and thereafter would be much smaller. To offset this effect, the purchases of this capital by the young are deducted from wages. That is, part of the tax on wages is deferred until the capital is consumed, producing a much smaller base, leaving a base that is only slightly smaller than the wage base, and maintaining a larger base in the future.

Of course, the actual economy is much more complicated, since it has many generations and only a portion of the capital stock is sold each year. Other things equal, the young tend to pay a relatively smaller tax but the burden increases with each generation, until the heaviest tax is borne by the old. The eventual effect, however, is nevertheless the same: The consumption tax base is old capital and wages, and consumption taxes do not impose a tax on the rate of return to new investment.

This illustration not only simplifies the generational comparisons, but also simplifies other matters. Some individuals who might be described as “lifetime poor” do very little saving; in their case the income tax, consumption tax, and wage base are virtually identical. How the burden of the tax shifts depends on how the rates and exemption levels change, and whether transfer payments are effectively subject to tax. Some individuals who are extremely wealthy, on the other hand, may pass on wealth from one generation to another without ever consuming it. Even though the consumption tax burden would eventually apply when consumption takes place, such an event may be unlikely to occur.

These illustrations demonstrate why the consumption tax is referred to by economists as a tax on wages plus old capital. They also suggest that the concern about transition rules to provide relief to old capital are inconsistent with the fundamental nature of a consumption tax. A consumption tax with an exemption of tax on old capital moves the tax towards a wage tax, and it would be much easier to impose the tax in that way, as a wage tax. When the USA tax, for example, allows individuals to recoup basis tax-free or firms to recoup depreciation on the existing capital stock, it is transforming the consumption tax base into something quite different—a tax whose consequences vary across the generations in ways very different from income, consumption, or wage taxes.

The illustrations made thus far are for a consumption tax imposed directly on individuals, such as the individual part of the USA tax. This
tax has two important characteristics: It applies to both financial and physical assets, and because it continues to tax wages at the individual level, it does not require any accommodation of the tax in price, as would likely be the case if the taxes were all collected from businesses, as in the case of a sales tax.

B. Indirect Consumption Taxes

Many of the tax proposals being discussed are not of that nature. The VAT and sales tax approaches impose taxes not on the individual, but on firms. And these approaches count only sales of, and investments in, real physical assets in measuring savings, and not financial assets. The Hall-Rabushka approach, as embodied in the Armey flat tax proposal, is a modified VAT which imposes a tax on wages at the individual level, and imposes the remainder of taxes on the firm. A portion of the USA tax is imposed on firms via a value-added tax. These taxes only resemble the direct consumption approach if all individuals run their own businesses and work in them, and even then, only if businesses have no debt. But most capital is held in the form of financial claims such as stocks and bonds, and most individuals work for others.

Two points are important to remember in assessing these more complicated proposals: The form of the tax can matter but the channeling of the tax through an intermediary (a firm) should not matter per se, except for a possible adjustment period.

In assessing the burden of indirect consumption taxes, it is important to distinguish between those types of proposals that are likely to require a general price accommodation and those that are not. A national sales tax, or a VAT, because it creates a wedge between the prices charged by the firms and the overall costs of production—and in particular labor costs—would tend to produce an economic contraction if no price accommodation is made, due to sticky wages and prices (that is, firms would find it hard to lower their wages to allow them to pay the tax and might begin reducing their work force instead).

If prices are allowed to rise to accommodate an indirect consumption tax levied in the form of a VAT, then the true burden of the tax is exactly as described in the previous section on direct consumption taxes (ignoring transfer payments), but is accomplished not through direct tax payments but through reduced purchasing power. Wages and asset prices do not fall, but their purchasing power with respect to consump-
tion goods declines, producing exactly the same result (in terms of real quantities of goods consumed) as in the direct consumption tax case.  

If transfer payments are not indexed, they will effectively be taxed by an indirect tax that leads to price accommodation. This shifting of the tax burden via price rises can be contrasted with the Armey flat tax proposal. In general, wage income is taxed directly in the flat tax (with the exception of fringe benefits), while the remainder of the consumption base (capital income minus net investment) is taxed at the firm level. Because wages are taxed to individuals rather than to the firm, there is no reason to accommodate the tax with a rise in price.

