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Introduction

Martin Feldstein

Because tax rules affect economic behavior, the analysis of any proposed change in tax policy should quantify the effects of that change on economic behavior and on the economy as a whole. Although this advice is clear in principle, it is difficult to apply in practice. As a result, nearly all analyses of tax proposals have ignored the impact of the proposed change on economic behavior. The resulting calculations are therefore uninformative about the economic effects of the proposed tax policy and incorrect about its impact on tax revenue.

The purpose of the National Bureau of Economic Research Project on Behavioral Simulation Methods in Tax Policy Analysis is to begin correcting this situation. Toward that end, our research has concentrated on developing simulation models that incorporate the behavioral responses of individuals and businesses to alternative tax rules and tax rates. We have also worked on extending the computational general equilibrium models that analyze the long-run impact of tax changes on the economy as a whole.

Although several different simulation approaches are therefore included in this volume, the principal focus of the project has been on the microsimulation of individual behavior. The basic data for these simulations are stratified random samples of more than one hundred thousand individual tax reforms that the Internal Revenue Service prepares each year. Our behavioral microsimulations are an extension of the computer simulation approach that the United States Treasury and the Congressional Joint Committee on Taxation have used for over a decade to prepare detailed estimates of the revenue effects of proposed changes in the tax law. The Treasury and Joint Committee calculations take each

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individual's pretax income and expenditures as fixed and calculate how changes in the tax rules would alter the resulting tax liabilities. This same practice of assuming no behavioral response to changes in tax rules has also been common in a number of studies by individual researchers. Although these analyses have played a valuable role in indicating both the aggregate effect of the proposed changes on the government budget and the distribution of the revenue change among income groups, their relevance is limited by their implicit assumption that the proposed tax changes would not alter the economic behavior of individual taxpayers.

In fact, many of the potential changes in tax laws would be expected to have significant effects on individual behavior. For example, a different method of taxing the income of working wives would alter the amount of work that they do.[1] Several studies of the tax treatment of charitable giving indicate that the tax law has a substantial effect on giving and therefore on the corresponding tax deduction.[2] A long list of behavior affected by tax policy could easily be constructed.

Ignoring the effect of a tax change on individual behavior obviously distorts the estimated impact of the proposed tax change on tax revenue. If a lower rate of tax would increase the labor supply of married women, the conventional method of analysis, which ignores this behavioral response, overstates the revenue cost of such a reduction. Similarly, because the deductibility of charitable gifts increases giving, the conventional method of analysis misstates the revenue effect of proposals to alter the deductibility of charitable gifts. The first advantage of incorporating behavioral equations is therefore to improve the accuracy of the estimated revenue effects of proposed tax changes.

The second, and I believe more important, advantage of incorporating behavioral equations is that this permits studying how alternative tax rules would affect the economic behavior itself. Since the purpose of many proposed tax changes is to alter economic behavior (or to reduce distortions that are already present), estimating the behavioral impact should be central to the simulation analysis.

During several years before the beginning of the NBER project reported here, I applied the behavioral simulation approach to studies of the effect of alternative tax policies on charitable giving and on the sale of corporate stock and the realization of capital gains. In these studies, Daniel Frisch, Joel Slemrod, Shlomo Yitzhaki, and I developed the TAXSIM computer program that uses the large IRS samples of individual tax returns to calculate changes in individuals' tax liabilities and behavior and to provide statistical summaries under the existing tax law

1. See chapter 1 by Feenberg and Rosen in the current volume and the earlier studies that they cite.

2. Chapter 5, by Feldstein and Lindsey, summarizes the previous research on the subject.

and alternative proposals. This experience convinced me that it would be both desirable and feasible to extend this approach to a number of other areas.

During 1980 and 1981, a group of NBER research associates collaborated on a variety of methodological and substantive studies of behavioral simulation. Daniel Feenberg had the primary responsibility for extending and updating the TAXSIM program. In the form in which it was used, the program included the Internal Revenue Service samples of individual tax returns for 1972, 1975, and 1977, the most recent data then available. The income tax laws of all of these years as well as the law prevailing in 1980 are available in the overall TAXSIM model.

Although the individual tax return contains a great deal of useful information, there are some important facts that are missing. For example, while information about the separate earnings of husbands and wives is available for the 1975 sample of tax returns, there is of course no information on the tax return about the number of hours that either spouse worked. To study the effect of alternative tax rules on the labor supply of married women, Daniel Feenberg and Harvey Rosen (chapter 1) therefore developed a method of imputing to each tax return the number of hours worked by the wife on the basis of the joint distribution of hours, earnings, and other variables estimated from survey data. Jerry Hausman (chapter 2) also studied the problem of imputing a distribution of working hours on the basis of a separate set of survey data.

A different problem of imputation occurs because taxpayers who do not itemize their deductions do not provide information about such things as charitable contributions and interest expenses. Lawrence Lindsey and I (chapter 5) developed a procedure for imputing an amount of giving to nonitemizers that reflects previous econometric research on the price and income elasticities of charitable giving, the observed distribution of giving among itemizers, and the tax rules that govern itemization.

