

# Distributional Analysis of Tax Policy

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## Distributional Tables and Tax Policy

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The distribution of tax burdens and government expenditures is a fundamental question in both public economics and public policy. Positive and normative analyses in public economics have focused on *incidence*, effects of tax and expenditure policies on the distribution of economic well-being. Tax policy debates among policy makers are grounded in no small part in their perceptions of the effects of policy changes on the distribution of economic well-being. The study of incidence is an active area of research among economists, though the contributions of recent research are not always integrated in the distributional assessments presented to policy makers.

Since 1990, the preparation of "distribution tables" has been an area of increasing activity for staff economists in the administration and Congress and for economists in private organizations advising taxpayers—as well as for academic economists serving in the government. While there are many reasons for this recent growth, two seem particularly prominent: first, the heightened concern over income inequality in the 1980s, with the attendant concerns that the federal tax system may have been partially responsible and, in any event, should be used to redress changes; and second, the increasing ability of staff economists to prepare detailed tables quickly, using modern computer technology and microsimulation models. Whatever the reason, the higher profile of distribution tables has aroused worries by economists

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in and out of government that the tables do not necessarily convey the appropriate information (or, in some cases, lack of information) to decision makers. In this chapter, I argue that economic analysis has much to offer decision makers in forming their judgments about tax fairness.

On one level, economic analysis has made significant contributions to the study of distributional effects of government policies. It is well understood, for example, that the burden (or benefit) of a tax change is not necessarily borne by (does not necessarily accrue to) the groups that bear the legal liability to remit the tax. That is, changing the structure of taxes alters the economy's equilibrium by altering prices of goods, labor, and capital.<sup>1</sup> The concept of shifting the burden of the tax is incorporated in the distributional analysis presented by policy makers in the executive branch and Congress. There is much controversy, however, over *how* the economy's equilibrium changes in response to many taxes, for example, the corporate income tax or a broad-based consumption tax. Such controversy notwithstanding, I argue that economic analysis contributes a framework for deciding the appropriate questions and for gathering information.

In the following section, I present some questions posed by economic analysis for the presentation of distribution tables and then review "answers" in practice. The next section illustrates some methodological issues in measuring the distribution of the tax burden in the context of proposals for a broad-based federal consumption tax. The final section suggests a strategy for bringing theory and practice closer together.

### Applying Economic Analysis

A basic methodological issue in distributional analysis is how to measure incidence. Economists' reflexive answer is to calculate the compensating variation, a monetary measure—in absolute terms or relative to lifetime resources—of the effect of a particular policy change on economic well-being. This "answer" is by no means a simple one in practice, since it requires the calculation of the extra resources needed to restore the individual to his or her initial level of well-being given a

1. For a survey of the academic literature, see Laurence J. Kotlikoff and Lawrence H. Summers, "Tax Incidence," in Alan J. Auerbach and Martin Feldstein, eds., *Handbook of Public Economics*, vol. 2 (Amsterdam: North-Holland, 1985). An excellent review of practical problems is presented in U.S. Congress, Joint Committee on Taxation, "Methodology and Issues in Measuring Changes in the Distribution of Tax Burdens," Washington, D.C., June 14, 1993.

change in prices.<sup>2</sup> Moreover, this measure, generally used to measure the present incomes of individuals, comes.<sup>3</sup>

Economists' analysis is generally used static or life-cycle overlapping generations models for the calculation of consumption for the population at a point in time. In some cases across different models, the case of the life-cycle models have been used. However, behavioral distributional analysis pres-

2. Another measure of the change level of economic well-being.

3. Another issue related to the effect of a tax policy change is used to finance changes in spending. Some analyses of the distributional incidence, a comparison of equal-revenue tax instruments.

4. See, for example, John Whalley, *A General Equilibrium Model of Applied General Equilibrium Production and Survey*, pp. 1007-51.

5. See, for example, *Fiscal Policy* (Cambridge: Harvard and Kenneth L. Judd, *Journal of Political Economy*, 77 (September 1969), and Jonathan Skinner, and *Motives in Explaining* *Conference Series on Public Policy*.