For individuals whose capital is solely invested in their own businesses and who have no debt, the results are exactly like a direct consumption tax. A business that is making new investments has a tax base that includes gross receipts of the firm (reflecting wage income of the owner plus profits from capital plus sales of assets) minus purchases of assets, which is a consumption tax base.

However, if the business owner has debt, there is a real difference between the flat tax and the other forms of tax, arising from the imposition of a lump sum tax on physical capital, without the resulting price accommodation, to allow the sharing of that burden with both debt and equity claims. Indeed, in this way, the flat tax can become a confiscatory tax.

An illustration may be useful, assuming a twenty percent tax to keep the math simple. Suppose an individual has a property he sells for $100,000 net of transaction costs, a loan of $90,000, and a basis of $95,000. Such a situation might occur for a recently purchased property. Under the income tax, his capital gain is $5,000, and his net proceeds after repaying the loan are $10,000, yielding $9,000 after tax. Under a direct consumption tax, he includes the $100,000 in income but deducts the $90,000 loan (the creditor includes it in income), for a tax of $2,000.

17. The indirect tax rate, if it is imposed on post-tax consumption rather than pretax resources available for consumption, as in the case of a sales tax, would be higher. (Prices of investment goods would not rise because they are exempt from the tax.) For example, if a 20% direct consumption tax is imposed, after-tax consumption will be only 80% of income after subtracting taxes and savings. A sales tax would have to be levied at a 25% rate, however, so that the consumer, when purchasing $80 dollars of goods net of tax would also have to pay a 25% tax ($20/$80) in order to spend $100 and maintain the ratio of 80 to 100. Technically, a tax levied on post-tax consumption would be at a rate equal to \( \frac{v}{1-v} \), where \( v \) is the tax rate on resources available for consumption.

18. This illustration is also presented in Jane G. Gravelle, Is Fundamental Tax Reform Possible?, NTA FORUM (Nat’l Tax Ass’n, Falls Church, VA), Spring 1996, at 1.

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and a net of $8,000. Under the VAT or sales tax, the price of the property should rise to $125,000 (the VAT rate on the net of tax price should be twenty-five percent to make it twenty percent of the tax-inclusive price). He pays $25,000 in tax and has proceeds, after repaying the loan, of $10,000. Of course, his purchasing power has now fallen, since what he can purchase now is only worth $8,000 in real terms, which is the same in terms of original prices as paying a $2,000 tax. The creditor has also lost purchasing power. But, under the flat tax, he includes the entire $100,000 in income, owes $20,000 in taxes and, after repaying the $90,000 loan, has a loss of $10,000. The twenty percent tax has become a 200 percent tax. The creditor pays nothing.

C. The Flat Tax and the Stock Market

What about corporate capital, where deductions for capital acquisition will be taken by the firm? For individuals whose equity assets are in stocks rather than physical assets, the tax does not resemble a tax on consumption. Looking just at the individual tax, it appears to be a tax on wages, which means that the young in our stylized example are actually paying as much or more than the old in income tax because they have the same tax base with a slightly higher rate. The old appear to be paying no taxes at all. Nevertheless, the tax that falls on firms must be paid by some individual—either through capital income, wage income, or asset prices.

We consider first the effect on corporate equities when there is no debt, and secondly the overall effect on financial assets when there is debt.\(^{19}\)

The effect of the Armey flat tax should be a pronounced fall in the stock market, according to economic theory. In the case where there is no debt, that fall should reflect the tax rate—if the rate is twenty percent, the stock market should fall by twenty percent.\(^{20}\) In fact, such a fall

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19. For a mathematical proof, see Gravelle, supra note 2.
20. There is one reservation about this point. Currently, because of accelerated depreciation and failure to index for inflation, the undepreciated asset balance tends to fall below market value and that feature itself would produce an asset price fall, reducing the total fall in the stock market, simply because some discounting has already taken place. In the case of direct sales of assets, this simply says that basis is smaller than market value, so that some taxable proceeds of the sale of assets already exist, and thus any additional taxable sales will be smaller than the market value of the assets.
would simply create the same true outcome in terms of real purchasing power as the case of a VAT or sales tax with price accommodation—the purchasing power of assets has fallen.

With price accommodation, the burden on old capital occurs because the same sales price of assets in nominal terms will purchase fewer goods, because the price of goods has increased. Without price accommodation, where the price of goods is fixed, the value of assets must fall.

