

The effect of taxation on labor supply in industrialized countries: A conference

by Robert Moffitt

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On October 12–14, 1988, a conference on the effects of taxation on labor supply in industrialized countries was held in Racine, Wisconsin. The conference was cosponsored by the U.S. National Science Foundation, the *Journal of Human Resources*, the Institute for Research on Poverty, and the Johnson Foundation. Held at the Johnson Foundation's Wingspread Conference Center, the conference brought together European and U.S. labor economists and econometricians to discuss the effects of income taxes on labor supply and the econometric methods used to estimate those effects.

Background

The motivation for the conference arose from two separate but related developments. First, tax reform in Western Europe has accelerated in the 1980s and has proceeded in directions similar to those taken in the United States. While most reform activity in Europe has concerned lowering of marginal rates, as in the 1981 U.S. tax legislation, there has also been some activity and considerable discussion of structural reform along the lines of the 1986 U.S. tax legislation. The country with developments most similar to those in the United States is the United Kingdom, where the top marginal rate was lowered in the early 1980s and a drastic reduction of the number of tax brackets (down to three) was enacted in 1988. Reductions in marginal rates have been under way in Germany as well, where an initial reduction in 1985 was followed by a second cut in 1988. Sweden plans to reduce its top marginal rate in the income tax to 75 percent, still high by most standards, but nevertheless reflecting a concern in Sweden for work incentives. The French conservative government cut tax rates, and discussions of structural reform in the Netherlands were introduced into public debate not long ago by the report of a specially appointed tax commission.

The second development in Western Europe in the last several years has been an increased interest in micro econometrics and in the use of advanced empirical methods for the

analysis of policy issues, particularly those related to labor supply. Most of the work has been conducted by relatively young labor economists who have followed U.S. developments in this area, particularly the work of Jerry Hausman on taxes and labor supply, and have been estimating similar models on data from their own countries. The European economists have also been interested in the development of new methods for estimating tax effects on labor supply beyond those used in the United States, as well as in the introduction of more realistic labor market assumptions into the model utilized by Hausman and others.

The participants

The intention of the conference organizers, Eugene Smolensky (Dean of the Graduate School of Public Policy, University of California) and myself, was to take advantage of these twin developments by bringing together labor economists from several European countries to present papers on their latest research results and experts in the subject from the United States to discuss the European work as well as present new work of their own.

Participants and discussants included the following persons:

- François Bourguignon and Thierry Magnac from France
- Ugo Colombino and Daniela del Boca from Italy
- Arie Kapteyn, Arthur van Soest, and Isolde Woittiez from the Netherlands
- John Dagsvik and Steinar Strøm from Norway
- Jaime García and José M. González-Paramo from Spain
- Sören Blomquist and Nils Urban Hansson-Brusewitz from Sweden
- Richard Blundell and Costas Meghir from the United Kingdom
- Gary Burtless, Jerry Hausman, James J. Heckman, Thomas MaCurdy, Charles F. Manski, Robert Moffitt, John Rust, Peter Schochet, Robert Triest, James Walker, and Kenneth Wolpin from the United States.

Revised versions of the papers will be published in the *Journal of Human Resources*.

The papers

Most of the papers at the conference, as well as most of the discussion of the participants, concerned the econometric difficulties in estimating the effects of income taxes on labor supply and the econometric issues connected with what has come to be the standard model for the solution of the difficulties. The estimation problem arises whenever an income tax system has tax rates that vary with income, as in the American system with rates of 15 percent and 28 percent. Applying simple regression analysis to explain hours of work, for example, is problematical because it is not obvious “which” tax rate in the schedule should appear on the right-hand side of the regression equation. In general, the whole tax schedule should be entered, but entering all rates would result in an extremely cumbersome regression equation.