6. In another line of research, money-equivalent variation and equivalent variation money measures of income are expressed in terms of a consumption bundle. See Lau, and Thomas M. Sargent, *American Economic Review*.

change in prices.<sup>2</sup> Most applied analyses do not attempt to calculate this measure, generally emphasizing effects of taxes on after-tax current incomes of individuals or households with different pretax incomes.<sup>3</sup>

Economists' analytical approaches to studying incidence have generally used static computable general equilibrium (CGE) models<sup>4</sup> or life-cycle overlapping-generations models.<sup>5</sup> These models permit the calculation of compensating variations for different groups in the population at a point in time, in the case of the CGE model, and in some cases across different lifetime-income groups or generations, in the case of the life-cycle simulation models. As analytical devices, such models have been used to assess actual and potential tax reforms. They have not, however, been the principal guiding force in shaping distributional analysis presented to policy makers.<sup>6</sup>

2. Another measure is the equivalent variation, which uses the after-tax-change level of economic well-being as the point of reference.

3. Another issue relates to the disposition of tax revenue. The distributional effect of a tax policy change depends in general on whether the revenue is used to finance changes in other (current or future) taxes or government spending. Some analyses of alternative tax reforms therefore focus on differential incidence, a comparison of the distributional consequences of alternative equal-revenue tax instruments.

4. See, for example, Charles L. Ballard, Don Fullerton, John B. Shoven, and John Whalley, *A General Equilibrium Model for Tax Policy Evaluation* (Chicago: University of Chicago Press, 1985); and John B. Shoven and John Whalley, "Applied General Equilibrium Models of Taxation and International Trade: An Introduction and Survey," *Journal of Economic Literature* 22 (September 1984), pp. 1007-51.

5. See, for example, Alan J. Auerbach and Laurence J. Kotlikoff, *Dynamic Fiscal Policy* (Cambridge: Cambridge University Press, 1987); R. Glenn Hubbard and Kenneth L. Judd, "Social Security and Individual Welfare: Precautionary Saving, Borrowing Constraints, and the Payroll Tax," *American Economic Review* 77 (September 1987), 630-46; R. Glenn Hubbard, Jonathan Skinner, and Stephen P. Zeldes, "Precautionary Saving and Social Insurance," *Journal of Political Economy* 103 (April 1995), pp. 360-99; and R. Glenn Hubbard, Jonathan Skinner, and Stephen P. Zeldes, "The Importance of Precautionary Motives in Explaining Individual and Aggregate Saving," *Carnegie-Rochester Conference Series on Public Policy* (1994).

6. In another line of inquiry, research by Jorgenson and his collaborators has focused on money-metric individual welfare (incorporating compensating and equivalent variations in total expenditure by defining the concept as money measures of individual welfare corresponding to each policy, expressed in terms of a common price system); see Dale W. Jorgenson, Laurence J. Lau, and Thomas M. Stoker, "Welfare Comparison under Exact Aggregation," *American Economic Review* 70 (May 1980), pp. 268-72; and Dale W. Jorgenson,

Applied analyses of the distribution of the tax burden have been more heavily influenced by empirical studies that have proceeded in two steps: first, hypothesizing the incidence of each principal tax; then, using cross-sectional or panel data on households to estimate the distribution of the composite tax burden by income class.<sup>7</sup> Among academic economists, the results of such empirical studies have generated controversy both because they rely on ad hoc assumptions about the incidence of particular taxes<sup>8</sup> and, relatedly, because *tax collections* may bear a poor relation to tax burdens.<sup>9</sup>

Rather than examining in more detail the controversy among alternative approaches to distributional analysis, I focus on some questions suggested by economic analysis and on "answers" implemented in practice. The number of alternative answers, in principle, to central questions suggests the desirability of more sensitivity analysis in distribution tables than is the case under current practice.

**The Construction of Distribution Tables in Principle.** It is instructive to begin by describing the essential elements of the typical distribution tables of tax burdens used by policy makers, to wit: Which taxes are included? What is the definition of income? What are the underlying assumptions about incidence? What measure of the tax burden is used? How are temporary tax provisions treated?

"Correct" answers to these questions depend, of course, both on the professional judgment of staff economists and economic policy makers and on the purpose for which the table is used. While senior

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"Aggregate Consumer Behavior and the Measurement of Social Welfare," *Econometrica* 58 (September 1990), pp. 1007-40; and money-metric social welfare (providing a complete ordering of economic policies by defining the concept as the difference between money measures of social welfare corresponding to each policy, expressed in terms of a common price system); see Dale W. Jorgenson and Daniel T. Slesnick, "Aggregate Consumer Behavior and the Measurement of Inequality," *Review of Economic Studies* 51 (July 1984), pp. 369-92. While day-to-day application to distributional analysis is probably not around the corner, these approaches offer valuable developments for decomposing impacts of proposed policy into "efficiency" and "equity" effects.