Note that a fall in the stock market by the rate of the tax will again produce results identical to those of the direct consumption tax. The old individual will sell his asset for \((1-v)\) less, while the young individual will be able to purchase his investments at a discount. As with the direct tax, this discount must be repaid with interest when he sells the asset in the next period.

What causes the stock market to fall? The basic reason is that for a newly manufactured asset (or a new firm), the rate of return on investment is going up, because the firm's deduction of asset acquisition costs—which is equivalent to imposing no tax in present-value terms—renders the return higher. That means that the individual rate of return, or discount rate, is higher on a new investment than an existing one. Since the return from old capital in existing corporations is still subject to the tax, the only way to make the return on the existing stocks equal to the return on the new investment—and to make the individual willing to purchase it—is for the stock value to fall by the amount of the tax. For example, suppose the pretax rate of return is \(R\); if the cash flow tax rate is \(v\), then the flow of profits from ownership of an existing stock that originally represented one dollar of capital is \(R(1-v)\). But a new asset will earn a return of \(R\) because its acquisition cost can be deducted. If the value of stock falls to \((1-v)\), it will earn the same rate of return as a new investment.

To present a simple example, suppose the pretax return is ten percent and the tax rate is twenty percent. A new investment will earn a ten percent rate of return, but an existing one (where the flow of capital is subject to the tax) will earn only eight percent. Suppose a share of stock sells for $100. After tax, there is an annual return of $8. If the price of the stock fell to $80, it would now earn a return of ten percent ($8/$80), making it as attractive an investment as a new $80 investment that will earn $8, for a rate of return of ten percent. Another way to look at this is from the perspective of maximization of profits inside the firm. If the tax rate is twenty percent, then a new asset that costs one dollar to construct can be purchased for only eighty cents, because of the immediate deduction of costs. (For both old and new investment, the flow of return will be taxed.) If stock can be sold for one dollar, then
the firm can make twenty cents on the sale. Thus, at the margin, it would make sense for the firm to keep issuing stock, until the price drops to eighty cents, where selling a stock share is exactly worth the value of the investment it purchases.

This analysis suggests, therefore, that the translation of an indirect consumption tax, such as the Armey tax, into the equivalent of a direct consumption tax would be accompanied by a dramatic fall in the value of the stock market. Theoretically, this fall should occur immediately if the tax change came as a surprise; otherwise, it should begin to occur in advance of the adoption of the tax.

Of course, there is no way to be sure that this phenomenon will occur as predicted by theory; in that case, the Armey flat tax becomes a tax whose incidence, even in a fundamental way, is unknown.

The same sort of price adjustment process would occur for a VAT or a sales tax where price change was not accommodated. Because these taxes also impose an indirect tax on wages, wage rates should fall as well.

D. Debt and the Effect on the Stock Market

The effect of debt works exactly the way it would in the case of direct ownership. Part of the financial claims to assets are held in the form of debt, and these nominal claims cannot fall in value. In this case, the equity holders must bear the burden of the tax on old capital. In particular, for each original dollar of value, the asset value will fall by the full amount of the tax on all capital, even if equity provides only a fraction of the assets. For example, if the tax rate is twenty percent and equity constitutes two-thirds of the total asset value, then the value of equity assets will fall not by twenty percent, but by thirty percent. If equity constituted one-half of the value, the asset should fall by forty percent.

