February 1983

Choosing a Flat-Rate Tax Schedule

Joel Slemrod and **Shlomo Yitzhaki** of the National Bureau of Economic Research have calculated that the flat-rate tax system that would distribute tax burdens in a manner most similar to the current system would probably involve a rate of 20 to 25 percent but that might be as high as 38 percent. In **On Choosing a Flat-Rate Income Tax Schedule,** NBER Working Paper No. 1028, they use a numerical technique developed by Yitzhaki to find the flat-rate tax system that comes closest to meeting various objectives while also raising the same revenues as the present tax system.

Analytic models of the optimal (or ideal) income tax systems abound, but they usually make simplifying assumptions about the distribution of income and do not consider the current distribution of deductions and exclusions. The main advantages of the authors' optimization technique are that it can consider the actual distributions of these items, that it focuses attention on the objectives a tax system is aimed at achieving, and that it gives specific answers about the best system to meet any formulation of those objectives.

The basics of a flat-rate tax system are simple. Each taxpaying unit, such as an individual or family, is allowed some dollar level of exemption, probably associated with the number of persons in the unit. All income above the exemption level is subject to a constant tax rate. Three aspects of a flat-rate code can be manipulated to produce very different results: the level of exemptions per person or taxpaying unit, the deductions allowed from taxable income, and the tax rate. There is, of course, a trade-off

between the level of exemptions or deductions allowed and the tax rate needed to raise a given amount of revenue.

Shifting to a flat tax would cause some households' tax burdens to fall and others' to rise. Who gains and who loses depends on the particular flat-rate system, a household's income level, and the extent to which the household benefits from tax preferences in the current system. The tax burden could be shifted from higher to lower-income households, or to the middle class, or according to some other pattern.

Slemrod and Yitzhaki first take the approach of formulating explicit objectives that a flat-rate system might reasonably be designed to meet. They then use a computational technique to calculate the flat-rate schedule that comes closest to meeting those objectives. They perform the calculations using a sample of 947 tax returns drawn randomly from the Treasury Tax File for 1977, with the data updated to reproduce the pattern of tax returns that would be filed in 1982.

The first objective considered is to minimize the changes in the distribution of the tax burden. The extent of such changes can be measured in several different ways. For example, one way holds that all changes in tax burdens are equally undesirable. Another operates on the presumption that large changes are disproportionately more undesirable than small ones. A third holds that increases in tax burdens are more undesirable than decreases.

The calculations are performed for three types of flat-rate systems. One is a system with a tax credit of

equal value for each taxpaying unit, plus an additional credit for each person in the unit. The second has a credit for the unit, but no additional ones for the number of individuals. The third has a credit for each individual but none for the taxpaying unit itself (equivalent to having personal exemptions but no standard deduction). The third system has the advantage of completely eliminating the marriage penalty, since the value of exemptions is the same whether a couple files jointly or individually.

Finally, Slemrod and Yitzhaki compute tax rates using two measures of taxable income. The first is the existing adjusted gross income (AGI), while the second is AGI plus the adjustments to income in the present code and the excluded portions of realized capital gains.

Each calculation procedure must specify which type of tax changes to minimize, the system of tax credits, and the tax base. Because there are so many combinations of assumptions, Slemrod and Yitzhaki concentrate their attention on the cases where the optimal system results in half the population paying higher taxes and half paying lower. Then they find the systems that minimize either the sum of changes in tax liabilities or the sum of changes in average tax rates.

"...the tax rate that minimizes changes in current tax burdens falls between 20 and 25 percent."

In most of the cases considered, the tax rate that minimizes changes in current tax burdens falls between 20 and 25 percent. The system that produces the fewest changes in the distribution of the tax burden is the one with tax credits for both the taxpaying unit and each individual in the unit. The one exception occurs when the measure of tax changes is the sum of the squared differences in tax liabilities, and the tax base is AGI. In that case, the best flat-tax system has a marginal tax rate of 38 percent and features a higher level of exempt income. The much higher rate results because the squared-difference measure penalizes the large tax reductions many high-income families would enjoy under lower-rate schemes and causes the chosen flat-rate system to more closely reproduce the current taxation of high-income taxpayers.