7. See Joseph A. Pechman and Benjamin A. Okner, *Who Bears the Tax Burden?* (Washington, D.C.: Brookings Institution, 1974); Edgar K. Browning and William R. Johnson, *The Distribution of the Tax Burden* (Washington, D.C.: American Enterprise Institute, 1979); and Joseph A. Pechman, *Who Paid the Taxes, 1966-1985* (Washington, D.C.: Brookings Institution, 1985).

8. The incidence of the corporate income tax is particularly controversial.

9. For example, a high rate of tax on realized capital gains may raise little revenue, but generate a significant tax burden for holders of assets.

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policy makers often use distribution tables to guide them in implementing "equity" goals, comparatively little review of these five questions takes place by officials, though the technical staffs of the Treasury Department's Office of Tax Analysis (OTA), the Joint Committee on Taxation (JCT), and the Congressional Budget Office (CBO) are keenly aware of their importance.

*Which taxes are included?* A tax-burden table may include all taxes (federal, state, and local), all federal taxes, or only a specific set of federal taxes. Criteria for inclusion depend on the purpose of the table, but in practice judgments over how certain taxes are—or how well they can be—distributed are important.

*What is the definition of income?* The way in which incomes are classified is in principle chosen to distinguish taxpaying units by their economic well-being. At one level, members of Congress and administration policy makers are interested in narrowly defined concepts such as money income; at another level, economists have generally stressed broader definitions matching more closely conceptual notions of income. The common economists' measure of a household's economic income, the Haig-Simons measure of annual income, equals the annual change in the household's wealth plus the market value of consumption over the year.<sup>10</sup>

A second issue in defining income relates to the specification of an economic unit: income may be defined on a family basis (as a proxy for an economic unit) or on a tax-return basis (which corresponds to current income-tax reporting).<sup>11</sup> Differences in distributional estimates from different sources sometimes reflect this distinction.

A third issue relates to the time period under consideration. Generally, distribution tables produced for policy makers are based on current annual income, while many analysts have argued for greater

10. As discussed later, this concept of economic income is difficult to measure. Staff economists for policy makers have used different sets of approximations of economic income.

11. For a discussion of the distinctions among these concepts, see Susan C. Nelson, "Family Economic Income and Other Income Concepts Used in Analyzing Tax Reform," in *Compendium of Tax Research, 1987*, Washington, D.C.: U.S. Department of the Treasury, Office of Tax Analysis, 1987; and U.S. Department of the Treasury, Office of Tax Analysis, "Household Income Mobility during the 1980s: A Statistical Assessment Based on Tax Return Data," *Tax Notes* (June 1, 1992); and U.S. Department of the Treasury, Office of Tax Analysis, "Household Income Changes over Time: Some Basic Questions and Facts," *Tax Notes* (August 24, 1992).

emphasis on permanent income.<sup>12</sup> The length of the period over which one analyzes the distributional consequences of a policy change is important for two reasons. First, the progressivity or regressivity of a tax change can be overstated in the short run to the extent that annual variations in income overestimate long-run or lifetime differences.<sup>13</sup> Abstracting from lifetime income differences, the consumption-smoothing feature of the familiar life-cycle model predicts that differences in annual income over the life cycle are larger than differences in annual consumption (which corresponds more closely to permanent income). Second, significant reforms entail periods of transition.<sup>14</sup> A switch from a wage tax to a consumption tax, for example, burdens the current elderly in the short run, who paid wage taxes and now in retirement must pay consumption taxes; the introduction of investment incentives reduces the value of old capital in the short run; and the introduction of an actuarially fair pay-as-you-go social security scheme benefits the first generation to participate relative to future generations.

*What are the underlying assumptions about incidence?* Staff economists rely on theoretical arguments and empirical evidence about the

12. Advocates of a permanent income measure argue that it removes transitory fluctuations in annual income and better reflects long-run well-being; advocates of a current annual income measure argue that it is better (or, at least, less controversially measured) and corresponds to man-in-the-street notions of income.

A still broader question is whether to consider intergenerational redistribution of the tax system. See, for example, Alan J. Auerbach, Jagadeesh Gokhale, and Laurence J. Kotlikoff, "Generational Accounting: A Meaningful Way to Evaluate Fiscal Policy," *Journal of Economic Perspectives* 7 (Summer 1993); and Alan J. Auerbach, "Public Finance in Theory and Practice," *National Tax Journal* 4 (December 1993), pp. 527-538.