The consequence of this type of adjustment means that the Armey flat tax does not impose its lump sum tax on holders of debt, who pay no tax on either return of principal or interest on old capital. The burden of the debtors is, however, shifted to owners of equity. If all individuals held equal portions of debt and equity, this effect would not matter, but since there are varying portfolios, the tax would impose higher tax burdens on consumption.
<table>
<thead>
<tr>
<th>Income Class ($ thousands)</th>
<th>Wage Tax 20.8 Rate (%)</th>
<th>Fringe Benefits Tax, 20.8 Rate (%)</th>
<th>Business Cash Flow Tax, 20.8 Rate (%)</th>
<th>Wage Tax 17 Rate (%)</th>
<th>Fringe Benefits Tax, 17 Rate (%)</th>
<th>Business Cash Flow Tax, 17 Rate (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 - 10</td>
<td>1.3</td>
<td>1.8</td>
<td>0.4</td>
<td>1.8</td>
<td>1.4</td>
<td>0.3</td>
</tr>
<tr>
<td>10 - 20</td>
<td>1.9</td>
<td>1.7</td>
<td>1.2</td>
<td>3.8</td>
<td>1.4</td>
<td>0.9</td>
</tr>
<tr>
<td>20 - 30</td>
<td>3.5</td>
<td>2.2</td>
<td>1.5</td>
<td>5.8</td>
<td>1.8</td>
<td>1.2</td>
</tr>
<tr>
<td>30 - 50</td>
<td>5.4</td>
<td>2.3</td>
<td>1.8</td>
<td>7.6</td>
<td>1.9</td>
<td>1.5</td>
</tr>
<tr>
<td>50 - 75</td>
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<td>8.9</td>
<td>1.8</td>
<td>1.5</td>
</tr>
<tr>
<td>75 - 100</td>
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<td>9.8</td>
<td>1.7</td>
<td>1.5</td>
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<tr>
<td>100 - 200</td>
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<td>2.0</td>
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<td>200 +</td>
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<td>0.4</td>
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<tr>
<td>Total</td>
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<td>1.7</td>
<td>2.6</td>
<td>8.3</td>
<td>1.4</td>
<td>2.1</td>
</tr>
</tbody>
</table>

Source: Derived from Treasury Department (1996) data.
VI. MEASURING THE EFFECTS OF SHIFTING TO A CONSUMPTION BASE

We discuss this issue in two steps. The first is how the distributional tables for the flat tax would change if distributed according to consumption rather than income. This issue concerns the non-labor compensation portion of the business cash flow tax: The tax on the difference between earnings of capital and investment. The second issue is how to interpret the heterogeneity in age that is reflected within classes and across income classes, and whether a lifetime income framework is more appropriate.

A. Adjusting for Distribution by Consumption

Fortunately, the Treasury analysis disaggregates the tax into the three separate components: The individual wage tax, the firm's tax on fringe benefits and payroll tax, and the business cash flow tax. These components are shown by income class in Table 7 (preceding page).

Table 7 indicates that the business cash flow tax (columns 4 and 5), when allocated by income, is less important at the lower income levels, and more important at higher income levels.

There are reasons to believe that this allocation is concentrated too heavily in the lower income brackets, but also too heavily in the highest income brackets, while middle income brackets receive too light a share.

First, the capital income tax is allocated to all capital, physical and financial, including interest on government bonds, while the tax under the flat tax applies only to business physical assets (indirectly in the case of the stock market and corporations). Lower-income individuals, however, tend to have only a very small part of assets in this form—for personal incomes below $25,000, less than ten percent. For the highest income classes (above $100,000), housing, which is the major excluded physical asset, constituted between fifteen and thirty-four percent, leaving between sixty-seven and eighty-five percent in the taxed group.21

21. This calculation is based on numbers in Arthur B. Kennickell & Martha Starr-McCluer, Changes in Family Finances from 1989 to 1992: Evidence from the Survey of Consumer Finances, 80 FEDERAL RESERVE BULLETIN 861 (1994). It is only an approximation because while net worth is provided as a median and a mean, net worth
This effect causes too much of capital subjected to the lump-sum tax to be allocated to the lower income classes and too little to the higher income classes. To illustrate, if we assume that housing constitutes ninety percent of net assets in the lower income groups and fifteen percent of net assets in the higher income groups, constituting thirty percent overall, the effect of allocating the tax to all capital rather than business capital would be to reduce the burden in the lower income classes by eighty-five percent and raise it in the higher classes by twenty-one percent. This change in allocation would add about one percentage point to the tax rate in the top bracket, lower the bottom bracket rates by almost 0.4 percentage points, and lower the second bracket rate by one percentage point.

The second correction is needed because the overall savings rate in the economy, which affects the overall amount of tax to allocate (since the

of each type is provided only as a median for those who hold it, making the overall amount for the group (median assets multiplied by fraction holding the asset) somewhere between a mean and a median. Since only a very small fraction of the lower income groups held the asset, it was calculated as a fraction of mean assets rather than median assets. It would be a larger fraction of median assets, but, of course, the median asset of this type for all individuals would be zero. For the highest income group, the share was calculated using both median and mean. For the intermediate groups, $25,000 to $50,000 and $50,000 to $100,000, the range in share associated with housing was 34% to 90% and 34% to 70%. Of course, mean and median wealth may be larger or smaller than physical assets plus corporate stocks depending on whether or not net interest-bearing assets are positive or negative. The trend, however, seems clear—housing is a decreasing share of net assets as income rises.

