The Revenue Estimating Process

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Would reinstituting an exclusion for capital gains realized by individuals increase or reduce federal revenues? In 1990, the Treasury Department and the Joint Committee on Taxation disagreed on the answer to this critical question, with the Treasury estimating the proposal would increase federal revenues and the Joint Committee estimating just the opposite.

The debate over revenue estimates for capital gains proposals has highlighted the significant legal and parliamentary implications of such estimates in recent years and their increasing impact on the outcome of legislative proposals. Interest has intensified in questions such as: What are revenue estimates? How are they prepared? What are the critical assumptions underlying them? How accurate are they? Should the methodology underlying the estimates be made public by the Joint Tax Committee and the Treasury Department? How can the methodology be improved? What role do private revenue estimates play in the revenue estimating process?

I. REVENUE ESTIMATES AND THE BUDGET PROCESS

Revenue estimates are simply one type of economic forecast. A revenue estimate is the expected change in tax receipts as a result of a change in the tax law. To prepare a revenue estimate, a reve-

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The sections on revenue estimates, the budget process, and common assumptions draw heavily on a paper by Randall D. Weiss, *The Revenue Estimating Process: Legal Implications and Methodological Responses*, FEDERAL BAR ASSOCIATION, SECTION OF TAXATION REPORT 1, 4-6 (Fall 1990).

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nue estimator must project receipts under current law and under a proposed change in the law. The difference between these two projections of receipts is the revenue estimate for the proposed change in the law.

Although revenue estimates do not represent a complete economic analysis of a tax proposal, they provide useful information to those evaluating the desirability of the proposal. Revenue estimates do not tell what the economic impacts of a tax proposal will be or what the impact of the proposal on the distribution of tax burdens will be. Whether revenue estimates are big numbers or small numbers, or positive numbers or negative numbers, does not provide any useful information in determining whether a tax proposal meets any of the maxims for a good tax outlined by Adam Smith over two hundred years ago.

Revenue estimates have always been important, but they are clearly more important today than they were in the past. One reason revenue estimates have become more important is that the Economic Recovery Tax Act of 1981 indexed the personal exemption, the standard deduction, and the bracket widths for inflation. This change has had a profound effect on the tax legislative process and thus on the importance of revenue estimates. Prior to enactment of the 1981 Act, inflation pushed individual taxpayers into higher and higher tax brackets. Congress periodically cut taxes to offset the effect of this bracket creep. It was much easier to put a tax bill together when it could be labelled as a tax cut even though the bill only offset the effect of bracket creep over the last several years. Since 1981, Congress has not had the luxury of cutting taxes. Instead, the pressure has been to increase federal revenues. This is never easy to do and is especially difficult during periods like the 1980s, when the Administration and Congress were averse to increases in marginal tax rates. It is probably only possible to do if Congress sets revenue targets for itself. When revenue targets are set, revenue estimates become critical to the legislative process.

The desire of Congress to control and reduce the deficit has evolved gradually from mere good intentions to an elaborate set of legal and parliamentary rules that rely on specific numerical measures of the effect of legislation on the budget. This evolution began with the Congressional Budget Act of 1974,[1] which gave legal significance to revenue estimates by creating a series of parliamentary obstacles to proposed legislation that does not comply with

1. Pub. L. No. 93-344, 88 Stat. 297 (codified in scattered sections of 2 U.S.C.)

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the plan set forth in the budget resolution passed each year by Congress and by providing penalties for committees that do not follow the corresponding "reconciliation" instructions to generate legislation reducing the deficit by specified amounts.

Revenue estimates were raised to a new level of importance by the Balanced Budget and Emergency Deficit Control Act,[2] commonly known as the Gramm-Rudman Act, after its main Congressional sponsors. The Act, which was enacted in 1985 and amended in 1987, set specific deficit targets for each year through 1993. At the beginning of the fiscal year, the Office of Management and Budget estimated whether this target was going to be achieved. This forecast depended critically on the estimate of the revenue effect of any legislation enacted just before the beginning of the fiscal year. If the forecast was not within $10 billion of the target, the President was required to institute a series of automatic across-the-board spending cuts, called sequestration, to achieve the target. In this context, a $1 million swing in estimated revenue effect could directly cause a $10 billion change in spending on the gamut of federal activities.

The Omnibus Budget Reconciliation Act of 1990[3] replaces the deficit targets under the Gramm-Rudman legislation with spending targets. There are now three kinds of sequesters—one for taxes and entitlement outlay programs, one for discretionary outlay programs (calculated separately for three spending categories for the first three years), and a general sequester which cannot constrain spending during the first three years. Under these new budget rules, a sequester in discretionary spending cannot be prevented by enacting tax increases. Rather, tax increases can prevent only a sequester of entitlement spending; such a sequester would take place only if the combined effect of tax or entitlement legislation enacted in 1991 or thereafter would increase the deficit in any year.[4] Even under this new budget scheme, revenue estimates will continue to be very important because Congress is likely to take great care to avoid the threat of an entitlement sequester.

Apart from their increased parliamentary and legal implications, revenue estimates also have become more important simply

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2. Pub. L. No. 99-177, 99 Stat. 1038.

3. Pub. L. No. 101-508, 104 Stat. 1388.

4. Although the deficit for fiscal 1992 is likely to be over $300 billion, President Bush was not required to propose tax increases in the 1992 budget because the proposed cuts in entitlements more than "paid for" the proposed tax cuts.

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because of increased sensitivity to budget deficits in recent years. For example, the Tax Reform Act of 1986[5] was assembled under a revenue neutrality constraint—the revenue effects of the Act in the first five years were to add to zero. This was not a legal or parliamentary requirement but, rather, a political agreement that was observed by both the Administration and the Congress during all phases of consideration of that Act. Because it was accepted by all participants, the Joint Tax Committee's revenue estimates of the provision of the Act, and proposed amendments to it, had a very significant impact on the ultimate outcome of that legislative effort.

II. Common Assumptions

Although it is a widely held view that revenue estimating is more of an art than a science, there is an underlying methodology of common assumptions followed by both the Joint Tax Committee and the Treasury Department.

A. ECONOMIC ASSUMPTIONS

All budget estimates, those concerning outlays as well as receipts, are estimated within a framework of specified economic assumptions as to the level of major economic variables such as gross national product, the average price level and rate of inflation, interest rate, and the unemployment rate (the Congressional Budget Office and Treasury use different sets of assumptions). Thus, an estimate of the revenue derived by a proposed increase in the corporate tax rate by one percentage point depends on an estimate of corporate taxable income; this is, in turn, derived from a forecast of corporate profits that is consistent with the GNP assumption. Both the baseline estimate of receipts under current law and estimates of proposed legislation are consistent with the same economic assumptions, so that one may be added to the other to derive a consistent estimate of what total receipts would be if the legislation were enacted. Similarly, all estimates of baseline outlays and outlay effects of proposed legislation are consistent with the same set of assumptions.

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5. Pub. L. No. 99-514, 100 Stat. 2085.

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B. BEHAVIORAL RESPONSE

One of the most important issues raised about revenue estimates is the extent to which estimates can or should take into account anticipated taxpayer response to the proposal. As a general rule (but with a major exception discussed below), the effects of behavioral response on receipts are taken into account. For example, in estimating the revenue impact of an increase in an excise tax such as that on gasoline, it is assumed that the increase would be fully passed through to consumers and that a reduction in gasoline consumption would result. This would not only reduce the expected receipts from the increment in the rate, but would also reduce the expected take from the rate that prevails under present law. Both of these impacts are reflected in the estimate.

Estimators often do not have precise estimates of the degree of behavioral response (such as the increase in home equity loans in response to the phasing out of the deduction of consumer interest), but they use whatever evidence is available. Relatively small differences in behavioral assumptions can lead to large differences in the estimates. For example, the corporate and individual models produce accurate static estimates of the revenue effect of changes in the minimum tax. Yet taxpayer behavior will change significantly if the minimum tax rules change and, therefore, static estimates, for proposals to tighten the minimum tax, are heavily discounted to take into account likely taxpayer behavior. The revenue estimators must determine whether the static estimate should be cut in half or cut by, say, 80 percent. Thus, the overall revenue estimate for a minimum tax proposal is dominated by the assumed behavioral response. Given the state of economic science, the behavioral assumption represents a major source of uncertainty in the estimates.