The “standard” model that solves the problem was first developed by Gary Burtless and Jerry Hausman¹ and was later applied to the income tax case by Hausman.² Burtless and Hausman essentially set up a two-equation model, one equation to represent the individual’s choice of the tax schedule segment upon which to locate, and one equation to represent the individual’s choice of hours of work within the chosen segment. The first equation contains, either implicitly or explicitly, all the marginal tax rates in the schedule; but the second equation contains only the marginal tax rate in the chosen segment. The first equation also allows the choice of a “kink,” that is, a point at which the marginal tax rate changes. It should also be noted that Burtless and Hausman did not suppose that individuals necessarily make their decisions in two stages, for the econometric specification of the model in the form of two equations was entirely for convenience. The virtue of the model is that it ties the economic theory of labor supply choice into the estimation problem in an elegant and intuitively plausible way.

Burtless and Hausman outlined an estimation method for the model and demonstrated its use in an application to the case of a negative income tax. In his 1981 application to the income tax, Hausman estimated a similar model using U.S. data from the mid-1970s. Hausman found significant work disincentives of progressive taxation for women, which was expected on the basis of prior analyses, but also significant (though smaller) work disincentives for men. The latter was unexpected, for the conventional wisdom in the labor supply literature is that the labor supply of men is very insensitive to tax policy.

The papers and discussion at the conference generated a number of issues and questions about the Burtless-Hausman model and its successors. One of the most frequently discussed issues concerned how findings obtained using the standard model change as the statistical and mathematical assumptions imposed in that model are altered. A second source of concern discussed at the conference was the implication of the lack of clustering of observations around the kink points of the tax schedule. Economic theory implies

that such clustering should take place—that a significant number of individuals should work up through a tax bracket just to the point where the marginal tax rate is about to increase. However, data plots show essentially no such clustering around income tax kink points, at least not to the naked eye and not with the sample sizes available. Several reasons for this lack of clustering were put forward at the conference, including the possibility that individuals simply do not have the flexibility in their work decisions to fine-tune their hours of work so closely; that errors in survey responses are present; or that the marginal tax rates do not change by a sufficiently great amount from one bracket to another to make it worthwhile for individuals to attempt such fine-tuning of their work hours.

Another possible explanation for the lack of visual clustering is that we (the analysts) have mismeasured the locations of the kink points in the tax schedule for lack of adequate data. In most survey data sets, including that used by Hausman, no information is available on the family’s filing status, itemization status, number of exemptions, types and amounts of deductions, and so on. Instead, a standard tax rate schedule must be imputed to each family using simple socio-demographic characteristics such as family size and marital status. There is unquestionably significant error in this procedure, as it is well known that the tax situations of demographically identical families can be very different.

A related issue of more direct policy importance is whether the lack of information on deductions constrains not only the accurate modeling of individual tax schedules but also our ability to determine the effects of structural tax reforms such as that enacted in the United States in 1986. The 1986 law simultaneously simplified the tax schedule and broadened the tax base, chiefly by eliminating deductions and by reducing deductibility rates. Without information on deductions in the data and in an estimated model, it is difficult to see how the effects of the 1986 law could be satisfactorily determined. To date, only Robert Triest has addressed this question in his work.

A final general issue discussed at the conference and in the papers was the means by which institutional constraints on hours of work could be introduced into the model. It is well known that weekly hours of work cluster around 35–40 and that few individuals work part time, though the number has been increasing somewhat over time in the United States. If this signals an inability to adjust hours of work, individual responsiveness to the income tax may be likewise constrained. Several suggestions were put forth at the conference for more accurately modeling the distribution of hours of work in the standard model.

The individual papers at the conference developed one or more of these issues in more detail. In their paper on the Netherlands, Van Soest, Woittiez, and Kapteyn considered the problem of institutional constraints. In their paper on Norway, Dagsvik and Strøm took a different approach to the same problem.

Blomquist and Hansson-Brusewitz estimated the standard model on their Swedish data for two specifications of the labor supply function, thereby addressing the question of whether the functional form of the labor supply equation has an effect on the results. In their paper on the United Kingdom, Blundell and Meghir also addressed the question of the flexibility of the functional form of preferences, stressing the importance to the results of allowing maximum flexibility.

