NBER WORKING PAPER SERIES

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Working Paper No. 5000

NATIONAL BUREAU OF ECONOMIC RESEARCH
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January 1995

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ABSTRACT

This paper uses the experience after the Tax Reform Act of 1986 to examine how taxes affect three aspects of individual taxpayer behavior: labor supply, total taxable income, and capital gains. The substantial sensitivity of married women's labor supply implies that the efficiency of the tax system could be increased significantly by reducing the marginal tax rates of these women relative to their husbands' marginal tax rates. More generally, the sensitivity of taxable income to the net of tax share implies that lower marginal tax rates would involve much less revenue loss than is traditionally assumed and would bring a much more substantial reduction in the deadweight loss of the tax system. The sharp fall in the real value of realized capital gains since the 1986 rise in tax rates on capital gains confirms earlier research indicating the substantial sensitivity of capital gains realizations to tax rates. A comparison with projections by the Treasury and Congressional Budget Office made in 1988 shows that the current official model greatly understates the sensitivity of capital gains to tax rates.

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Behavioral Responses to Tax Rates: Evidence from TRA86

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For those of us who study the effects of taxation, the Tax Reform Act of 1986 (TRA86) is the most important natural experiment since the start of the income tax. Although we are just beginning to examine the evidence, the lessons based on studying TRA86 are likely to have profound effects on academic thinking and on the design of tax policies in the years ahead.

The 1986 tax legislation is so useful as a basis for research for three quite different reasons. First, it involved a wide variety of tax rate changes for different individuals. The marginal tax rate fell by 44 percent for the top income earners and 100 percent for low income earners but actually rose for nearly a third of all taxpayers (Jerry Hausman and James Poterba, 1987). The tax rate on capital gains rose by as much as forty percent for some taxpayers while changing very little for others. This variety makes it possible to separate the effects of changes in tax rates from the background forces that affected all taxpayers during the middle years of the 1980s.

Second, the magnitude and character of the tax change was largely unexpected before 1986, making it possible to compare 1985 and earlier years with the years after 1986 (Feldstein, 1993a; Donald Fullerton, 1993).

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Third, and in some ways most significant, the quality of government data on household behavior in the 1980s is superior to anything that researchers have had in the past. In addition to the Treasury public use sample of more than 100,000 individual tax returns for each year, there is also a panel of taxpayers that permits researchers to follow the same individuals before and after the 1986 tax change. Researchers are beginning to study these data sources and also to explore what can be learned from a variety of other sequential cross-section data sets. With this rich array of microeconomic data, it is no longer necessary to try to learn something about the effects of tax changes in the 1980s from a handful of aggregate time series observations.

By analyzing these data we can hope to develop the information needed to forecast how potential changes in tax rules and tax rates would alter tax revenue and the deadweight loss of the tax system. Sometimes our analytic goals have to be more modest. We cannot always translate behavioral changes into measures of economic efficiency. But even in those cases, we can hope to provide useful information by estimating how much a proposed change in tax rules would increase such economic variables as charitable contributions or private saving or capital gains realizations per dollar of revenue loss. Of course, in some cases the analysis may point to policy changes that actually raise revenue while also increasing some desired form of economic behavior.

I. Tax Rates and Labor Supply

Although there is still very little statistical analysis of the behavioral changes induced by TRA86, the available evidence points to several important conclusions. I begin with the research on labor supply and then turn to the more general effect of tax rates on taxable

income and to the specific effect of tax rates on capital gains.

There is a long and econometrically sophisticated literature on the effects of taxes on labor supply based on cross-section samples that predate the 1986 tax reform[1] (Jerry Hausman, 1981 and 1985; Hausman and Paul Ruud, 1984; James Heckman, 1993; Thomas MaCurdy, 1992; Thomas Mroz, 1987; John Pencavel, 1986; Robert Triest, 1990). The general conclusions of these studies are that the working hours and participation rates of men are quite insensitive to net wages and to exogenous income but that working hours and participation rates of married women are substantially more sensitive to both. It is clear however that, even for married women, the literature contains a variety of parameter estimates. These estimates appear to be sensitive to the particular parametric specification of the labor supply function and to the treatment of the unknown wages for women who are out of the labor force, a particularly serious problem since labor force participation is generally found to be more responsive than the hours worked among the employed group of married women.