There is a major exception to the general rule that anticipated behavioral response is reflected in the estimates of the impact of proposed legislation. All estimates assume that the major economic aggregates—GNP, interest rates, employee compensation, investment, the overall price level, and the total level of state and local taxes—are unaffected by the proposal under study.[6] This assump-

6. Examples of elements of the economic forecast that may change as appropriate would include the mix of employee compensation, the mix of investment between structures and equipment, and the composition and level of nonwage personal income. For a discussion of this issue, see Howard W. Nester, *A Guide to Interpreting the Dynamic Elements of Revenue Estimates*, OFFICE OF TAX ANALYSIS, DEPARTMENT OF TREASURY, COMPENDIUM OF

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tion is reflected in all budget estimates, not just those of revenue proposals. The estimated budget effects of, for example, a proposal to increase spending on military aircraft does not reflect any change in unemployment compensation, revenues, or costs of servicing the federal debt that could result from induced changes in employment, national income, or interest rates. Likewise, proposals to cut income taxes do not take account of such effects either.[7]

This framework is adopted, not because estimators believe that spending and taxation have no effect on economic aggregates, but, rather, to prevent the chaos in the estimating process that would result if the hundreds of estimates of revenue and outlay proposals made each year had to anticipate all possible economic effects. Further, such an effort would involve complex tracing of a long chain of economic effects throughout the economy. For example, an increased gasoline tax that would reduce gasoline sales could also reduce automobile and tourist industry sales. But reduced oil imports could strengthen the dollar and the economic softness could lower interest rates; these factors could strengthen the economy. The sizes of these effects depend on how close the economy is to full employment, the level of the overall budget deficit, and many other variables which themselves depend on hundreds of individual budget policy decisions. Because of these complex interactions, a specific estimate of a proposal's impact on the aggregates would be virtually meaningless in a broader context. Yet the impact of holding constant the major economic aggregates can hardly be overstated because many of the variables whose movement could influence the size and direction of the estimate are held fixed in the estimating process.

C. *THE INCOME TAX OFFSET OF EXCISE TAX ESTIMATES*

The assumption that GNP is held constant has a particular application with respect to estimates of excise tax proposals because changes in excise taxes have corresponding, and partially offsetting, effects on income and payroll tax collections. The rationale

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TAX RESEARCH 1987 at 15-16. For an earlier discussion of feedback effects, see the Appendix to the Statement of Secretary of the Treasury W. Michael Blumenthal, The Revenue Act of 1978 (H.R. 13511), before the Senate Finance Committee, August 17, 1978, S. REP. No. 1263, 95th Cong., 2d Sess. 197.

7. The President's Budget, however, is a consistent document. The feedback effects of the President's proposals for spending and taxation are incorporated in the economic forecast underlying the budget estimates. The Administration does not provide estimates of how much the economy would falter if the President's proposals are not enacted.

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for this offset is not that excise taxes are deductible since, as discussed above, the estimates typically assume that excise taxes are fully passed forward to consumers, leaving pretax margins unchanged. Rather, the income tax offset follows from the assumption discussed above that GNP is unchanged as a result of the proposal.[8]

For example, suppose that an estimate is required of a proposal to increase the gasoline tax by one cent per gallon. Given the assumption that total expenditures remain unchanged, total receipts of producers of goods and services would decline by the amount of any increased tax revenue. If this occurs, however, the income received by the producers also must decline by this amount, causing a reduction in income tax revenues equal to the amount of income reduction multiplied by the average marginal income and payroll tax on all income. For this purpose, the average marginal tax rate is assumed to be approximately 25 percent so that the net effect of an excise tax increase is estimated to be 75 percent of the gross effect. This methodology also applies to proposed changes in payroll taxes on employers, such as unemployment insurance tax and the employer's share of social security taxes.

Under current law, the social security trust funds are off-budget and are excluded from deficit estimates and calculations made in the sequestration process. This, coupled with the income tax offset, can lead to a curious scoring of a cut in the social security tax. The reduction in the social security tax is off-budget and, therefore, not counted, but the income tax offset may be on budget. Thus, a proposal to reduce social security taxes by $12 billion could reduce the on-budget deficit by $1.5 billion (25 percent of the reduction in the employer share of the social security tax).

D. ESTIMATES OF TECHNICAL AMENDMENTS

Given the complexity of the tax law and the limited time usually available for the staff to draft final statutory language, mistakes in an enacted statute are not uncommon. Congressional revenue estimators generally deal with later legislation correcting such mistakes by assuming that the intended result actually had been implemented the first time. Thus, the revenue estimate for enacted

8. For a discussion of this issue, see George S. Tolley & C. Eugene Steuerle, *The Effect of Excises on the Taxation and Measurement of Income*, in OFFICE OF TAX ANALYSIS, U.S. DEPARTMENT OF THE TREASURY, 1978 COMPENDIUM OF TAX RESEARCH, at 67-83.

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legislation reflects the decision that actually was intended, even though by mistake the legislation does not actually reflect Congressional intent. As a consequence, even though the real effect of such technical corrections may be substantial, a zero revenue effect is attached to such corrections as are deemed necessary to implement what Congress originally intended. As a general rule, the baseline against which the tax law changes are measured is the law that has been intended by legislation previously enacted, so that subsequent amendments which merely effect the intent are treated as having no revenue effect.[9]

The Joint Committee has adopted this estimating convention because of the difficulty of drafting complex tax legislation under severe time deadlines. If a committee decision has not been accurately implemented in a statute, it would lead to strange results to account for a provision twice—once when the decision was made and a second time when the decision was accurately implemented. A member of Congress who had offered a revenue raising amendment to pay for a losing amendment would be extremely frustrated if the loser was accidentally omitted from the legislation and he had to sponsor another revenue increase to pay for the provision again in the following year. Of course, the procedure of labeling some amendments as "technical" sometimes leads to disputes about exactly what Congress intended, especially in situations where the committee report or other written document does not clearly specify the intended result of a provision.

Partly because of this difficulty, the Treasury Department generally makes the assumption that current law is the law as enacted, not what Congress intended to enact. As a result, Treasury

9. The 1987 ESOP legislation appears to be an exception to the rule that Congressional estimates score technical corrections as having zero revenue effect if they merely effect the original intent of Congress, but the circumstances involved in this were somewhat different from the normal technical correction. The 1986 Act contained a provision allowing an estate tax deduction for certain contributions to an ESOP; the revenue estimate at the time was a small loss of over three years. Shortly after enactment, the staff realized that the provision was much more far-reaching than had been assumed during the 1986 legislative process. Although Congress would not have adopted the provision in its enacted form had a correct estimate been available, the statute did not reflect a true drafting error. Thus, the January 1987 CBO baseline receipts estimates reflecting the enacted legislation were reduced substantially to take into account the subsequent analysis of the provision. The 1987 Act provision restricting the ESOP estate tax deduction so that it would have a net revenue loss in line with the original understanding of the 1986 Act conferees was then scored as having a $4.8 billion revenue pickup for fiscal years 1988-90. See REPORT OF THE HOUSE WAYS AND MEANS COMMITTEE, THE OMNIBUS BUDGET RECONCILIATION ACT OF 1987, H.R. No. 391, 100th Cong., 1st Sess. 1638.

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will score technical corrections as having significant revenue effects if the technical correction makes a major substantive change in the law.[10]

This difference between Treasury and the Joint Committee on how technical corrections are scored could become critical under the new budget rules. The Joint Committee could score a technical correction as having no revenue effect because it does not change what Congress originally intended. For purposes of sequestration reports, Treasury could score the same technical correction as a revenue loser if it makes a significant substantive change in current law.

E. INTERACTIONS AMONG REVENUE ESTIMATES

In interpreting a table of revenue estimates (for example, for enacted legislation or for the Administration's tax proposals), it is important to know the assumptions made about interactions among the different provisions. For example, consider a table that contains both a change in tax rates and an item affecting allowable deductions. The effect of the change in the rates depends on the amount of taxable income, which is affected by the rules allowing deductions. Likewise, the effect of changing deduction rules depends on the tax rate that determines the tax impact of each dollar of additional deductions. In order to derive the combined effect of the items, one must be estimated assuming that the other is already in place. Clearly, the actual numbers shown for the individual items, which are constrained to sum to their combined effect, depend on the order in which the estimates are done. Tables of revenue estimates do not always state the assumed ordering of the provisions, so that comparison of estimates may be difficult.

During development and consideration of the 1986 legislation, Treasury generally stacked base broadeners first and then rate cuts last.[11] Thus, the revenue estimates for proposals to reduce exclusions or deductions assumed the current high marginal tax rates would apply to the broadened tax base. Stacking the rate reductions last resulted in a high revenue cost for rate reductions because these rate reductions also applied to the broadened tax base. This stacking order would have proved impractical during Con-

10. Treasury Memorandum from Tom Neubig to O. Donaldson Chapoton, Revenue Estimates for the Technical Corrections Act, April 1, 1988.

11. This stacking order was consistent with the decision process within Treasury. Treasury first decided how much base broadening was possible. Tax rates were set last.

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gressional markups, because the great majority of the amendments offered during that process consisted of amendments to the tax base rather than to the rates and the committees had already tentatively agreed on the lower tax rates. Thus, in order to approximate the impact that an amendment would have on the entire package, the Joint Committee stacked the rate reductions first and, thus, the rate reductions applied to the current, more narrow tax base. This stacking order reduced the cost of the reduction in tax rates and, correspondingly, reduced the revenue pickup from base broadening provisions, which were stacked last.