Bourguignon and Magnac, the French authors, estimated a family labor supply model taking into account joint household decision-making by husbands and wives, finding that the usual economic model of joint utility maximization does not fit the data well. They also found evidence of demand-side rationing and institutional constraints on hours of work. García, González, and their coauthor Antonio Zabalza, for Spain, and Colombino and del Boca, for Italy, estimated the standard model in a form closely related to that estimated by Hausman and found, interestingly, very similar elasticities in those countries to those found in the United States.

The two U.S. papers addressed a different set of issues. Triest tested the sensitivity of findings to the estimation method used. MaCurdy addressed issues in the specification of preferences.

Although the conference was long on methodological points and short on policy conclusions, considerable progress was made in identifying and clarifying the methodological issues that must be addressed in any study of the effects of income taxes on labor supply. Moreover, the interaction between the participants from the European countries and the United States was extremely fruitful, as many researchers discovered that they had been working on similar issues but with different approaches. As a consequence, the participants took away from the conference a stimulating set of ideas for new methods to use in their future research on what is a critical policy issue here and abroad. ■

¹Burtless and Hausman, "The Effect of Taxation on Labor Supply: Evaluating the Gary Income Maintenance Experiment," *Journal of Political Economy*, 86 (December 1978), 1103-1130.

²Hausman, "Labor Supply," in *How Taxes Affect Economic Behavior*, ed. Henry Aaron and Joseph Pechman (Washington, D.C.: Brookings Institution, 1981). For a review of the literature, see Hausman, "The Econometrics of Nonlinear Budget Sets," *Econometrica*, 53 (1985), 1255-1282; and Robert Moffitt, "The Econometrics of Piecewise-Linear Budget Constraints," *Journal of Business and Economic Statistics*, 4 (July 1986), 317-328.

PC-SIPPTEST

The Survey of Income and Program Participation (SIPP) is a series of panel surveys conducted by the U.S. Bureau of the Census in the 1980s to monitor short-term changes in the economic situations of persons, households, and families in the United States. The surveys gathered data on family formation and dissolution, job changes, income earned from labor and capital, receipt of government transfers, family characteristics, and many other topics.

The 1984 public use files of SIPP have been available since 1987 in a relational database management system (Ingres) at the University of Wisconsin-Madison for use on a VAX/VMS system via remote access. These files consist of data on more than 64,000 people, who were interviewed up to nine times over a three-year period.

Now available is PC-SIPPTEST, a microcomputer version of the VAX database, created by extracting a 2 percent representative sample of survey units. The sample contains all the essential variables for households, families, persons, and their associated employment and income information, as well as supplementary surveys on special topics. Tools for retrieval include

- longitudinal files with information about the duration in the panel, change in marital status, spells of receipt of income, income and asset amounts, demographic characteristics, residential mobility;
- files of target populations, such as those receiving welfare, medical assistance, food stamps, and health insurance;
- new units of analysis—assets jointly held by couples, social security benefits, parent-child and husband-wife pairs.

The database is stored on high-density disks. The package comes with an instructional manual (*Analyzing Complex Data: A DBMS for the 1984 Panel of the Survey of Income and Program Participation*, volume 1, *Exploring PC-SIPPTEST*), two diskettes of data dictionaries for the nine interviews in the files, and the questionnaires.

PC-SIPPTEST provides an unparalleled opportunity to understand the SIPP, determine sample sizes, test hypotheses, and debug command files before undertaking research on the complete panel.

The package costs \$575. To order it or to obtain further information, write to SIPP ACCESS, Institute for Research on Poverty, 3412 Social Science Building, 1180 Observatory Drive, University of Wisconsin-Madison, Madison, WI 53706. BITNET address: SIPPASSIST@WISCP5L. Phone: (608) 262-6358.