13. Don Fullerton and Diane Lim Rogers conclude in their study, however, that, in practice, lifetime and annual-income incidence of the U.S. tax system are not markedly different. See Don Fullerton and Diane Lim Rogers, *Who Bears the Lifetime Tax Burden?* (Washington, D.C.: Brookings Institution, 1993). See also the discussion in James M. Poterba, "Lifetime Incidence and the Distributional Burden of Excise Taxes," *American Economic Review* 79 (May 1989), pp. 325-30; OTA, "Household Income Changes over Time"; and OTA, "Household Income Mobility during the 1980s."

14. Transition effects are discussed in Douglas B. Bernheim, "A Note on Dynamic Tax Incidence," *Quarterly Journal of Economics* (1981), pp. 705-23; Christophe Chamley, "The Welfare Cost of Capital Income Taxation in a Growing Economy," *Journal of Political Economy* (June 1981), pp. 468-91; and Hubbard and Judd, "Social Security and Individual Welfare."

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incidence of particular taxes. For many taxes, such as the individual income tax, there is broad professional agreement on incidence; for other taxes, notably the corporation income tax, there is considerably less professional agreement. Though not often scrutinized by consumers of the tables, alternative incidence assumptions can have a significant effect on distribution tables of tax burdens.

*What measure of tax burden is used?* Tax burdens are measured in practice as the amount of taxes paid, or reduction in taxes paid; they do not incorporate notions of excess burden. The distribution tables attempt to convert "taxes paid" into indicators of the economic burden of taxes, including the effective tax rate—that is, taxes divided by income—the percentage change in taxes, the percentage change in after-tax income, or the share of taxes paid. The choice of indicator is not innocuous: the indicators do not necessarily present the same "answer" regarding the progressivity or regressivity of current taxes or a change in taxes, nor do they relate in the same way to theoretical measures of economic well-being.

*How are temporary tax provisions treated?* Both current federal tax law and proposed policy changes often incorporate temporary measures; such provisions may be included in a distribution table or given special treatment in an ancillary table. An additional complication arises on account of provisions with a timing element. Individual retirement account or Keogh contributions from pretax income, for example, reduce current tax payments while increasing tax payments in future years when withdrawals are subject to tax.<sup>15</sup> Analysts must make decisions about how to treat such timing changes.

In addition to the questions raised above, a serious question arises over which proposals merit the detailed distributional analysis found in distribution tables. At the risk of sounding simplistic, such analysis should be submitted only when it informs the debate. I would argue that such situations arise relatively rarely—for example, the submission of the president's budget or a proposal to change the structure of the tax system significantly.

**The Construction of Distribution Tables in Practice.** In part because of the flurry of interest created by the fashioning of the Omnibus Budget Reconciliation Act of 1990, in the early 1990s the Office of Tax Analysis prepared numerous distribution tables to explain current-law tax

15. The net tax benefit of such tax-favored savings schemes is, of course, the sheltering of accumulated earnings from taxation (plus a gain upon disbursement of funds if the tax rate is lower at that time).



burdens and effects of tax policy changes on those burdens. As a rule, distribution tables are prepared for the use of administration officials and are not released publicly. The Joint Committee on Taxation and the Congressional Budget Office do release distributional tables to congressional decision makers.

The Office of Tax Analysis, the Joint Committee on Taxation, and the Congressional Budget Office have offered "answers" to the five questions raised earlier:

*Which taxes are included?* Following the work of the late Joseph Pechman,<sup>16</sup> the CBO, OTA, and JCT staffs decided to count only federal taxes, including individual income and corporate income taxes, payroll (social security and unemployment insurance) taxes, and excise taxes.<sup>17</sup> Customs duties are not incorporated. The JCT staff has not previously distributed the corporate income tax, although its 1993 pamphlet on distributional analysis suggests that it will do so in the future, at least for changes in elements of the tax; the CBO and OTA do distribute the burden of the corporate income tax.

*What is the definition of income?* The OTA, JCT, and CBO use "current annual income" to define income. Each staff tries to approximate economic income. The JCT uses a very narrow definition, relying almost exclusively on items reported on tax returns. Specifically, the JCT adds back to adjusted gross income tax-exempt interest, workers' compensation, nontaxable social security benefits, deductible contributions to individual retirement accounts (IRAs), employer contributions for health and life insurance, tax preferences under the alternative tax, and net losses in excess of minimum tax preferences from passive business activities. In addition to the categories in the JCT definition, the CBO includes all government cash transfers, all cash pension benefits, the employer share of payroll taxes, and a portion of the corporate income tax.