These effects can be illustrated by the following simple relationships, in which we assume there is included capital (businesses assets, denoted $K$) and excluded capital, denoted $E$. There is a high and a low income class, denoted by $h$ and $l$ subscripts.

If $g$ is the growth rate of the capital stock and $R$ is the rate of return, $t$ is the tax rate, and we divided capital into taxable capital stock as $K_l$ and $K_h$, with excluded capital $E_l$ and $E_h$, allocating by total capital would result in the following burdens assigned to each class:

Low Income: $t(R-g)(K_l + E_l)(K_h + E_h + K_l + H_l)\]

High Income: $t(R-g)(K_h + E_h)(K_l + E_l + K_h + H_l)\]

This shows that the tax $t(R-g)(K_l + K_h)$ would be divided based on the aggregate holdings of capital. But the true allocation should be:

Low Income: $t(R-g_h)K_l$

High Income: $t(R-g_h)K_h$

which allows for different holdings of capital.

By substituting in these equations for the fact that overall taxed capital represents about 70% of the total capital stock, and assuming that the share that is taxed of total capital holdings is 10% in the lower group (so that total holdings are ten times taxable holdings), we can write the actual allocations as:

Low Income: $t(R-g_h)(.7)(10)K_l$

High Income: $t(R-g_h)(.7) (1/8.5)K_h$

As a result, the burden assigned to the lower group, for example, ignoring the differences in $g$'s, or savings rates, is seven times too large, or should be reduced by 85%.
tax is imposed on profits minus savings), will vary across the income classes. Using class-specific savings rates would alter tax rates in the opposite direction from the change described in the previous paragraph, since the savings rate is larger in the higher brackets. Thus, it would lower the tax burden in the highest brackets, and increase it in lower brackets.

Statistics published by the Joint Committee on Taxation (JCT) provide some background to indicate this effect of savings heterogeneity on the distribution of a consumption tax. The JCT examined a five percent consumption tax, but we have multiplied their numbers to create a fifteen percent rate, to make their tax similar in magnitude.

The JCT presents four variations on the distribution, which are shown in Table 8 (following page). Two of the variations are relevant to the flat tax. In one distribution, they allocated the benefit of deducting savings at the time savings occurs, which is consistent with distributing the tax based on consumption. This distribution is shown in the third column. They also allocated the benefit of deducting savings to the accrual of earnings on the savings, which would be very small relative to savings. This allocation is close to the income allocation used by the Treasury, except that it is as if savings is virtually zero (second column). The aggregate tax would therefore be larger. The JCT also provided two types of price assumptions: One where there is no rise in prices, and one with a rise in prices. The one with no rise in prices (second and third columns) is relevant to the flat tax.

The income classes used by the JCT are not comparable to those in the Treasury tables used in assessing the flat tax, because they are not as broadly defined. Thus, a $100,000 income in the JCT table (Table 8) would be a significantly larger income in the Treasury’s tables. Nevertheless, they provide a rough guide to assessing how the distribution would be affected by savings rates.

23. In terms of the mathematical formula in previous footnote, $g_s$ is higher than $g$, so that $(R-g_s)$ is smaller than $(R-g)$. The opposite effect occurs for the lower income class.

24. Joint Comm. on Taxation, 103d Cong., 1st Sess., Methodology and Issues in Measuring Changes in the Distribution of the Tax Burdens 54-58 (Comm. Print 1993). Their tax was assumed to be an add-on tax so that it allowed an offset for lower income taxes due to the deduction of these taxes from the base; the numbers were corrected for this factor.