To see how tax changes would be distributed, Slemrod and Yitzhaki look at disaggregated break-downs of liabilities by household. The example they use is the flat-rate system with AGI as the tax base and credits for both the taxpaying unit and each individual, the one that minimizes the sum of deviations from the present tax distribution. The tax schedule under that system has a credit of $944 per household and $489 per person, and a tax rate of 25 percent.

The number of households that would benefit significantly (that is, enjoy a reduction of more than two percentage points in their average tax rates) is relatively small for the lowest income group. From then on, the percentage of significant gainers follows a U-shape, dropping from 47 percent in the $5000-to-$10,000 income class to less than 10 percent in the $20,000-to-$40,000 group, and then rising to 90 percent in the $200,000-and-over group. Conversely, the percentage of significant losers follows an inverted U, peaking at 58 percent in the $25,000-to-$30,000 income class.

There is also a significant amount of dispersion in the impact of a flat-rate tax within income classes. The dispersion occurs because households, particularly high-income ones, differ substantially in the amount of deductions they now take. In other words, the average tax rate on similar AGIs varies quite a bit under the present system, so that shifting to a system where the tax rate on a given amount of income is virtually fixed would hurt some households and help others.

Next, Slemrod and Yitzhaki examine the breakdown of changes in marginal tax rates. Because the tax credits are larger than the value of standard deductions and exemptions under the present system, many low-income taxpayers would find their marginal tax rates reduced (to zero) under a flat rate. However, since a marginal rate of 25 percent is higher than the rate currently applicable to most lower-income households, many others would face a higher marginal rate. Overall, about 41 percent would enjoy reductions of more than two percentage points in their marginal tax rates, while 37 percent would experience increases of more than two points. Most of those facing higher marginal tax rates would be in the middle-income groups. That result suggests that the payoff from a reduction in marginal tax rates could be much less than many flat-tax proponents have argued; the incentive effects of marginal-rate reductions at the high and low ends of the income spectrum must be balanced against the disincentive effects in the middle.

In the final section of the paper, the authors consider the choice of a flat-rate tax system in which minimal efficiency costs in addition to minimal changes in the tax liabilities are desired. In the relevant range of flat-rate systems considered, there is an inevitable trade-off between the efficiency costs incurred and the resultant changes in tax burdens. The authors begin to estimate the precise dimensions of this trade-off in the concluding section of their study.   AE

Determination of Union Status

NBER Research Associate **Henry S. Farber** finds that a common assumption in economic models, that workers are union members simply because they want to be, is not accurate. In *NBER Working Paper No. 1006,* **The Determination of the Union Status of Workers,** Farber thus takes account of employer preferences as well as the desires of workers.

For this study, Farber uses a set of data on the personal characteristics and job attributes of about 1500 randomly selected workers (both union and nonunion). He eliminates from this list certain groups, such as those in the construction industry, where the union effectively makes the hiring decision for employers through hiring halls. The remaining sample consists of 915 workers.

Nonunion workers in the survey were asked: "If an election were held with secret ballots, would you vote for or against having a union or employee association represent you?" Some 37 percent of the nonunion workers answered in the affirmative.

Using this information and an econometric model, Farber finds that nonwhites (mostly blacks) are more likely to be unionized than whites with the same education and occupation, largely because they are more likely to prefer union representation. Nonwhites have about a 45 percent higher probability of desiring union representation than that of equivalent whites, and a probability of being hired by a union employer not significantly different from that of whites.

Further, Farber finds that the well-known lower propensity for southern workers to be unionized is the result of a combination of a somewhat lower demand for union representation on the part of workers and a greater shortage of unionized jobs than outside the South. He attributes the longer "queues"—or waiting lists—of workers for union jobs in the South to the higher costs of organization and administration of labor unions there. One contributory factor could be the social and legal constraints, such as the Right-to-Work laws common in the South.

Farber also attempts to explain why clerical, service, and professional and technical workers are less likely to be working on union jobs than blue-collar workers. Clerical workers, he finds, are less likely than blue-collar workers to desire representation. At the same time, those who want union representation are less likely to find a union employer. Farber suspects that this may reflect higher costs of organizing among clerical workers as a result of market conditions or employer resistance.

Service workers want union representation as much as blue-collar workers do. But they are less likely to find union jobs, again possibly because of the difficulty of organizing new union jobs as a result of market conditions or employer resistance. Professional and technical workers are less likely to want union representation than blue-collar workers do, but those who do want union jobs have about as much chance of finding them as blue-collar workers do.