An issue closely related to stacking is the grouping of tax proposals. The 1990 Act replaced the 28 and 33 percent tax rates for individuals with a 31 percent rate and then phased out the personal exemption for high income individuals. This was shown in the committee reports as two different changes in the law and, indeed, the committees considered these changes separately. The revenue estimates would have looked different but the total would have been the same if the first proposal repealed the 33 percent tax rate to the extent it phased out personal exemptions and replaced this with the new phaseout based on adjusted gross income and the second proposal replaced the 28 and the remaining portion of the 33 percent tax rate with a 31 percent tax rate.[12] Another example where grouping of tax proposals was important is from the 1986 Act where estimates for full taxation of capital gains were never shown separately but were grouped with the estimates for the reduction in tax rates.

F. TIME PATTERNS OF REVENUE EFFECTS

Revenue estimates are projections of cash receipts—how much will actually be paid to the Treasury Department during each specified time period. Thus, estimators must not only determine the effect of the proposal on tax liability, they also must attempt to determine the timing of collection of that liability.

These timing considerations can have significant impact on the likelihood of enactment of various proposals. The Gramm-Rudman law focused attention on budget effects of a proposal in the fiscal year that was immediately approaching so that, even in major revenue-raising legislation, proposals which had very signifi-

12. For an example of how interpretation of revenue estimates depends on grouping, see Donald Bartlett & James Steele, "The rich escape in budget deal's sleight of hand," *Oregonian*, November 6, 1990.

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cant revenue effects in the long run were less attractive than those which had large first-year impacts. Under the new budget rules, the sequesters operate separately for each year during the period the rules are in effect, so that matching the years of revenue loss from tax cuts with the years of revenue gain from tax increases will be even more crucial.

Each proposal has its own time pattern of effects, depending on such factors as rules for deposit of taxes, withholding, and the likelihood that the proposal will be immediately reflected in estimated payments.

G. ESTIMATES OF PROPOSALS TO IMPROVE COMPLIANCE

Recent studies by the Internal Revenue Service have emphasized that noncompliance with the income tax laws has produced a "tax gap" on the order of $100 billion annually. While such studies often inspire dreams of easy money for deficit reduction, revenue estimates for specific proposals to reduce noncompliance are often very small. This is because the Service and the revenue estimators are measuring different things. Internal Revenue Service estimates of the tax gap reflect the total tax that could possibly be collected if perfect compliance were achieved. The amount that is feasible to collect through increased enforcement and stricter penalties, information reporting, and withholding requirements, in contrast, is generally estimated to be much lower.

Further, revenue estimates of proposals to change penalties or information reporting requirements reflect solely taxpayer response to the proposal and not the potential for increased Service enforcement activity, such as additional penalty assessments or matching of new information returns, using the new provisions. This convention follows from the general budget assumption that other aspects of the budget, including the enforcement budget of the Service, are assumed to be unchanged by the proposal.

For example, the estimate for the 1986 Tax Reform Act provision requiring that social security numbers be reported for dependents over the age of five correctly assumed that the mere enactment of the rule would result in a significant reduction in the number of dependency exemptions claimed. Further savings that could be achieved through increased enforcement activity, such as actual verification of the social security numbers by the Service, was not reflected in the provision's estimated revenue effects. This latter potential for revenue increase could, however, be reflected in

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an estimate of the budget effect of increasing appropriations for Internal Revenue Service enforcement activities.

III. The Making of Revenue Estimates

Revenue estimates are done by skilled economists using sophisticated models and whatever other information they have at their disposal. Because estimates must be produced for all sorts of proposals for which little information is available for analyzing the impact, a great deal of informed judgement is an essential part of the process. And because of the political context in which the estimators work and the influence their output has on the prospects for enactment of various tax proposals, they are subject to a great deal of pressure.

A. THE REVENUE ESTIMATING STAFFS

For the Congress, the Joint Committee on Taxation prepares the official revenue estimates for proposed changes in the tax law, and the Congressional Budget Office prepares estimates of federal receipts under current law. For the Executive Branch, the Office of Tax Analysis within the Treasury Department prepares both the official revenue estimates and estimates of budget receipts.

As revenue estimates have increased in importance, the number of government revenue estimators has also increased. Today, the revenue estimating staff in the Office of Tax Analysis has ten professionals and the economic modeling and computer application staff, which works with the revenue estimating staff, has an additional nine professionals. Today there are twelve professional revenue estimators at the Joint Committee on Taxation and six at the Congressional Budget Office.

Today's revenue estimators generally are economists who have completed the Ph.D. or some other advanced degree. To be successful as a revenue estimator, two critical skills are needed because revenue estimating is both a science and an art requiring human judgement. First, estimators must really care about getting numbers right. This passion must go beyond being fanatical if one's checkbook does not balance. Second, estimators must be creative in designing methods for analyzing the effects of proposals, because revenue estimates are no better than the assumptions and analytic framework underlying them. These two skills, the love for getting numbers right and creativity, do not often come in the same person, making it difficult for the Joint Committee and Trea-

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sury to recruit new revenue estimators.

Another important issue facing the Joint Committee and Treasury staffs is how to deal with the huge demand for their services. During 1990, the Joint Tax Committee received 950 formal requests for revenue estimates, of which about 60 percent were completed.[13] In addition, the Joint Committee staff estimated over 350 packages during the Budget Summit negotiations. Some of these estimates required little more than a new run of the individual tax model. There clearly were estimates that required one or two weeks of full-time work.

The sheer volume of estimates produced by the Joint Committee raises a question as to how priorities are set by the revenue estimating staff when everyone wants an estimate immediately. The short answer is: Very carefully. It should not be surprising that estimates required by a member of Ways and Means or Finance for an upcoming mark-up are completed before estimates requested by other members of Congress. When the revenue estimating crunch gets totally out of hand, members of the tax-writing committees give a priority ranking to their requests for revenue estimates.

Adding more revenue estimators to the Joint Committee staff might produce additional estimates but could create other problems, particularly given the necessity to ensure consistency among estimates produced by the staff. It must be recognized that as long as revenue estimates are a free good for members, the demand for estimates will exceed the available supply. We know of no practical way to get around this free good problem.

B. REVENUE ESTIMATING MODELS

The Joint Committee and the Treasury use complex computer models and detailed statistical data to prepare revenue estimates. The two most important models are the individual tax model and the corporate tax models. Both models are based on stratified random samples of tax returns as filed.

In the case of the individual model, the tax return data base is enhanced by data such as age, sex, and social security earnings from social security records and by data, such as income from non-

13. Telephone conversation with Bernard Schmitt, Associate Chief of Staff of the Joint Tax Committee. As recently as 1985, there were only 350 formal requests for revenue estimates. Treasury probably prepares a similar number of revenue estimates each year though no tally is kept.

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taxable sources, from the current population surveys of the Bureau of the Census. Additional data items, such as tax-exempt interest not available on the other files, are imputed to the tax model. The imputed data are adjusted to be consistent with the underlying economic forecast and are extrapolated to the current year.[14]

The models permit easy and consistent static estimates as to what would be the revenue effect of a change in current law. Taxpayer behavior, however, must be specifically modeled for those estimates for which behavioral responses are significant.

Not all revenue estimates are prepared using the individual and corporate tax models. There are separate models for the estate tax and the foreign tax credit and for estimating depreciation proposals and estimating proposals affecting specific industries such as the life insurance and the property and casualty insurance industries. In addition, many estimates raise new issues or require new information that has not previously been incorporated into a formal model. These are probably the most time-consuming estimating projects.

C. RELATIONSHIPS BETWEEN JOINT COMMITTEE AND TREASURY STAFFS

There is a long tradition of the revenue estimators at the Joint Committee and Treasury working closely together, but estimates will differ because each staff separately extrapolates the individual model and because the Joint Tax Committee's estimates are based on the CBO's macro forecast while Treasury's estimates are based on the Administration's macro forecast. Ideally, a revenue estimator on each staff would estimate each proposal independently. They would then compare estimates and assumptions and attempt to reconcile differences. The workload in recent years has been so heavy that this ideal situation seldom exists. Much more typically, the revenue estimators at the Joint Committee and the Treasury exchange ideas and confer on assumptions and data so that totally independent estimates are not first produced. Either differences in estimates are resolved, or an understanding is reached as to the source of the differences. By working together, the Treasury and Joint Committee provide an idiocy check for each other.

The two staffs also work closely together in developing basic

14. For a description of the Treasury individual tax model, see James M. Cilke & Roy A. Wyscarver, *The Individual Income Tax Simulation Model*, in OFFICE OF TAX ANALYSIS, U.S. DEPARTMENT OF THE TREASURY, COMPENDIUM OF TAX RESEARCH 1987 at 43-75.

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estimating models. For example, if the Administration is considering alternative tax depreciation rules, the Treasury revenue estimating staff will begin work on a depreciation model. The Joint Committee staff will be consulted, but the primary work will probably be done at Treasury. When depreciation proposals become hot legislatively, the Treasury depreciation model will be given to the Joint Committee and the Joint Committee is likely to further develop and elaborate this model. The process can be reversed. The Joint Committee developed the early models for preparing revenue estimates of changes in the tax treatment of property and casualty insurance companies.

During Congressional consideration of tax legislation, the Joint Tax Committee provides the official revenue estimates, and this gives the Joint Committee revenue estimators a larger role in the legislative process than the Treasury revenue estimators even though the Administration may rely on Treasury estimates in deciding on whether to support or oppose a particular proposal. Treasury's estimates, when they differ from Joint Committee's estimates, generally are not made public during the mark-up.