The OTA uses the broadest annual income concept, called family economic income (FEI), which adds to adjusted gross income a proxy for unreported and underreported income; deductible contributions to IRA and Keogh plans; nontaxable transfer payments (such as excludable income from social security and Aid to Families with Dependent

16. See Pechman and Okner, *Who Bears the Tax Burden?* and Pechman, *Who Paid the Taxes, 1966-1985*.

17. For a description of taxes included by the three groups, see U.S. Congressional Budget Office, *The Changing Distribution of Federal Taxes: 1975-1990* (Washington, D.C.: CBO, 1987); Nelson, "Family Economic Income"; and JCT, "Methodology and Issues."

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Children benefits); employer-provided fringe benefits; inside buildup on private pensions, IRAs, Keoghs, and life insurance; tax-exempt interest; and imputed rent on owner-occupied housing.<sup>18</sup> In contrast to the JCT and CBO, the OTA computes capital gains on an accrual basis, adjusted for inflation, to the extent permitted by reliable data. In addition, inflationary losses of lenders are subtracted, and gains of borrowers are added. Finally, FEI includes the value of food stamps received but excludes other in-kind transfers, such as the value of public housing and Medicaid payments.<sup>19</sup>

To represent income units, the JCT uses tax returns. The CBO uses families but for some distributions also adjusts for family size by dividing each family's income by the poverty level for a family of that size. The OTA's FEI is calculated on a family, rather than on a tax-return, basis. The economic incomes of all members of a family unit are added to arrive at the family's income used as a classifier in the distributions.

I noted earlier that an additional question in deciding the appropriate income concept relates to the time horizon for analysis. One option is to shift from annual measures of economic income to lifetime measures. Indeed, Don Fullerton and Diane Lim Rogers have produced an ambitious examination of lifetime tax burdens borne by groups in the population,<sup>20</sup> and staff economists at the OTA and JCT are analyzing various measures of permanent income. Lifetime incidence calculations, while informative, are not likely to become the principal summary measures for policy makers for two reasons. First, on a conceptual level, lifetime income and incidence calculations assume perfect insurance and lending markets; recent research shows that for

18. See Nelson, "Family Economic Income." In earlier work, Pechman and Okner, *Who Bears the Tax Burden?* and Pechman, *Who Paid the Taxes, 1966-1985*, also incorporated in "income" imputed rent on owner-occupied housing, measures of accrued rather than realized capital gains, and noncash transfer payments. William G. Gale reviews issues in deciding on the appropriate income concepts in "Comment on 'Trends in Federal Tax Progressivity, 1980-93,'" mimeo, Brookings Institution, October 1992.

19. The difference between the OTA and JCT approaches to defining economic income essentially represents differences in judgments about whether existing data permit the development of information about some components of Haig-Simons income relative to the OTA's family economic income. Some of the data sets used by the JCT staff for other purposes described in the pamphlet could have been applied to the construction of a more comprehensive measure of economic income. Whether imperfections in such data make more comprehensive measures less meaningful is, of course, an open question with reasonable positions on either side.

20. Fullerton and Rogers, *Who Bears the Lifetime Tax Burden?*

most groups in the population, consumption moves more closely with income than perfect-markets models suggest.<sup>21</sup> Thus current income provides information about economic well-being not captured by permanent income. Second, since revenue estimates are presented for relatively short time horizons (generally a five-year budget period), policy makers are likely to request distributional analysis for a comparable period.<sup>22</sup> A related point is raised by the concern over "transition issues": to the extent that policy makers are concerned with the near-term effects of policies, the incidence of the tax change may be different from that suggested by "long-run" calculations.

*What are the underlying assumptions about incidence?* The basic incidence assumptions used by the OTA are as follows. The individual income tax is assumed to be borne by payers, the corporate income tax by capital income generally,<sup>23</sup> payroll taxes (employer and employee shares) by labor (that is, wages and self-employment income), excise taxes on purchases by individuals by the purchaser, and excise taxes on purchases by business in proportion to total consumption expenditures. The same incidence assumptions are used in distributing current-law burdens and proposed changes. With the exception of the corporate income tax, the OTA, JCT, and CBO follow very similar incidence assumptions. The CBO generally assumes that half the corporate tax burden is borne by all capital income and that half is borne by labor income. As of this writing, the JCT distributes neither the corporate income tax nor the proposed changes in the corporate income tax. The JCT suggests, however, that it will in the future distribute *changes* in the corporate tax burdens.<sup>24</sup>

*What measure of the tax burden is used?* Distribution tables prepared by the Office of Tax Analysis have traditionally measured tax burdens by the amount of taxes paid (or the reduction in taxes paid, for a tax reduction), in absolute terms or in terms of an effective tax rate. While such measures provide a consistent means of distributing current-law

21. See, for example, Christopher D. Carroll, "The Buffer Stock Theory of Saving: Some Macroeconomic Evidence," *Brookings Papers on Economic Activity* no. 1 (1992): 61-135; and Hubbard, Skinner, and Zeldes, "The Importance of Precautionary Motives."