25. The tax was still restricted to the physical assets that are also taxed under the flat tax.
## Table 8: Effective Tax Rates, 15% Consumption Tax

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>0-10</td>
<td>9.5</td>
<td>9.5</td>
<td>12.4</td>
<td>12.4</td>
</tr>
<tr>
<td>10-20</td>
<td>9.7</td>
<td>9.6</td>
<td>9.1</td>
<td>9.1</td>
</tr>
<tr>
<td>20-30</td>
<td>11.2</td>
<td>10.8</td>
<td>10.8</td>
<td>10.5</td>
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<tr>
<td>30-40</td>
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</tr>
<tr>
<td>40-50</td>
<td>12.4</td>
<td>11.8</td>
<td>11.8</td>
<td>11.2</td>
</tr>
<tr>
<td>50-75</td>
<td>12.4</td>
<td>11.5</td>
<td>11.5</td>
<td>10.7</td>
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<td>75-100</td>
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<td>100-200</td>
<td>11.3</td>
<td>10.0</td>
<td>11.0</td>
<td>9.7</td>
</tr>
<tr>
<td>200+</td>
<td>12.3</td>
<td>7.6</td>
<td>11.9</td>
<td>7.6</td>
</tr>
</tbody>
</table>

**Source:** Derived from Joint Committee on Taxation (1993) data.
Note first that there is virtually no difference in the burdens in the lower two classes, which would be consistent either with a virtually zero savings rate or with very little existing capital ownership. Examining the first two columns, however, we see that going from an income base to a consumption base has a very big effect at the highest income level, more modest effects in the upper middle income classes, and little effect at the moderate income levels.

Although we note that the measurement of income is different in this table, as an illustration, if we used this data to adjust for the top income class in the flat tax distributional tables, the tax rate is actually three percentage points too high; the adjustment for a higher savings rate is much more important than the adjustment for the type of capital ownership.26

Thus, the corrections to the flat tax distribution tables would result in a less progressive tax using a consumption basis. Tax burdens at the lower end would not be much affected, but tax burdens in the upper middle part of the distribution could rise, while burdens at high income levels could fall. The effective tax burden for the flat tax at the highest level in Table 1 would fall from fourteen percent to eleven percent.

Table 8 also indicates how a flat tax without an exemption under a VAT or retail sales tax might look (last column), since those taxes would need to be accommodated with a price change. These taxes tend to be more regressive in general than a flat tax even without an exemption, because the price level increase causes a loss in purchasing power from unindexed transfer, raising the tax burden in the lower income levels.27

26. We would need to make two corrections. First, we would need to treat the growth rate $g$ in the aggregate as virtually zero. If the rate of return is 8% and the growth rate is 2.5% (so that $R-g$ is 5.5%) we need to increase the capital tax portion of the tax burden, add it to the other components, which add up to 8.8%, and then decrease the overall rate by the ratios shown in the bottom row, second and third columns of Table 8, to derive a tax rate of 10.9% $\{[8.8+(5.1)(1.21)(8)/5.5]7.6/12.3\}$, rather than 14%.

27. It is difficult to draw conclusions about the rest of the income distribution, because the price rise also affected the income tax rates through indexing provisions and the data were not available to correct for that effect. That may be one reason that the rates do not rise in the moderate income classes, since they would be most affected by the indexing procedures.
B. Distribution Across Generations and the Lifetime Perspective

It is important to recognize, however, that even though these cash flow calculations indicate a certain distributional pattern, they are incomplete, and possibly even misleading, in the higher income levels, where the lump-sum tax on old capital and the deduction for savings are important. Within each income class, there is age heterogeneity, with some young individuals who are accumulating lifetime savings, and some older individuals who may be saving less or dissaving. In addition, because income over the lifetime goes up and then down, a given individual may be in different income classes over time. These observations mean that calculating taxes paid in broad income aggregates using a single cross-section observation is incomplete.

For example, taxes imposed on the difference between earnings on capital and savings are simultaneously imposing large taxes on older individuals who are dissaving and providing benefits for young savers. Of course, the young savers will eventually have to repay their deduction over time, so that if one were looking only at young people, or people in the steady-state long run, distributional effects might more easily be seen by the wage tax portions, shown in Table 9 (following page). In this case, the tax would still show a hump shape, with the highest taxes applying to the higher middle-income groups, where the advantage of the exclusion is decreasing but incomes are not high enough to have a large fraction of income derived from capital income. Compared to current taxes, with the 20.8 percent rate, the bottom sixty percent of the population would still have a tax increase, the next higher thirty percent would remain about even, and the top ten percent would have a reduction. This outcome is contrasted with a tax increase for all but the top ten percent when allocated by income.