The 1990 budget procedures require, however, that once legislation has been enacted, the Administration is to estimate the bill's effect on spending and revenues, and these estimates are to be used in subsequent sequestration reports. When Congress returned in January 1991, the House, concerned that the Administration should not have the power to make the official spending and revenue estimates of enacted legislation for the purpose of sequestration, adopted a rule that will require reported bills and conference reports to contain a statement of law codifying the Joint Tax Committee revenue estimates for purposes of sequestration. It is not clear how this will work. The President has said he would veto any bill containing codified cost estimates. The only tax legislation passed since adoption of the new rule, the Desert Storm tax relief measure, went through on the suspension calendar so all House rules were suspended. The new procedures may still change the relative roles of the two staffs in the legislative process.

D. PRIVATE SECTOR REVENUE ESTIMATORS

In addition to revenue estimators working for the government, there are revenue estimators in the private sector. As there is considerable mystique surrounding revenue estimates, it is not too surprising that most revenue estimators working in the private sec-

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tor were trained at Treasury, the Joint Committee, or the Congressional Budget Office. Today there are more revenue estimators with more experience in the private sector than there are in the public sector.

Private revenue estimators can be quite helpful to the official government estimators. In 1987, the Joint Committee on Taxation originally estimated that repeal of vacation pay reserve would increase federal revenues by $200 million over the three-year period, 1988-90.[15] Several large companies realized that this estimate was far too low, given the impact that this proposal would have on them. They decided to tell the Joint Committee that the revenue estimate for repeal of vacation accrual was too low even though they realized that if a higher revenue estimate were attached to this proposal, it was more likely to be included in the final legislation. On the other hand, the companies also realized that if the proposal were not properly scored, the corporate sector would not get credit for the increased taxes resulting from repeal of this provision, and repeal looked likely anyway. The Joint Committee revised its revenue for repeal of vacation accrual to $2.0 billion over the three-year period, 1988-90.[16]

Private sector revenue estimators thus can provide a useful supplement to the information available to the Joint Committee and Treasury, though the official estimates always are those made by the government. Because revenue estimates have such an important impact on the prospects for tax provisions, affected taxpayers are willing to pay private sector estimators to spend much more time on a given issue than government estimators have available. Thus, private sector estimators often are able to develop a much more extensive analysis, sometimes based on information from affected taxpayers that is not on tax returns and is not easily available to the government estimators.

The revenue estimating staffs at the Joint Committee and Treasury, however, are somewhat wary of private revenue estimators. The government estimators are reluctant to make information available on specific revenue estimates, fearing that private revenue estimators will attack those assumptions that are unfavorable

15. JOINT COMMITTEE ON TAXATION, DESCRIPTION OF POSSIBLE OPTIONS TO INCREASE REVENUES PREPARED FOR THE COMMITTEE ON WAYS AND MEANS 287 (JCS-17-87, June 25, 1987).

16. SENATE COMMITTEE ON FINANCE, OMNIBUS BUDGET RECONCILIATION ACT OF 1987: EXPLANATION OF PROVISIONS APPROVED BY THE COMMITTEE ON DECEMBER 3, 1987 FOR INCLUSION IN LEADERSHIP DEFICIT REDUCTION AMENDMENT, 219 (Dec. 1987).

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to their clients while not providing any information on those assumptions that are favorable to their clients.

Even so, it has been our experience that most government revenue estimators are willing to discuss their revenue estimates with private sector estimators, though some government estimators are more open or more confident than others. But revenue estimators have bosses and bosses often do not want estimates, and especially worksheets, disclosed.[17] Government revenue estimators are more open before they have completed a revenue estimate. Once the revenue estimators at the Joint Committee or Treasury release an estimate, they often become locked in. It takes a lot of new information to persuade government estimators to change an estimate once it has been released.

E. REVISING THE REVENUE ESTIMATES

One of the largest sources of frustration, for the estimators and consumers of revenue estimates alike, are the changes that occur in estimates as new information is provided. First, as new assumptions about the macroeconomic aggregates are released by CBO and OMB, estimates that are dependent on those assumptions are revised. This usually occurs twice a year—at the beginning of the year and during the summer. This second revision often causes problems in dealing with legislation whose consideration stretches out over the year, because revenue estimates that are directly dependent on the macroeconomic estimates must be restated while the bill is still being acted on. Thus, packages of provisions that were revenue neutral under one set of assumptions might lose revenue under another set of assumptions. Legislators who thought they had met the constraints of the estimating process can be quite frustrated to be told that the decisions must be revisited (this happened on several occasions during the formulation of the 1986 Act). The alternative, however, would be for decisionmaking to be shaped by estimates that are obsolete and whose inaccuracy would be documented at the next budget update.

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17. The Deputy Director of the Office of Tax Analysis sent a memorandum to the revenue estimating staff, laying down some rules for dealing with "Distinguished Former Colleagues and Advisors." He stated that, "It is intended to limit release of data to former colleagues who are working on a project and wish to see 'how it was done at Treasury when they worked there.' It is not always in the Treasury Department's best interest to have outsiders able to anticipate Department results." Memorandum from Howard Nester, Deputy Director, Revenue Estimating, to the revenue estimating staff, "Material Supplied to Former Staff," February 17, 1988.

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Revisions in estimates also can occur when the staffs receive new information on the impact of a proposal, often information that is brought to them by the private sector. Rather than continuously producing new numbers, however, the staff generally tries to bunch the revisions so that ongoing legislative deliberations can be disrupted as little as possible. Thus, at the time of summer changes in macroeconomic aggregates, many estimates are updated to reflect any new information or analysis that the staff has received during the previous few months.

IV. How Accurate Are Revenue Estimates?

Readers of House Ways and Means and Senate Finance documents often scratch their heads in amazement at the precision of the revenue estimates attached to obscure or complex provisions. How could the staff of the Joint Committee on Taxation have obtained enough information to produce such estimates? How accurate are revenue estimates and is there any way of checking their accuracy several years later?

In theory, assessing the accuracy of revenue estimates is one way to evaluate the entire revenue estimating process. To the extent that the estimates are accurate, the process is functioning well. Although we will attempt to make such an assessment in the next section, there are severe limitations on the ability of anyone to make an *ex post* judgement on the accuracy of estimates. First, only the estimates for that small set of proposals that are actually enacted can be verified by experience. Second, the estimates are economic forecasts, so that, like weather forecasts, they are always subject to uncertainty.

A final problem in assessing the accuracy of estimates is the extreme difficulty of even obtaining information on the actual cost of a change in the tax law. This always involves knowing what receipts would have been if the change had not been made, and this is itself very difficult. For example, if Congress tightens the treatment of mergers and acquisitions, there is no way, by examining tax returns filed several years later, to determine how many mergers did not take place as a result of the change in the tax law or how companies that merged restructured their transactions because the law changed. In theory, one could undertake surveys of companies and estimate econometric equations to get a handle on what would have happened if the law had not changed. Even so, the *ex post* validation estimate may require as many assumptions

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as the original *ex ante* estimate. It may never be known whether the original estimate was reasonably accurate.

Although most estimates probably cannot be checked easily, some can. For example, whether the new luxury excise taxes raise as much revenue as expected will be known as Treasury releases detailed data on excise tax collections. Also, when Congress enacts a new tax credit, the accuracy of the revenue estimate can be determined by examining tax returns filed several years later. In spite of these measurement problems, we believe that some types of revenue estimates generally are more accurate than others. The most accurate are those that are based on relevant data and for which behavioral responses and the underlying macroeconomic forecast are unimportant. For example, the revenue cost of an increase in the personal exemption is reasonably easy to estimate and the estimate is likely to be highly accurate. By using the individual tax model, the estimator can make a static estimate of how much increase in the personal exemption is going to reduce taxable income and tax. Behavioral responses are unimportant because the number of taxpayers, dependents, and blind persons will be little affected if the personal exemption is increased. The underlying macro assumptions will have some effect on the revenue estimate, but it will be quite small. For example, a two percent decrease in employment would decrease the revenue cost by far less than two percent.

Estimates for an acceleration of tax depreciation are much more difficult. Behavioral responses are important as taxpayers may change the mix of their investments in response to the change in incentives. The underlying macro assumptions are also important. If the economy goes into a recession, investment levels will fall whether or not depreciation is liberalized. Finally, there are complex interactions across tax years; because many companies have loss carrybacks and carryforwards, it is not enough to forecast corporate profits, it is also necessary to forecast income subject to tax.

V. Case Studies of Revenue Estimates

This section includes nine case studies of revenue estimates. Our purpose in relating these is to have a rough idea of how well the process is functioning. This is not by any means a random survey, since, as discussed above, many estimates are very hard to check. However, it allows us to see some of the difficulties faced by

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the estimators and illustrates many of the points made above.

A. SAFE HARBOR LEASING

The Economic Recovery Tax Act of 1981[18] included the safe harbor leasing provision which was designed to ensure that investment incentives were available to firms that currently were not taxable. The new leasing rules facilitated the transfer of tax benefits from a company that currently could not use them to a company that could. Reported transactions under the new rules received widespread public criticism and it quickly became apparent that the safe harbor leasing, whatever its substantive merits, involved a serious problem of public perception.