Nada Eissa (1994) has used the TRA86 experience to estimate the sensitivity of married women's labor supply to taxes in a way that avoids the problems of earlier studies. She reasoned that the change of a married woman's marginal tax rate between the years immediately before 1986 and the years immediately after 1986 depended on her husband's initial income level. Women with high income husbands experienced bigger declines in marginal tax rates than women whose husbands had lower incomes. Eissa classified women

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[1]Although the demographic characteristics of the women in the different groups do not differ substantially, Eissa controlled for the effects of the differences by a regression equation within the differences-in-differences framework.

in the Current Population Survey by their husband's incomes in this way and calculated the changes in labor force participation rates and the corresponding changes in the marginal net-of-tax shares (i.e, in one minus the marginal tax rate) for these income groups in pre- and post-1986 CPS samples. Comparing the change in participation rates between the two periods for two different income groups to the corresponding change in marginal tax rates for the two different income groups provides an estimate of the local elasticity of participation with respect to the net of tax share. Eissa also applies this differences-in-differences approach to estimating the response of hours among married women who work.[2]

This differences-in-differences estimation procedure avoids the problem of the unobserved wage rate in earlier cross section studies (by assuming only that the proportional change in the wage of women is the same in the different husband income groups). It also avoids the requirement of cross section studies to specify a precise functional form for the labor supply equation.

Eissa's analysis found a compensated elasticity of the participation rate with respect to the net of tax share (or, equivalently, to the net of tax wage) of 0.42 at the means of the variables and a corresponding elasticity of hours worked among those who are employed of 0.45. These effects have fully occurred within five years of the change in tax rates. The combined effect of the two elasticities implies an elasticity of total hours worked of about 1.0. Although this is not substantially different from the central tendency in the previous

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[2]Jerry Hausman and James Poterba (1987) projected the effects of TRA86 based on Hausman's 1981 parameter estimates. Barry Bosworth and Gary Burtless (1992) discuss the effects of the 1986 legislation but their evidence is limited to means for data aggregated by income quintiles.

literature, it is an important contribution because the estimation method is more robust and the parameter estimates are therefore more reliable.

It is important however not to confuse changes in participation and in average hours with changes in labor supply. The amount of "labor" that an individual supplies depends also on the intensity of work effort, the nature of the occupation, the assumption of risk and responsibility, the location of work, the amount of travel, the on-the-job acquisition of skills, and many other dimensions *all of which can be influenced by changes in tax rates*. It is totally wrong to say that taxes do not affect the labor supply of men when what the data show is that their participation rate and their average hours do not appear to vary in the short-term. Similarly, although it is possible to observe women's response to tax changes in the form of participation rates and average hours, women will also respond over time by changing the same wide range of labor supply behavior. Only further imaginative research will show how much more elastic the total long-run labor supply is than the currently measured changes in participation and average hours.

II. Tax Rates and Taxable Income

A decrease in marginal tax rates causes not only an increase in labor supply (broadly defined) but also a shift in the form of compensation (from fringe benefits and other non-taxed income to taxable cash compensation) and a reduction in deductible expenditures as the relative price of ordinary consumption falls relative to the price of such tax-favored consumption as mortgage payments and charitable contributions. Taxable income therefore rises substantially more than aggregate hours.

In Feldstein (1993), I used the Treasury Department's panel of tax returns to estimate

the response of taxable incomes to changes in the net of tax share. I grouped taxpayers by their 1985 marginal tax rates and compared each taxpayer's adjusted taxable incomes in 1985 and 1988 to the group's change in the marginal net of tax share. This differences-in-differences approach avoids the identification problems of traditional regression estimates.

For example, taxpayers in the highest marginal tax rate class in 1985 had an average rise of 42.2 percent in their marginal net of tax share between 1985 and 1988. Taxpayers in the next lower group, with marginal tax rates of 42 percent to 45 percent in 1985, experienced a 25.6 percent average rise in their net of tax share. The corresponding increases in the adjusted taxable income for the two groups (adjusted to exclude capital gains and modified in other ways) were 44.8 percent and 20.3 percent. Comparing these changes in taxable incomes and in the net of tax shares implies a taxable income elasticity of 1.48. Other differences-in-differences comparisons for taxpayers with 1985 marginal tax rates of 22 percent and higher implied taxable income elasticities of 1.25 and 1.04.