In the highest income classes, the reduction would be dramatic—burdens would fall by fifty percent. Although this type of calculation is imprecise, it shows the significant benefits for young individuals of effectively exempting capital income from tax during their lifetimes. This benefit for younger generations in the higher income classes is, of course, paid for by lump-sum taxes on the older generations. Thus, in a traditional life-cycle model, the largest tax burdens fall on the high-income elderly, and the largest benefits on the high-income young. Relative to income, older individuals could be paying taxes many times larger than their income, depending on how quickly they are dissaving. That is, an older individual who is maintaining capital will pay a tax at the statutory rate, while an older individual who finances half of...
### Table 9: Effective Tax Rates, Long Run Burden Measured by Total and by Wage Portion of Flat Tax, by Income Class

<table>
<thead>
<tr>
<th>Income Class ($ thousands)</th>
<th>Current Law (%)</th>
<th>With Flat Tax, 20.8%</th>
<th>With Wage Portion of Flat Tax 20.8%</th>
<th>With Flat Tax, 17%</th>
<th>With Wage Portion of Flat Tax 17%</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 - 10</td>
<td>8.1</td>
<td>13.8</td>
<td>13.3</td>
<td>13.9</td>
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<tr>
<td>10 - 20</td>
<td>8.8</td>
<td>15.0</td>
<td>13.8</td>
<td>16.5</td>
<td>14.1</td>
</tr>
<tr>
<td>20 - 30</td>
<td>13.4</td>
<td>17.6</td>
<td>16.1</td>
<td>19.3</td>
<td>18.1</td>
</tr>
<tr>
<td>30 - 50</td>
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<td>17.8</td>
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<td>20.0</td>
</tr>
<tr>
<td>50 - 75</td>
<td>19.8</td>
<td>21.8</td>
<td>19.7</td>
<td>23.0</td>
<td>21.5</td>
</tr>
<tr>
<td>75 - 100</td>
<td>21.2</td>
<td>23.4</td>
<td>21.7</td>
<td>23.4</td>
<td>21.9</td>
</tr>
<tr>
<td>100 - 200</td>
<td>21.9</td>
<td>23.0</td>
<td>20.5</td>
<td>21.9</td>
<td>19.9</td>
</tr>
<tr>
<td>200 +</td>
<td>23.6</td>
<td>17.0</td>
<td>11.9</td>
<td>14.9</td>
<td>10.7</td>
</tr>
<tr>
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<td>20.8</td>
<td>21.2</td>
<td>18.2</td>
<td>21.2</td>
<td>19.1</td>
</tr>
</tbody>
</table>

Source: Derived from Treasury Department (1996) Data.
consumption out of earnings and half out of savings will pay twice the statutory rate.

This relationship could, however, be influenced by bequests, about which we know very little. For wealthy families that pass on wealth from one generation to another, older individuals could respond by reducing their bequests to maintain consumption. In that case, the lump-sum tax on the old would be passed on to their descendants in the form of a one-time decrease in asset values. Indeed, these individuals could still pass on actual assets, such as physical property and shares of stock, and the burden would fall on future generations, because these assets are still bearing tax and have fallen in value.

These are some of the problems that confront this type of analysis. Perhaps the clearest statement that might be made about this distributional effect is that lower and moderate-income individuals are likely to pay higher taxes under these proposals, and the very wealthy as a group are likely to benefit from the ability to accumulate future wealth without taxation.

C. Asset Price Effects: Behavioral Responses and Transition Relief

Some of the effects discussed in the previous section could be altered by other factors. Two of these factors have to do with asset price effects deriving from reallocation of capital and transition relief.

While consumption taxes impose lump-sum taxes on business capital, they also remove the preferences that favor owner-occupied housing over business capital. They may also be inducing increased savings, and may also affect the choice between debt and equity finance, which will in turn influence rates of return. These behavioral responses will have effects on the distribution of the tax burden across income classes, and perhaps even across time.

Much attention has been focused on the possible depression in prices of houses due to the removal of tax benefits that favor these assets. The mortgage interest and property tax deductions are often mentioned, but economic assessments of these asset price effects also consider the increased rate of return in equity investments in business assets as well. Some studies have claimed very large depressing effects on asset prices.28 Of course, there should be an offsetting asset price increase in business assets, and thus, in the stock market.