Because of the public criticism and the problem of public perception, Treasury undertook a study of safe harbor leasing. The Treasury study was based on a sample of over 2,000 leases.[19] Treasury concluded that the data in the study could not be used directly to check the original revenue estimates because much of the property in the Treasury survey of safe harbor leases would have been leased anyway. Nevertheless, the Treasury analysis indicated that the value of leased property in 1981 totaled $19.3 billion, and this volume of leasing was consistent with the volumes assumed in making the original revenue estimates.[20]

The Treasury study of safe harbor leasing is the only case of retrospective validation of a revenue estimate we know of that used a special survey of taxpayers to gather data. Even so, it was difficult to say much about the revenue cost of safe harbor leasing because the counterfactual—how much of the property would have been leased in the absence of safe harbor leasing—was unknown.

B. R&D TAX CREDIT

The Economic Recovery Tax Act of 1981 provided a new 25 percent credit for research expenditures in excess of average research expenditures in the base period, generally the preceding

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18. Pub. L. No. 97-34, § 201(a), 95 Stat. 172, 203 (codified as I.R.C. § 168(f)(8)).

19. U.S. DEPARTMENT OF TREASURY, OFFICE OF TAX ANALYSIS, PRELIMINARY REPORT ON SAFE HARBOR LEASING ACTIVITY IN 1981, (March 26, 1982). A final report was prepared in July 1982, but was never released because it was clear that Congress was going to repeal safe harbor leasing.

20. According to the Service, $37.1 billion of property was leased in 1981 and 1982. Margaret Riley, *Safe Harbor Leasing, 1981 and 1982*,INTERNAL REVENUE SERVICE, STATISTICS OF INCOME BULLETIN 6 (Fall, 1983).

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three taxable years. The credit was expected to reduce tax liabilities about $800 million a year:[21]

($ millions)

1982	1983	1984	1985
-591	-847	-878	-817

The actual reduction in corporate tax liabilities was much higher.[22]

($ millions)

1982	1983	1984	1985
-839	-1,277	-1,589	-1,628

The underestimate of the cost of this new credit may have been due to several factors. First, little (if any) data were available on the R&D growth patterns of individual companies. Second, it is also possible that the revenue estimators underestimated the extent to which companies would classify future expenditures as qualified research expenditures or the extent to which companies would fail to identify qualified research expenditures in the base years before 1981. Third, perhaps partly for the previous reason, R&D expenditure grew substantially during this period. According to surveys by the National Science Foundation, total expenditures on R&D performed within the United States by industrial firms increased from 1.7 percent of GNP in 1981 to 2.1 percent in 1985.[23]

C. MAXIMUM TAX ON EARNED INCOME

In 1972, Congress reduced the maximum tax rate on earned income from 70 to 50 percent for tax years 1972 or later. It was anticipated that this change would reduce federal income tax revenues by $170 million a year, once the proposal was phased in.[24] In fact, 88,000 returns elected the 50 percent maximum rate in 1972 and the tax savings from use of the maximum tax was $271 mil-

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21. STAFF OF THE JOINT COMMITTEE ON TAXATION, GENERAL EXPLANATION OF THE ECONOMIC RECOVERY TAX ACT OF 1981 at 393.

22. INTERNAL REVENUE SERVICE, STATISTICS OF INCOME, CORPORATE INCOME TAX RETURNS, 1982 through 1985.

23. NATIONAL SCIENCE FOUNDATION, RESEARCH AND DEVELOPMENT IN INDUSTRY: 1988.

24. STAFF OF THE JOINT COMMITTEE ON TAXATION, GENERAL EXPLANATION OF THE TAX REFORM ACT OF 1969 at 13.

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lion,[25] or about $100 million more than estimated.

The estimate for the 50 percent maximum tax was prepared on the 1966 individual tax model, blown up to 1969 income levels. The estimate at 1969 income levels was projected forward in time. The individual tax model should have allowed the revenue estimator to estimate the amount of earned income taxed at rates above 50 percent. Wages and salaries came directly off the tax returns. The self-employment income would indicate the amount of net profits from unincorporated businesses or partnerships that is earned income. Also, the revenue estimators had to estimate how much earned income would be ineligible for the maximum tax because of the tax preference offset. This offset provided that earned income eligible for the maximum tax was reduced by tax preferences in excess of $30,000 in the current year or the average tax preferences in excess of $30,000 in the current and prior four years, whichever is greater. Because excluded capital gains was the major preference, the revenue estimators, by using the individual tax model, could get a reasonable estimate of preference income subject to the offset for the current year. As for the four prior years, the estimators probably had to make a guess because panel data were not available. Considerable effort was spent trying to model the tax preference offset though it only amounted to $77 million in 1972.[26]

It is not clear why the revenue estimate for the 50 percent maximum tax missed by $100 million. It is unlikely that taxpayers increased their work effort sufficiently to account for much of the underestimate. It may be that self-employment income was underestimated as the wage ceiling in 1972 was only $9,000 or that closely held businesses recharacterized a substantial amount of dividend income as earned income. Also, in projecting forward from 1969 income levels to 1972, the estimators may have underestimated the increase in income taxed at rates above 50 percent.

D. INDIVIDUAL RETIREMENT ACCOUNTS

In 1981, Congress liberalized individual retirement accounts by raising the general limit from $1,500 to $2,000 and extending them to individuals who were active participants in pension, profit-

25. INTERNAL REVENUE SERVICE, STATISTICS OF INCOME, 1972 INDIVIDUAL INCOME TAX RETURNS 145.

26. Emil M. Sunley, *The Maximum Tax on Earned Income*, 27 NAT'L TAX J. 543, 549 (Dec. 1974).

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sharing, or stock bonus plans. The expected revenue cost of the liberalization was:[27]

($ millions)

1982	1983	1984	1985	1986
- 229	-1,339	-1,849	-2,325	-2,582

This estimate implies that in 1984, for example, deductions for IRA contributions were projected to be about $6 billion higher than they would have been under prior law. Actual deductions were $15 billion by 1984 compared to only $5 billion in 1981.[28] Clearly, revenue loss was much greater than expected.

The 1981 IRA estimate was not a shot in the dark. The revenue estimators had considerable data on the use of IRAs by individuals not covered by qualified plans. The estimators assumed that individuals covered by qualified plans would make deductible contributions at the same rate as individuals with the same income who were not covered by plans. One might argue that individuals not covered by a plan would make higher contributions because they were not active participants in a tax-preferred retirement plan. On the other hand, it may be the case that individuals with a strong preference for retirement savings seek out employers who offer tax-preferred retirement plans. If this is so, individuals not covered by a retirement plan might make lower contributions than individuals with the same income who are covered by a plan. Thus the estimators' assumption, combined with their other assumption that participation rates for newly eligible taxpayers would rise over time, does not seem unreasonable.

In hindsight, it appears that the key fact that was missed by the revenue estimators is that a universal IRA can be mass marketed. Beginning in March and April, 1983, IRAs were touted by financial institutions through newspaper advertisements and direct mailings. Would taxpayers rather contribute $2,000 to an IRA or pay $1,000 in taxes? IRA participation rates jumped.

Should Treasury and the Joint Committee have known that a universal IRA would be successfully mass marketed? There was no

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27. STAFF OF THE JOINT COMMITTEE ON TAXATION, GENERAL EXPLANATION OF THE ECONOMIC RECOVERY TAX ACT OF 1981, at 385.

28. INTERNAL REVENUE SERVICE, STATISTICS OF INCOME, INDIVIDUAL INCOME TAX RETURNS, 1985, at 19; INTERNAL REVENUE SERVICE, STATISTICS OF INCOME, INDIVIDUAL INCOME TAX RETURNS, 1981, at 45.

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similar experience on which to draw. In the future, revenue estimators will consider possibilities for mass marketing tax preferences.

E. ALL SAVERS CERTIFICATES

In 1981, Congress enacted the all savers tax exemption which provided a lifetime exclusion from gross income of $1,000 ($2,000 in the case of a joint return) of interest earned on qualified savings certificates issued between October 1, 1981 and December 31, 1982. The certificates were required to have a yield equal to 70 percent of the yield on 52-week Treasury bills. The goal of this legislation was to stem the flow of deposits out of bank and thrift institutions.[29]

The estimated revenue effect on a calendar year liability basis was $1.7 billion for 1982 and $1.6 billion for 1983.[30] In fact, the amount of interest excluded on account of the all savers exclusion was $4.4 billion in 1982 and $0.8 billion in 1983.[31] Assuming an average marginal rate of about 40 percent for taxpayers with the all savers certificates, the revenue estimate was very close for 1982 and too high for 1983, when the bloom was off the all savers program.

The estimate was largely based on information from the individual income tax model, from which the staff could draw information on the amount of interest income received by taxpayers with tax brackets higher than 30 percent. After allowing for the lower yield and the cap, this was the amount of interest that could potentially be converted to tax-exempt income under the provision.