> **"...Farber finds no systematic relationship between educational attainment, sex, and marital status of workers and their union status."**

Older workers, Farber finds, are less likely to want union representation, even though they might benefit from such fringes as union pension plans. In addition, workers on nonunion jobs with more seniority are less likely to desire union representation on their current job than workers with less seniority. Finally, Farber could find no systematic relationship between educational attainment, sex, and marital status of workers and their union status.

As background for this work, Farber notes that workers decide whether they prefer union or nonunion jobs depending on which job offers them the best combination of pay and other advantages. In order to keep costs down, employers in firms that are already unionized will tend to hire those workers who are most productive. They likely will be able to choose from a queue of workers seeking such union jobs.

This queue results from the fact that the advantages of a union job are likely to exceed the cost of dues and initiation fees. Further, it is an expensive and uncertain process to create new union jobs by organizing nonunion jobs. It involves the holding of an election supervised by the National Labor Relations Board, probably an intense and closely monitored campaign, and perhaps appeals by either or both sides to the NLRB regarding such issues as illegal campaign tactics and the determination of the appropriate bargaining unit. However, notes Farber, once the jobs are successfully unionized, their union status is preserved even if the workers who made the investment in the organization process leave the firm. New jobs created through expansion of unionized establishments are unionized automatically. To fill any vacancy, the employers can hire whomever they wish, but all new hirees will be unionized. For some workers, the benefits of unionization are larger than the costs of union membership but smaller than the costs of organizing nonunion jobs. This results in a queue for union jobs.   DF

The Impact of Community Health Centers

Since 1965, a network of federally funded Community Health Centers (CHCs) has developed in the United States to deliver ambulatory care to the poor in areas where there is a need for medical services. The CHC program was begun in 1965 by the Office of Economic Opportunity; in 1973, control of the program was shifted to the Bureau of Community Health Services, the Health Services Administration, and the U.S. Department of Health and Human Services. New and smaller variations on CHCs were created in 1975 and 1978 by two further pieces of federal legislation, so that by 1980 there were 800 CHCs across the United States. Now a study by NBER Research Associates **Fred Goldman** and **Michael Grossman** finds that these CHCs have had a significant effect in reducing infant mortality rates.

In *NBER Working Paper No. 1020,* **The Impact of Public Health Policy: The Case of Community Health Centers,** Goldman and Grossman set out to assess the impact of CHCs on health levels in the United States. They focus on infant mortality rates because these rates are a generally accepted indicator of health levels in all segments of the population; since the health benefits of CHCs may accrue to others in addition to the infants, though, the authors' estimates of the CHCs' impact may be a bit conservative.

Goldman and Grossman draw on a sample of data from the 678 largest U.S. counties for the years 1970–78. They find that CHCs have an inverse and statistically significant impact on infant mortality rates; the implication is that growth in CHCs during the 1970s contributed to the overall decline in infant mortality rates during that period.

Between 1970 and 1978, the white infant mortality rate in the United States fell by 5.5 deaths per thousand live births, and the black rate fell by 9 deaths per thousand live births. Goldman and Grossman find that CHCs have a larger impact on black infant mortality rates than on the rates for white infants, either in absolute or percentage terms. In the 1970–78 period, this amounted to a reduction of one death per thousand live births, or about 12 percent of the total decline. For whites, the comparable reduction amounted to 0.2 deaths, or 4 percent of the observed decline. Since reducing the black mortality rate has been a goal of public health policy for some years, the authors note, these results suggest that CHCs can contribute to achievement of this goal.

> "...CHCs have had a significant effect in reducing infant mortality rates."

In addition, the authors consider the statistics for counties similar in all respects other than the number of CHCs in each. They find that for whites, the total infant mortality rate in counties with four or more CHCs is smaller by 1.5 deaths per thousand live births than that rate in counties with no CHCs. The advantage of four or more CHCs for total black infant mortality rates is 2.9 deaths per thousand live births. Overall, Goldman and Grossman conclude, "... counties that have invested substantial resources in CHCs appear to have reduced both their white and black infant mortality rates by 10 percent when compared to counties that have made no investment in CHCs."