Gerald Auten and Robert Carroll (1994) of the Treasury Department's Office of Tax Analysis subsequently reestimated the same elasticity using the much larger panel of tax returns for 1985 and 1989 that is available only inside the Treasury. Their sample includes more than 5,000 taxpayers with 1985 marginal tax rates of 50 percent. They report an elasticity of 1.33 with a standard error of 0.15.[3]

In a related study, Daniel Feenberg and Poterba (1993) showed that the share of total adjusted gross income (AGI) received by the top one-half percent of taxpayers rose gradually

[3]These estimates for TRA86 are broadly consistent with the analysis of the 1981 tax reductions by Lawrence Lindsey (1987) and John Navratil (1994).

from 1981 to 1986 and then increased sharply in the next few years. Although some of the post-1986 increase is due to the inclusion of all of capital gains in AGI after 1986 and to the shift in some incomes from ordinary small business corporations to subchapter s corporations (that are part of individual AGI), the substantial remainder of the increased AGI no doubt reflects the taxpayers' decisions to take more of their income in taxable form rather than in untaxed benefits.

Although labor supply has been the traditional focus of tax studies of individual behavior, the induced change in taxable income is actually the more important response. It is the uncompensated change in taxable income that determines the change in revenue when tax rates change. And it is the compensated change in taxable income, rather than the more limited change in working hours and wage income, that determines the deadweight loss of the tax system (Feldstein, 1995).

III. Tax Rates and Realized Capital Gains

Because capital gains are only taxed when they are realized and losses can be offset against gains, the level of net realized capital gains can be expected to be quite sensitive to the capital gains tax rate. I found such sensitivity in a number of studies done in the late 1970s (e.g., Feldstein and Shlomo Yitzhaki, 1978; Feldstein, Joel Slemrod and Yitzhaki, 1980). That conclusion has been questioned by researchers who argue that the cross-section results were distorted by responses to temporary changes in individual tax rates (see., e.g., the recent paper by Leonard Burman and William Randolph (1994) of the Congressional Budget Office). The analysts at the Treasury and the CBO who are responsible for projecting the effects of capital gains taxes appear to take the view that changes in capital

gains tax rates have very little long term effect.

The experience since 1986 is therefore very informative. Although there has been no explicit microeconomic research on capital gains realizations since 1986, we can compare the history of aggregate realizations with the predictions of the Treasury and the CBO. Here are the facts. Realized capital gains surged in 1986 (jumping to 190 percent of the 1985 level) as taxpayers took gains in advance of the already legislated sharp 1987 rise in capital gains tax rates. The real value of realized capital gains then declined in 1987 and 1988 to $155 billion, 16 percent below the 1985 level. At that point, the Treasury and the CBO, based on their statistical model of realizations, projected that capital gains would rise rapidly over the next several years. The Treasury staff projected that capital gains would reach $256 billion in 1992 while the CBO projected capital gains of $287 billion (Gideon, 1990, p 216). In fact, capital gains have continued to decline since 1988, falling nearly 40 percent in real terms (to $118 billion in 1992) despite a 34 percent rise in the real level of share prices. The actual 1992 level of capital gains was only 41 percent of the level projected by the Congressional Budget Office .

It would appear from these data that the capital gains realizations are far more sensitive to tax rates than the Treasury and CBO analysts have assumed. Only a careful analysis of the microeconomic data on realizations will determine whether they are consistent with the estimates based on the earlier experience.

IV. Some Implications

Although evidence based on the 1986 experience is just beginning to accumulate, some clear implications already emerge. First, the substantial sensitivity of married women's

labor supply implies that the efficiency of the tax system could be increased significantly by reducing the marginal tax rates of these women relative to their husband's marginal tax rates (Feenberg and Feldstein, 1995). More generally, the sensitivity of taxable income to the net of tax share implies that lower marginal tax rates would involve much less revenue loss than is traditionally assumed and would bring a much more substantial reduction in the deadweight loss of the tax system (Feldstein, 1993b and 1995) than is implied by calculations based on labor supply alone. These estimates and the experience with capital gains suggest that the process of projecting taxpayer responses that lies at the heart of revenue estimation and therefore of Congressional tax policymaking would be substantially improved by incorporating the accumulating evidence on how taxpayers have responded to the Tax Reform Act of 1986.

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