As with the estimate for the liberalized IRA, the estimate for all savers certificates required an estimate of behavioral response. It may well be that overstatement of the revenue loss for the all savers certificates in the second year is partly accounted for by the understatement of the revenue loss for the IRA. Taxpayers simply put less into all savers certificates and more into IRAs. Another possibility would be that, given the high interest rates in late 1981, taxpayers used up their $1,000 lifetime exclusions the first year. Also, as Treasury bill rates decreased during the last part of 1982

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29. For more information on the impact of the provision, see U.S. DEPARTMENT OF THE TREASURY, IMPACT OF ALL SAVERS CERTIFICATES ON SAVINGS (May, 1984).

30. STAFF OF THE JOINT COMMITTEE ON TAXATION, GENERAL EXPLANATION OF THE ECONOMIC RECOVERY TAX ACT OF 1981, at 395.

31. INTERNAL REVENUE SERVICE, STATISTICS OF INCOME, INDIVIDUAL INCOME TAX RETURNS, 1982, at 44; INTERNAL REVENUE SERVICE, STATISTICS OF INCOME, INDIVIDUAL INCOME TAX RETURNS, 1983, at 12.

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and throughout most of 1983, the attractiveness of all savers certificates fell because a taxpayer would have had to invest more in an all savers certificate in order to earn the $1,000 of exempt interest. We conclude that the revenue estimate for the all savers certificates was as good as the revenue estimate for the expanded IRA was bad. St. Offset, the patron saint of revenue estimators, probably was looking after the revenue estimator who had to put a number on the proposal for all savers certificates.

F. CAPITAL GAINS

The recent debate over proposals to reduce the tax on capital gains heightened interest in the revenue estimating process. If the proposals are scored as increasing federal revenues, any political opposition to the proposals would be reduced and, in fact, the revenue gain from reducing the tax on capital gains could be used to pay for other tax reductions or be used to meet any deficit reduction target. In contrast, if the proposals are scored as losing revenue, then they must be paid for by other tax increases, making it more difficult to enact the President's proposal.

The Treasury estimated that the Administration's 1990 capital gains proposal[32] would increase federal tax receipts by $12.5 billion for fiscal years 1990-95. The Joint Committee estimated that the Administration's proposal would reduce tax receipts by $11.4 billion over the same period.[33]

Cutting the tax rate on capital gains will increase realizations, more so in the short run than in the long run, and there is no disagreement that this behavioral response is significant and must be taken into account when preparing a revenue estimate. If realizations increase sufficiently, then a cut in the tax on capital gains will increase revenues—the lower tax rate on a higher base will result in higher tax receipts than if a higher tax rate is applied to the lower tax base. If realizations are less responsive, a cut in the tax

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32. The Bush Administration proposed a 30% exclusion for capital gains realized by individuals on assets held three years or more, a 20% exclusion on assets held 2 years but less than 3 years, and a 10% exclusion on assets held 1 year but less than 2 years. In addition, the capital gains exclusion would be treated as a tax preference for purposes of the minimum tax; all depreciation would be recaptured as ordinary income; and investment income for purposes of the investment interest limitation would be reduced by the capital gains exclusion attributable to investment assets.

33. JOINT COMMITTEE ON TAXATION, EXPLANATION OF METHODOLOGY USED TO ESTIMATE PROPOSALS AFFECTING THE TAXATION OF INCOME FROM CAPITAL GAINS 2-3 (JCS 12-90, Mar. 27, 1990).

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on capital gains may lose revenue. The initial question then is, how responsive are realizations to changes in the tax on capital gains?

Economists focus on the elasticity of capital gains realizations as the measure of how responsive realizations are to changes in the tax rate on capital gains. If a 10 percent cut in the tax on capital gains increases realizations by 11 percent, the elasticity is 1.10. If realizations increase by only 8 percent, the elasticity is 0.80.[34]

In March 1990, the Senate Finance Committee held a hearing on the $23.9 billion difference between the Treasury and Joint Committee revenue estimate on the President's 1990 capital gains proposals.[35] This hearing was marked by a thorough disclosure of the estimating methodologies of both Treasury and the Joint Committee. Though there were a number of differences in assumptions, just three differences relating to taxpayer behavioral responses accounted for about 90 percent of the difference in the five-year estimates. First, the Joint Committee assumed a short-run revenue elasticity of 1.10 and the Treasury 1.20. Second, the Joint Committee assumed a long-run elasticity of 0.66 and the Treasury 0.80. Third, the Joint Committee assumed that it would take two years to reach the long run while the Treasury assumed it would take three years to reach the long run. What is surprising is that such small differences in underlying behavioral assumptions can lead to such a large difference in the revenue estimate.

Although the Joint Committee and the Treasury reviewed a number of empirical studies of the revenue elasticity of capital gains, most economists would agree that these empirical studies are not sufficiently robust to distinguish between a long-run elasticity of 1.10 or 1.20, between a short-run elasticity of 0.66 or 0.80, or between a two-year or three-year transition to the long run.

Generally, the Treasury and the Joint Committee are very close on revenue estimates prepared independently. The estimates for the 1990 capital gains proposal are an exception to this, particularly given the sign reversal between the two estimates. To put the estimates in perspective, however, we can look at the static estimates for a 30 percent exclusion. According to the Joint Committee, the static estimate for a 30 percent exclusion for 1990-95

34. In the 1970s the Treasury, using a rule of thumb that the revenue elasticity was 0.50, cut the static estimates for capital gains proposals in half.

35. For a balanced and nontechnical summary of the debate between Treasury and the Joint Committee, see Gerald E. Auten & Joseph J. Cordes, *Policy Watch: Cutting Capital Gain Taxes*, 5 J. ECON. PERSPECTIVES 181-92 (Winter 1991).

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would be a loss of $100.2 billion. The induced realizations, plus the revenue effect of full depreciation recapture, offset almost 90 percent of the static loss according to the Joint Committee and over 110 percent of the static loss according to Treasury. When viewed this way, Treasury and Joint Committee differ only by about 20 percent, and this may be understandable and acceptable given how important, in the overall estimates, are estimates of the behavioral response.

G. THE CRUDE OIL WINDFALL PROFIT TAX

On April 5, 1979, President Carter announced a phased decontrol the price of domestically produced crude oil. To prevent excessive new revenues from flowing to oil producers, the President proposed a 50 percent crude oil windfall profit tax on producer revenues from (1) the sale of uncontrolled oil that was attributable to any future price increase and (2) the sale of lower and upper tier oil that was attributable to decontrol. It was estimated that the oil windfall profit tax would raise $5.0 billion over the first three years, assuming no further real increases in OPEC prices and $7.4 billion if there were a 3 percent annual real increase in OPEC prices.[36]

As the legislation moved through Congress, there were many revenue estimates prepared as to how much revenue would be raised by various windfall profit taxes. These estimates depended critically on one assumption—the future price of oil. The House Ways and Means Committee assumed an $18 price per barrel for unregulated domestic oil in the second quarter of 1979, growing at the rate of inflation plus 1.5 percent per year, and the Committee estimated windfall profit tax collections would be $45.4 billion over the period 1980 to 1984. By the time the Senate Finance Committee took up the legislation, the world price of oil had jumped to $30. The Finance Committee assumed a $30 price per barrel of oil in the fourth quarter of 1979, growing at the rate of inflation plus two percent per year. Under this price assumption, windfall profit tax collections under the Senate Finance bill would be $98.7 billion over the period 1980 to 1984.[37]

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36. The White House, Fact Sheet on the President's Program, April 5, 1979. These figures are net of the income tax offset discussed above and are not comparable to the other figures in this section.

37. HOUSE COMMITTEE ON WAYS AND MEANS, REPORT ON THE CRUDE OIL WINDFALL PROFITS TAX ACT OF 1979, H.R. REP. No. 304, 96th Cong., 1st Sess. 9, 51.

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The Conference Committee followed the Senate Finance Committee price assumption and agreed to an oil windfall profits tax that was expected to raise a gross amount of $131.0 billion over the period 1980 to 1984, and $392.9 billion over the period 1980 to 1990.[38]

Actual collections from the oil windfall profit tax were much lower than estimated by the tax writing committees in 1979 and 1980. Collections were only $69.6 billion for the period 1980 to 1984 and $78.2 billion for the period 1980 to 1990.[39] The shortfall of actual collections primarily was due to the sharp decline in oil prices during the 1980s.

This story about the revenue estimates for the oil windfall profit tax illustrates how a key underlying assumption (namely, the price of oil) can dramatically affect the revenue estimate. In short, revenue estimates are no better than the assumptions underlying them. At the time of the Conference Committee action, the staff emphasized that the estimates were very sensitive to the oil price assumption, which was well within the range of estimates in popular currency at the time.