22. A compromise approach taken by the JCT staff is outlined in JCT, "Methodology and Issues."

23. For a review of the issues surrounding the incidence of the corporate income tax, see U.S. Department of the Treasury, *Integration of the Individual and Corporate Tax Systems* (Washington, D.C.: U.S. Government Printing Office, January 1992).

24. See JCT, "Methodology and Issues."

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taxes and proposed changes, they do not incorporate excess burden. The JCT and CBO economists have also traditionally measured direct tax burdens by tax payments or decreases in tax payments.<sup>25</sup> According to its 1993 pamphlet, the JCT staff has now adopted as measures of the tax burden effective tax rates and the percentage change in taxes paid. CBO staff and, if developments during my experience are continuing, OTA staff are emphasizing the percentage change in after-tax income as a straightforwardly computable measure of the tax burden and proxy for the change in economic well-being.

*How are temporary tax provisions treated?* OTA staff economists define as "permanent" the law at the end of the five-year budget period. The burdens of permanent tax changes are then distributed assuming *long-run* (end-of-budget-period) behavioral responses and *current* levels of income. Temporary tax changes are indicated in "short-run" distribution tables, which incorporate the effect of the first full year of the temporary provisions. Proposed policy changes involving "timing" effects (IRAs, for example) are evaluated by the Office of Tax Analysis at long-run levels.<sup>26</sup> Provisions with irregular effects on tax liabilities (such as changes in the timing of depreciation allowances) are assessed using the present value of taxes over the budget period. When I was at the Office of Tax Analysis, I was not always certain of the CBO and JCT procedures for distributing burdens or benefits of temporary tax changes or timing tax provisions. Prospective JCT procedures are outlined in the 1993 pamphlet.

#### Distributing the Burden of a Consumption Tax

A number of proposals over the past two decades have suggested fundamental restructuring of the federal income tax, both individual and corporate, to be financed by a broad-based consumption tax. The 1992 proposal of Nicholas Brady, former secretary of the Treasury, for example, recommended a broad-based business transfer tax—namely, a tax on business gross receipts with expensing of purchases from other

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25. A notable exception is the JCT staff's measurement of the burden of the capital gains tax as the "static" revenue loss (the change in revenue by income class, assuming no behavioral response to changes in the tax).

26. For the case of tax-favored savings vehicles such as IRAs, the long-run effect could be characterized by the tax savings from the earnings from one year's deposits in a steady-state year. I believe that the Office of Tax Analysis follows this procedure.

firms, including new investment<sup>27</sup>—to finance reductions in individual and corporate taxes. Claims that such a restructuring would improve economic efficiency are often countered with arguments that it would be regressive. The design of the Brady proposal was influenced by distributional considerations to ensure that the package did not reduce the progressivity of federal tax burdens; similar considerations have figured in the deliberations over a proposal for a broad-based consumption tax by Senators David Boren and John Danforth.<sup>28</sup>

Economists generally argue that, over the lifetime of a given individual, a flat-rate, broad-based consumption tax is equivalent to a flat-rate tax on wages plus a flat-rate tax on existing capital at the time the tax is introduced.<sup>29</sup> This equivalence arises because a consumption tax is likely to lead to price increases in the long run, reducing the purchasing power of wage income and income from existing capital. The returns to new investment are untaxed under a broad-based consumption tax.

This lifetime equivalence for a given individual does not imply that commonly produced distribution tables would generate identical answers under the two approaches. Since annual consumption exceeds

27. The business transfer tax is a variant of a subtraction-method value-added tax. There is no reason to believe that the incidence of a subtraction-method value-added tax and the more familiar (in practice) credit-invoice value-added tax are different. For discussions of this point, see David F. Bradford, *Untangling the Income Tax* (Cambridge, Mass.: Harvard University Press); U.S. Congressional Budget Office, *Effects of Adopting a Value-added Tax* (Washington, D.C.: GPO, 1992); JCT, "Methodology and Issues"; Charles E. McLure, Jr., "The Mechanics of Three Consumption Taxes," in *The Value Added Tax: Coming to America?* (Arlington, Va.: Tax Analysts, 1993); and Nicholas F. Brady, "Remarks Presented at the Graduate School of Business of Columbia University," December 10, 1992.