It is important to recognize the difference in the nature of these asset price effects. They are not fundamental to the nature of the tax, as is the

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lump-sum tax on old capital (which may express itself as an asset price effect). Rather they derive from behavioral responses, including the ability of the economy to expand or contract the supply of assets. If the quantity of assets could be quickly altered to suit new preferences, then there would be no asset price effects. Thus, any asset price effects are transitory.

It is not easy to determine how powerful these asset price effects would be in the short run, or how they would affect the distribution. There are reasons to expect that they would be modest in the short run, as any small change in asset prices may cause individuals who own assets to respond in a way that would dampen the effects; moreover, historical evidence does not support large swings in the prices of housing. In addition, although lower-income individuals tend to own more housing relative to other assets, the downward pressures on housing will occur at the higher end, for a number of reasons. Indeed, it is possible for the total demand for housing to contract, but the demand for smaller units to expand. Thus, the distributional effects discussed in this Article are unlikely to be heavily affected by asset price adjustments due to shifts between housing and other assets.

There may be more relevant effects if the savings rate increases (increasing the demand for business assets and driving up their prices), or, if there are portfolio shifts between debt and equity assets, also driving up the demand for business property and corporate stock. Any asset price effects would be temporary, but they would moderate the lump-sum effects of the tax on the oldest individuals who are selling capital goods in the short run. It is extremely difficult to determine whether this effect would be important.

A second phenomenon that could alter the distributions is the adoption of transition relief. If transition relief is allowed in the form of allowing the recovery of basis (such as depreciation and inventories), then the sellers of assets will receive considerable relief. These benefits would not entirely offset the initial asset tax, unless the deductions allowed were immediate, but their present value could provide a substantial asset price offset. Their benefits would vary across assets, depending on the remaining basis relative to market value and the speed of recovery allowed.

29. See id.
Transition relief would not, however, have a permanent effect on asset prices. As depreciation and inventory recovery is used up, asset prices would fall to the level that would have occurred without transition relief. Individuals who purchase stocks, for example, will be purchasing two assets—the stock itself at its permanent lower price, and a stream of remaining tax deductions.

Transition relief would also require higher tax rates to make up the revenue. For that reason, transition relief shifts the burden from initial old generations to intermediate generations, while not affecting the long run steady-state. An alternative way to provide complete relief for the lump sum tax on old capital is to adopt a wage tax: A wage tax will increase the tax burden of future generations relative to a consumption tax, because a permanently higher tax rate will be required.

D. The USA Tax

The USA proposal is in many ways more complicated than the other proposals. It contains both a modified VAT and a direct consumption tax, so that financial as well as physical assets are subject to tax. It has graduated rates and is designed to be distributionally neutral across incomes. It contains transition rules that reduce the burden on old capital and shift burdens across generations. And there are a variety of exceptions from the broad-based consumption tax approach (for example, mortgage interest deductions are still allowed, and a certain amount of asset sales and loan proceeds can be excluded) which alter the nature of the tax. Taken as a whole, these provisions are likely to make the differences between the current tax and the USA tax smaller than is the case with the other taxes.

E. Income Tax Reform

Although a proposal for income tax reform has been made, no details have been provided. It is easier to structure an income tax reform so that the distributional consequences can be more easily understood, although even when distributional neutrality is attempted, there will be shifts in burden within income classes.

CONCLUSION

The concern about distributional consequences of major tax reform proposals is well founded. The analysis in this Article suggests that there will be substantial redistribution across income classes and across generations in the middle- and upper-income classes. Even without considering the consequences of a switch to a new tax base, flat or
single-rate taxes tend to shift the tax burden dramatically from high-income individuals to lower- and middle-income individuals, and significantly alter the distribution of after-tax income. These distributional effects are even more pronounced when changes in the tax base occur. Under the flat tax, tax burdens for future high-income classes could fall by half, and lifetime disposable income would increase substantially.

Moreover, there is an enormous amount of uncertainty associated with the projected effects. Until we learn a great deal more about life-cycle savings and the accumulation of capital, including the role of bequests, much of our analysis of tax burdens across the generations will be guesswork. The difficulty facing fundamental tax reform is that we will obtain a major redistribution of the tax burden which we cannot chart with any degree of certainty.