The basic TAXSIM program, as augmented with the relevant imputed values, provides the framework within which estimated behavioral models can be introduced. The relevant models must ultimately rest on good econometric research. But even the best econometric research is likely to leave a significant margin of uncertainty because the parameter estimates are conditioned on a model specification that represents a substantial simplification of reality. Because all econometric specifications represent "false models" in this sense, simulating a particular tax change with different parameter values and model specifications can provide a useful indication of the range of uncertainty and the confidence that any conclusion deserves. Simulations of this type can also indicate the parameters to which the conclusions are most sensitive and therefore the type of additional econometric work that would be most useful in reducing uncertainty.

Six different microsimulation studies of individual responses to tax policies were completed and are reported in this volume. The most general tax change, an overall reduction in tax rates, was studied by Hausman (chapter 2). Lindsey (chapter 3) focuses on changes in the highest tax rates, examining in particular some alternatives to the maximum tax provision, which was intended to set a ceiling of 50% on the marginal tax rate on earned income but which, as Lindsey shows, rarely succeeds in achieving that limit. Feenberg and Rosen (chapter 1) consider alternative tax treatments of the family, including credits and exemptions for the earnings of a family's second earner. The other three simulations focus on more specific aspects of household behavior: Mervyn King (chapter 4) studies the tax treatment of home ownership, Lindsey and I (chapter 5) examine charitable contributions, while Feenberg and I (chapter 6) study individual saving behavior.

Michael Boskin, Marcy Avrin, and Kenneth Cone (chapter 7) use data derived from Social Security Administration records and the Current Population Survey to estimate the effects of alternative policies on the long-run financial status of the social security program. They explicitly recognize that changes in social security rules induce changes in retirement behavior.

A microsimulation approach can also be used to study the effects of changes in corporate taxation. Although the Internal Revenue Service does not prepare a sample of corporate tax returns for analysis by outside researchers, some problems can be studied with the information provided by corporations in annual reports and 10-K statements. Michael Salinger and Lawrence Summers (chapter 8) use this information to analyze how alternative tax rules would influence share prices and thus corporate investment in plant and equipment. Daniel Frisch (chapter 9) investigates the likely impact of alternative tax treatment of foreign source income on overseas investment by American firms. By working closely with the United States Treasury, Frisch was able to use special tabulations that maintained corporate confidentiality but provided the necessary detailed information on United States overseas investment and income by industry and host country.

In contrast to these eight microsimulation studies of particular aspects of economic behavior, three of the studies presented in this volume are based on computational general equilibrium models of the effects of taxes on the economy as a whole. Lawrence Goulder, John Shoven, and John Whalley (chapter 10) examine the implications of alternative specifications of international trade and capital flows for the response of the domestic economy to domestic tax rules. In all of their analyses, that response is very sensitive to the extent of international capital mobility. Don Fullerton and Roger Gordon (chapter 11) use a closed-economy general equilibrium model to study the effects of changes in capital

taxation but emphasize the importance of recognizing benefits that accompany some taxes and measuring effective marginal tax rates instead of the conventional average tax rates. Joel Slemrod (chapter 12) presents a new general equilibrium simulation model that recognizes that individuals and firms adjust their financial behavior in response to changes in the taxation of capital income and uses this model to examine the effects of switching to an inflation-indexed tax system.

The final paper in the volume, by Alan Auerbach and Laurence Kotlikoff (chapter 13), provides a theoretical simulation of the effects of tax rules on personal saving. Their simulation uses a life-cycle model, in which individuals choose the saving rate in each year that maximizes a measure of total lifetime utility subject to the intertemporal budget constraint implied by the interest rate and the structure of tax rates. The analysis emphasizes that the rate of saving in any year therefore depends not only on current tax rules but on the past history of tax rules and on the tax rules that are expected for the future.

The research project has helped us identify several areas for future research. Developing empirical simulation models based on intertemporal optimization is one of the tasks on this agenda. The availability of longitudinal data files like the Retirement History Survey and the Treasury's multiyear tax return file may provide the parameter estimates required to make such modeling a picture of reality. A multiyear approach to tax simulation is also the right way to analyze changes in social security taxes and benefits. As a minimum, the difference between the social security payroll tax per se and the excess of that tax over the induced marginal benefit increases should be examined.

The state income tax rules should be incorporated into the TAXSIM model and used for the analysis of individual behavior. Some preliminary work by Daniel Feenberg suggests that this will be a valuable addition to existing studies.

A link between the corporate tax simulations and the individual tax returns is necessary to examine the consequences of corporate tax integration proposals that do not have the same effect on all types of firms. Daniel Frisch and I have done some work along these lines that we intend to pursue.

Each of the microsimulation studies in this volume focuses on a single type of behavioral response. Some changes in tax rules would, however, be expected to affect several kinds of behavior. The future development of microsimulation analysis should incorporate such multiple responses where appropriate.

A long-run goal for behavioral simulation analysis should be the linking of microsimulations based on individual tax returns and corporate financial statements with the computable general equilibrium models of the entire economy. The prerequisite of this link is an expansion of the

financial side of the general equilibrium models and a development of portfolio equations for individual taxpayers.

We regard the work presented in this volume as the first stage in an ongoing research process. Some of the subjects for future research are already being examined. We hope that our preliminary efforts will encourage others to devote more attention to the behavioral aspects of alternative tax rules.