28. In estimating the distributional impact of the plan, the Office of Tax Analysis used the most conservative assumptions (to satisfy the Secretary's request that the proposal not reduce overall progressivity of the federal tax system): The consumption tax was assumed to raise prices, so that its burden was distributed across households according to their consumption. Taxes on corporate capital income (which were reduced in the plan through corporate tax integration) were assumed to be borne by owners of capital. Distributional analysis for the Boren-Danforth plan is (as of this writing in September 1993) being provided by JCT staff economists. As discussed later, the JCT assumes that the burden of the tax is borne by wages and old capital as the income is earned.

29. This equivalence is true in a benchmark case in which credit and insurance markets are perfect.

measured annual income of transfers and unemployment tax proportional to income, regressive at low-income levels. The incidence of the tax to wage income is regressive at low income levels. The incidence of taxes at low income levels is regressive in the benchmark case.<sup>31</sup>

To the extent that the incidence of taxes is regressive by economic income, the incidence of taxes on the return to capital is regressive. The incidence of taxes on the return to capital is regressive by economic income. The incidence of taxes on the return to capital is regressive by economic income.

The decision to tax consumption is not a tax. If a business is taxed on its income, the incidence of taxes on the return to capital is regressive by economic income. The incidence of taxes on the return to capital is regressive by economic income.

30. This assumes that payments are indexed to inflation. Taxing consumption suggests that consumption is regressive when distributional tables are used. The incidence of taxes on the return to capital is regressive by economic income. The incidence of taxes on the return to capital is regressive by economic income.

31. See, for example, JCT, "Methodology and Issues"; Charles E. McLure, Jr., "The Mechanics of Three Consumption Taxes," in *The Value Added Tax: Coming to America?* (Arlington, Va.: Tax Analysts, 1993); and Nicholas F. Brady, "Remarks Presented at the Graduate School of Business of Columbia University," December 10, 1992.

32. This distributional analysis is based on nominal and real income. The incidence of taxes on the return to capital is regressive by economic income. The incidence of taxes on the return to capital is regressive by economic income.

measured annual income for very low-income individuals on account of transfers and unmeasured income, distributing the burden of a consumption tax proportionally to consumption will make the tax appear regressive at low-income levels.<sup>30</sup> In contrast, distributing the burden of the tax to wage income and old capital income increases the progressivity of taxes at low- and high-income levels relative to the previous case.<sup>31</sup>

To the extent that tables showing the distribution of the tax burden by economic income class are to represent the short-run or medium-run incidence of tax changes, the JCT staff's decision to distribute the burden of a broad-based consumption tax to factor incomes (wages and returns to existing capital) is appropriate. During the period of transition from an income tax to a consumption tax, the burden borne by owners of existing capital enhances the current-annual-income progressivity of a flat-rate broad-based consumption tax.<sup>32</sup>

The decision regarding the distribution of a broad-based consumption tax is not the only incidence assumption required in analyzing the distributional consequences of a policy change involving such a tax. If a business transfer tax were used to reduce federal corporate income taxes and individual income taxes, for example, incidence assumptions for those taxes are also needed. If, on the one hand, the corporate income tax were borne by owners of capital, replacing corporate tax revenue with consumption tax revenue would be regressive on an annual-income basis. If, on the other hand, part of the burden of the

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30. This assumes that prices rise because of the tax, and that not all transfer payments are indexed. John Sabelhaus, "What is the Distributional Burden of Taxing Consumption?" Mimeo., Congressional Budget Office, December 1992, suggests that consumption taxes are likely to be less regressive than previously believed when distributed this way. This is because the traditionally used Consumer Expenditure Surveys overstate dissaving by very low-income households and saving by very high-income households. Sabelhaus and the JCT staff have used the Federal Reserve's Survey of Consumer Finances data on saving rates to impute consumption. These data suggest that income is higher relative to consumption for very low-income households and lower relative to consumption for very high-income households. The Brady proposal provided a refundable tax credit for low-income households rather than specifically indexing individual transfer programs.

31. See, for example, JCT, "Methodology and Issues," p. 55.

32. This distributional approach does suggest different burdens for holders of nominal and real claims on existing capital. Nominal bondholders will not be affected by the reduction in returns to existing capital. Owners of real physical capital bear this burden.

corporate tax were borne by workers or by consumers of corporate goods, the distributional consequences would be less regressive.<sup>33</sup>

An additional complication is raised by the distributional assumptions that accompany incremental reforms in the direction of a consumption tax. Suppose that a series of business income tax reforms was introduced gradually: expensing of investment, phasing out of interest deductions, and phasing out of deductions for compensation. At each step, the distributional analysis should be consistent with the distributional analysis of a broad-based consumption tax, the final result of the three steps. It would be inconsistent, for example, to distribute incremental reforms on the basis of factor incomes (wage and capital income) and to distribute the final result (a consumption tax) on the basis of consumption. The approach suggested by the JCT staff in its 1993 pamphlet—to distribute the burden of a broad-based consumption tax on wages and returns to existing capital—ensures greater consistency between distributional analysis of incremental and large-scale tax reforms.