Revenue estimates were important to this legislation not just because of the decisionmakers' interest in its budget effects, but also because the estimates facilitated decisionmaking by the tax-writing committees. Once the Conference Committee agreed on an oil price assumption and on a revenue target, it was clear what had to be decided by the conference. The main tradeoff was between providing incentives for new oil or for stripper production. If a different price assumption had been adopted, the main tradeoff would have been the same. The fact that the price assumption turned out to be wrong probably had no adverse effect on the decisionmaking by the tax-writing committees. Finally, the change in the oil price assumption as the bill moved from the House to the Senate gave the revenue estimators an excuse to re-estimate the House bill, incorporating any new information and correcting any known errors in the estimates used during the House markup.

H. PASSIVE ACTIVITY LOSSES AND PERSONAL INTEREST

Although the 1986 Tax Reform Act contained many provisions that were difficult to estimate, the phaseout of deductions for pas-

38. CONFERENCE COMMITTEE, REPORT ON THE CRUDE OIL WINDFALL PROFITS TAX ACT OF 1980, H.R. REP. No. 817, 96th Cong., 2d Sess. 163, 169.

39. Budget of the United States Government, Fiscal Year 1992, Part 7, 27-28.

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sive losses and consumer interest were among the most dependent on judgement. There were no figures on either passive losses or consumer interest on tax returns. Even more important, large behavioral responses were likely, but there was no evidence to suggest how large they might be. Loss-generating activities might simply shift from individuals to the corporate sector, which was not subject to the rules, and income from less leveraged passive investments might be used to offset the losses. Consumer interest might easily be recharacterized as either investment interest or home mortgage interest with relatively nominal transactions costs.

Because the deductions were phased out, rather than repealed, tax returns for the years immediately after the Act yield some information on the actual revenue gain from the provisions. To the extent that taxpayers actually reported some passive losses or consumer interest in those years, they had not shifted or restructured their investment or debt. Thus, we can estimate minimum revenue pickups from those provisions, at least in the early years.

With respect to the passive loss provision, a revenue pickup of $1.2 billion was projected in fiscal year 1987. According to the Internal Revenue Service, individual tax returns reported $10 billion of passive losses that were disallowed because of this provision.[40] Assuming a 28 percent marginal tax rate for these losses, a calendar year revenue gain of $2.8 billion resulted. Allowing for the fact that the fiscal year figure should be considerably less than the calendar year figure because of collection lags, the estimate appears quite close to the minimum impact of the provision as estimated from the tax return data.

The revenue estimates for the consumer interest limitation were gains of $0.6 billion and $4.5 billion in fiscal years 1987 and 1988, respectively. Transforming actual reported deductions into revenue loss figures, assuming a marginal tax rate of 25 percent for affected itemizers, yields revenue pickups of $3.9 billion and $6.0 billion for calendar years 1987 and 1988.[41] The estimates may be somewhat below the minimum gain as estimated from the tax returns. To avoid the possibility of attributing too much revenue gain to a provision whose impact could have been virtually eliminated by a large behavioral response, the estimators may have underestimated the inertia of taxpayers' responses to changes in the tax law.

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40. INTERNAL REVENUE SERVICE, 9 STATISTICS OF INCOME BULL. 31-40 (Winter, 1989-90).
41. INTERNAL REVENUE SERVICE, 9 STATISTICS OF INCOME BULL. 11 (Spring, 1990).

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I. TINs FOR TOTS AND CHILD CARE CREDIT COMPLIANCE PROVISIONS

The last two case studies involve estimates of proposals to improve compliance. As discussed above in section II, compliance estimates reflect only taxpayer response rather than the expenditure of any additional resources by the Internal Revenue Service. Since tax liability is not changed by these proposals, behavioral response is the *only* component of the estimates. Much less is known about the behavioral response to compliance provisions than many other tax provisions such as those affecting capital gains and charitable contributions. Because behavioral response to unique situations is inherently highly dependent on sheer judgement, these estimates are among the most difficult to develop and evaluate.

The 1986 Tax Act contained a provision ("TINs for tots") requiring that any claim for a personal exemption for a dependent age 5 or over must be accompanied on the tax return by the dependent's social security number. For a number of years, the Service had targeted dependency exemptions as an area of large noncompliance. For tax year 1984, the Service's estimate was that about 15 percent of all dependency exemptions were improperly claimed; the estimate made during consideration of the 1986 Act was that improper exemptions would lead to a revenue loss of $4.3 billion in 1987. The mere existence of substantial noncompliance simply set an upper bound, however, on the revenue gain from the proposal. The estimate for this provision during consideration of the 1986 Act was a gain of about $300 million annually.

Tax returns for 1987 show that taxpayer response to this provision was much greater than expected. Actual dependency exemptions claimed for that year were about 9 percent fewer than projected on the basis of past trends. As a result, the actual impact of the provision is estimated to be about $2.8 billion for that year.[42]

The second compliance provision that can be evaluated involves the child care credit. The Family Support Act of 1988 required that taxpayers claiming the credit generally must include the provider's name, address, and taxpayer identification number (TIN). Other changes to the credit in that Act reduced the age of dependents eligible for the credit and reduced the credit for individuals receiving tax-free child care assistance from their employ-

42. For additional information on the impact of this provision, see John A. Szilagyi, *Where Have All the Dependents Gone?*," INTERNAL REVENUE SERVICE, TREND ANALYSES AND RELATED STATISTICS—1990 UPDATE (Pub. 1500, Aug. 1990).

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ers. Again, the Service had estimated that there was considerable noncompliance with the credit (22.3 percent of all credits claimed should have been disallowed in full, according to the 1985 TCMP data), but there was no indication as to the effectiveness of the reporting device in discouraging this noncompliance. The combined revenue gain from these three changes was estimated to be $200 million in the first full year they were effective, with about half attributed to the compliance provision.

The response to these provisions has been dramatic. After years of growth, the amount of credit claimed in 1989 dropped by about $1.3 billion (about 34 percent) from the previous year. In addition, there was a 64.7 percent increase in the number of individual taxpayers reporting income from a child care business.[43] Because the estimates of the age and benefit changes were based largely on data that could be used to estimate the tax liability changes they caused, it is quite likely that a much larger than expected response to the compliance provision accounts for the bulk of the difference between the revenue estimate and the actual results. As with the TINs for tots provision, the behavioral response was very large, but, even after the fact, we are not aware of any way to estimate this response more accurately.

J. THE TOTAL REVENUE CHANGE FOR A TAX REFORM ACT OF 1986

One of the most important uses of revenue estimates of enacted legislation is to project total receipts. For this purpose, what is most important is the predicted total revenue change for the bill—not the revenue estimate for each provision. Here St. Offset can be helpful. Since enactment of the Tax Reform Act of 1986, corporate receipts have been below Administration and CBO projections but individual income tax receipts have been higher than expected by about the same amount. The major factor explaining the shortfall of corporate receipts is lower-than-projected corporate profits, which explains $44 billion of the $76 billion shortfall over the period 1987-1989 according to CBO. All other factors explain $24 billion of the shortfall, but the contributions of specific factors cannot be calculated. These other factors include lower-than-projected revenues for the corporate base broadeners in the Tax Re-

43. See John A. Szilagyi, *Whatever Happened to Child Care in 1989?*, 1991 IRS RESEARCH BULL. 33 (Pub. 1500 1991).

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form Act of 1986 as well as other legislation enacted in the 1980s, unexpectedly high use of ESOPs, and wider use of S corporations and the partnership form of business organization.[44]

VI. Improvements in the Revenue Estimating Process

Many people decry the importance of revenue estimates in the tax legislative process. It is said that too much weight is given to revenue estimates and not enough weight to fairness, efficiency, and simplicity, the traditional pillars of tax policy. Given that raising revenue is the principal objective of the tax system, however, revenue estimates do provide needed discipline (maybe the primary discipline) to the tax legislative process.

Recognizing that revenue estimates have increased in importance and that they will continue to be important, we suggest a number of improvements in the revenue estimating process.

A. THE TREATMENT OF SPEEDUPS AND DEFERRALS

When the tax-writing committees are instructed by the Budget Committee to raise, say, $20 billion of additional revenue for the next fiscal year, they have considerable leeway as to just how they do it. Not surprisingly, the tax-writing committees have often followed the path of least resistance and raised the necessary revenue by adopting speedups of tax payments instead of straightforward tax increases. If the goal of the budget exercise is to increase federal revenue to reduce the budget deficit, it should be recognized that speedups are not the same as increases in tax liabilities. Setting revenue targets for three to five years helps, but it does not solve this problem.

The issue can be best understood by an example. Suppose a three-day speedup in tax payments will shift tax payments between fiscal years as follows:

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44. *Hearings on the Decline of Corporate Tax Revenues Before the Senate Committee on Finance*, 101st Cong., 2d Sess. (1990)(statement of Dr. Robert D. Reischauer, Director, Congressional Budget Office).

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Year	Amount ($ millions)
1992 to 1991	1,000
1993 to 1992	1,050
1994 to 1993	1,103
1995 to 1994	1,158
1996 to 1995	1,216

The traditional revenue estimate, measured as a change in receipts under the proposed law compared to current law, would be:

($ millions)

1991	1992	1993	1994	1995
1,000	50	53	55	58

This revenue estimate is quite misleading. Except for three days each year, the national debt is not reduced by $1 billion. Instead, under the proposal, the government would have the use of about $1 billion each year three days earlier. The interest savings for the government would be less than $0.5 million each year, assuming the short-term government borrowing rate is 6 percent. In contrast, a proposal that sped up tax collections by one year (or one that increased tax liabilities and payments by $1 billion the first year, and $50 million each of the next four years) would have the same revenue estimate but would reduce the national debt by $1 billion the first year and by $1.2 billion over five years and would reduce the interest on the national debt by $60 million the first year.[45]

The 1990 legislation changing the budgetary treatment of loans and loan guarantees provides a useful model for dealing with this issue.[46] For several reasons, Congress and the Administration

45. In the 1987 amendments to the Gramm-Rudman Act, Congress recognized the measurement problems caused by speedups and deferrals by simply prohibiting counting the budget effects of such provisions for purposes of measuring compliance with budget targets. There were exceptions that allowed some breathing room. *See* Pub. L. No. 100-119, § 202, 101 Stat. 754, 784. The 1990 budget rules again will allow speedups and deferrals to be counted.

46. Daniel Halperin first pointed out to the authors that the new scoring rules for

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decided that the traditional measurement of cash flow was an unsatisfactory way of showing the impact of a loan on the budget. First, if a cash outlay associated with a loan is expected to be offset by future cash receipts (with interest), the new procedure is that no budgetary cost is shown. This is done because such a series of cash flows represents no change in the net liabilities of the federal government. Only if the loan is subsidized or there is a risk of default is a budget cost shown. Second, any estimated budget cost associated with a loan is recorded in the year of the loan, not over its life or in some proportion to the associated cash flows (although later adjustments are made if the initial estimates are incorrect). Again, the appropriate time to record any economic impact of the loan is when it is made, *i.e.*, when the value of the net federal liability changes.

Thus, we suggest the development of a present value approach to the evaluation of revenue proposals that have the effect of changing the within-year timing of tax receipts. The revenue effect of speedup and deferral provisions could be measured as the net present value of their cost. The effect would be to measure the revenue effect of a speedup or deferral as an equivalent change in tax labilities. For example, the revenue effect of the three-day speedup described above would be $0.5 million the first year, not $1.0 billion.

We suggest that this approach also could be applied to evaluate proposals that change a stream of tax benefits associated with economic activity that occurs in the first year that receipts are changed. Examples of such provisions are those affecting tax-exempt bonds and those affecting accelerated depreciation.

B. ACCURACY OF ESTIMATES

Revenue estimates presented in tables prepared by the Joint Committee and Treasury appear very precise. They are point estimates and that is indeed what policymakers and Congressmen want. Yet some estimates are more accurate than others. Should revenue estimators indicate how accurate they believe each estimate is, possibly by giving a range or a confidence factor, for the estimate? Should estimators indicate how important are any assumed behavioral responses or the underlying macroeconomic

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credit programs may have implications for how to score tax provisions that are similar to credit programs.

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assumptions?

We are not persuaded that information of this sort would serve any useful purpose, and it would be very subjective anyway. Among other factors, the accuracy of an estimate depends on the accuracy of all the assumptions as to other economic quantities used to derive it, as well as the correlation among all these variables. Thus, it would be impossible to derive a meaningful measure of accuracy.

C. *REDUCING THE MYSTIQUE*

For most observers of the tax legislative process, revenue estimates are very mysterious. This mystery, and widespread ignorance of how estimates are done, feeds the impression that the estimating process consists simply of throwing darts. The major point of this Paper is that, on the contrary, the methodology for producing revenue estimates follows sensible guidelines and includes sophisticated techniques, but these can always be improved.

In order to both improve respect for the process and stimulate discussion of methodology, the Treasury and the Joint Committee should make a major effort to increase their written discussion of how estimates are done. To begin with, the Joint Committee and the Treasury should prepare a technical paper outlining the methodology of revenue estimating. This paper could then serve as the basic handbook for the revenue estimating staffs of the Joint Committee and Treasury.

The Treasury and the Joint Committee also should release, from time to time, technical papers on revenue estimating issues. For example, there might be a paper on whether revenue estimates should take into account the effect of proposals on asset values and, therefore, on realized gains and losses. To illustrate this issue consider a cut in the corporate tax rate, which might increase the value of corporate assets and, therefore, the amount of realized gains and losses. Should this be considered in the revenue estimate? The traditional answer is no because the effect on corporate asset values is too unknown and, even if it were known, there might be offsetting effects on noncorporate assets. Should there be a different answer if the proposal is to tighten the tax treatment of mergers and acquisitions, which will reduce not only the number of mergers and acquisitions but also the price at which they will occur?

In addition to technical papers, the Joint Committee and

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Treasury should undertake retrospective estimates of enacted legislation and release the results of this work. We recognize that many estimates cannot be validated. For the important estimates that can be, retrospective studies should be done.

Treasury recently completed two retrospective studies that were mandated by Congress. In the first study, Treasury concluded that the 1984 Act increased tax revenues from life insurance companies by a smaller amount than predicted.[47] In the second, Treasury concluded that the revenue estimates for the property and casualty insurance provisions of the 1986 Act were in aggregate quite close to the actual increase in regular tax liabilities for calendar year 1987, although specific tax provisions were over- or underestimated.[48] These Treasury studies can serve as excellent models for retrospective studies of revenue estimates.

We do not advocate, however, drawing back the curtain to reveal the wizard pulling levers and turning dials, and we recognize it would be too costly for the Treasury and the Joint Committee to lay every estimate on the table. For example, we are not convinced that the extensive disclosure of capital gains estimating methodology improved the estimate, the process, or respect for the process. Further, we recognize that many estimates involve either confidential data or simply educated judgement that is difficult to buttress. But, given how important revenue estimates are in the legislative process, government estimators should think of other ways to respond to the vast and intense private sector curiosity about the process. Regardless of the wishes of the Treasury and the Joint Committee, the revenue estimating process may become more open because of evolution of disclosure laws. Judge Stanley Sporkin of U.S. District Court ruled in 1990 that Treasury had to release documents containing assumptions and calculations underlying a revenue estimate that became part of the President's Budget. The Internal Revenue Service, however, did not have to release predecisional documents that contained its initial estimates.[49] If

47. U.S. DEPARTMENT OF THE TREASURY, FINAL REPORT TO THE CONGRESS ON LIFE INSURANCE TAXATION (August 1989).

48. U.S. DEPARTMENT OF THE TREASURY, REPORT TO THE CONGRESS ON PROPERTY AND CASUALTY INSURANCE COMPANY TAXATION (April 1991).

49. The American Society of Pension Actuaries brought a Freedom of Information suit against the IRS to uncover the reasoning behind the $666 million revenue estimate for the "IRS Management Initiatives" in the President's Proposed Budget for fiscal Year 1990. The court ordered the IRS to release the documents that contain the assumptions and calculations that yield the $666 million estimate. American Society of Pension Actuaries v. Internal Revenue Service, 746 F. Supp. 188 (D.D.C. 1990).

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this ruling has widespread application, it could reduce frank discussion. Treasury often consults with the Joint Committee and others on revenue estimates. If these consultations were disclosed, the Joint Committee which, as part of Congress is not subject to the Freedom of Information Act, might be less cooperative with Treasury. Rather than waiting until such a decision impedes the quality of the estimates and risk being overtaken by forces they do not control, the estimating staffs should take the initiative to find a way to balance their need for confidentiality with the concerns of the private sector.

VII. Conclusions

Revenue estimates are forecasts of the expected change in tax receipts as a result of a change in the tax law. As a part of the tax legislative process, revenue estimates have increased in importance, and reasons for this include the indexing of the individual income tax to eliminate bracket creep, the Congressional focus on deficit reduction, and the adoption of legal and parliamentary rules.

Revenue estimates are produced by skilled professionals, and the methodology for producing revenue estimates follows sensible guidelines and uses sophisticated methodology and complex computer models. Estimates must be consistent with the macroeconomic assumptions, and they generally incorporate anticipated taxpayer response to the proposal being evaluated.

The methodology can always be improved. We believe that a present value approach should be considered for measuring the revenue effect of proposals that change the within-year timing of tax receipts. This approach could also be used to evaluate proposals that change a stream of tax benefits associated with economic activity that occurs in the first year. Finally, we believe that the Joint Tax Committee and the Treasury should increase their written discussion of estimating methodology, including the important underlying technical issues.

The accuracy of revenue estimates is a critical issue. What we conclude from case studies is that revenue estimating is not a pure science, particularly when behavioral responses are important. Especially in estimating compliance provisions, there is little evidence to guide the estimator's judgement as the amount of behavioral response. Nevertheless, the estimates generally indicate the appropriate magnitude of the revenue loss or revenue gain. Retro-

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spective estimates indicate that the cost of certain tax breaks originally were underestimated, and this is contrary to a popular perception that Treasury and the Joint Committee systematically overestimate the cost of any tax reductions while underestimating the revenue pickup from any tax increases. We find no evidence of systematic bias in the revenue estimates prepared by the Joint Tax Committee or the Treasury.

Finally, the revenue estimating process should become more open. This will require a balancing of the need for confidentiality with the legitimate concerns of the private sector.

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