To summarize, examining the distributional analysis of a broad-based consumption tax illustrates many of the issues surrounding the design of distributional information for policy makers, including assumptions about incidence and appropriate concepts of income and time horizon.

### Conclusions

As with many areas in public economics, the gap between the theory and the practice of distributional analysis is noticeable to economists and policy makers. Moreover, economic researchers and staff economists often want to present guarded and qualified answers to questions about the distribution of the federal tax burden to policy makers desiring much more specific answers. The temptation to satisfy policy makers' growing appetite for distribution tables should, in my view, be resisted<sup>34</sup> in favor of the following three-part strategy:

- Staff economists should continue their efforts to instruct decision makers on what one can and cannot learn from "distribution tables." The 1993 Joint Committee pamphlet and the 1987 Office of Tax Analysis *Compendium* are excellent examples of this educational pro-

33. See, for example, the discussions in JCT, "Methodology and Issues," and Fullerton and Rogers, *Who Bears the Lifetime Tax Burden?* While I understand the spirit of the exercise, the JCT staff's decision that the incidence of the existing corporate tax is not well understood but that the distribution of straightforward changes is easily accomplished puzzled me on a technical level.

ess. Seminars for new le committees) or administrative examination of assumption analysis of specific

- Staff economists most useful for examining and much less useful in of tax-burden tables for budget packages, or significant to which I referred earlier tables for a large number of the misleading approach by drawing attention away from policies.<sup>35</sup> Specific staff should become a part of for distributional tables

- Economists engaged the quality of applied economists in the administrative lifetime incidence, general and benefits of public markets can make potential distributional analysis.<sup>36</sup>

In short, economic analysis in much the same decision making—by providing a framework for gathering consistency of analyses conditions, sometimes ignoring makers better than mere demand.

34. I use the term *fiscal* report to policy makers' figures.

35. My former Treasury one occasion that the flu summit" conferees at a sublime and ridiculous e

36. One example is the tax burdens in President'scription built on research Accounting," *Journal of* with assistance from those

ess. Seminars for new legislators (particularly for those on tax-writing committees) or administration officials could also devote time to the examination of assumptions and judgments lying behind the distributional analysis of specific proposals.

- Staff economists should stress that distributional analysis is most useful for examining the distribution of fiscal policies generally<sup>34</sup> and much less useful in considering small changes in policy. Reporting of tax-burden tables for the existing federal tax system, presidential budget packages, or significant reforms—accompanied by the caveats to which I referred earlier—informs the policy process. Producing such tables for a large number of individual proposals gives decision makers the misleading appearance of exactitude and can cause confusion by drawing attention away from interactions of the effects of individual policies.<sup>35</sup> Specific statements qualifying such distribution tables should become a part of staff economists' response to specific requests for distributional tables for individual policy changes.

- Economists engaged in research on incidence can help improve the quality of applied distributional analyses by working with staff economists in the administration and Congress. Recent research on lifetime incidence, generational differences in tax burden, and burdens and benefits of public policies under imperfect insurance and capital markets can make potentially significant contributions to applied distributional analysis.<sup>36</sup>

In short, economic analysis can best contribute to distributional analysis in much the same way as it can to other areas of public policy decision making—by posing central questions for study, designing a framework for gathering information, and imposing basic tests for consistency of analyses communicated to policy makers. These contributions, sometimes ignored by decision makers, will serve those decision makers better than merely producing information of the type they demand.

34. I use the term *fiscal policies* to underscore the need for more effort to report to policy makers the distributional consequences of federal expenditures.

35. My former Treasury colleague Michael Graetz told me on more than one occasion that the flurry of distribution tables produced for "1990 budget summit" conferees at Andrews Air Force Base crossed the border between sublime and ridiculous early in the game.

36. One example is the discussion of intergenerational differences in federal tax burdens in President Bush's Fiscal Year 1993 Budget. That informative description built on research in Auerbach, Gokhale, and Kotlikoff, "Generational Accounting," *Journal of Economic Perspectives*, vol. 8 (Winter 1994), pp. 73–94, with assistance from those authors.