Report on "The Complexity of Economic Policy: Restricted Local Optima in Tax Design" by Gilles Saint-Paul

The central point made in the paper is correct but not surprising to anyone familiar with the literatures on piecemeal second best policy and tax reform. The paper mentions neither of these two literatures, for example the major work on tax reform by Roger Guesnerie. At the same time, the paper takes a somewhat different formal approach than is usual in this literature.

As with the tax reform literature, the starting point is the observation that in reality policy involves small changes in instruments from given initial conditions rather than the implementation of a globally optimal solution. If the changes stop as soon as a local optimum is found, then only if all local optima are also global will a true optimum necessarily have been found. Typically in tax problems, the conditions necessary for this are not satisfied, and so a piecemeal tax reform from an arbitrary initial position cannot in general be expected to find a global optimum.

The paper formulates a general equilibrium tax model and relates the welfare properties of the solutions found by a piecemeal tax reform policy to the number of instruments that are changed. Specifically, the tax system is piecewise linear, with a variable number of tax brackets. This is in principle quite realistic, since actual tax systems virtually all take this form. The piecemeal tax reform consists of small changes in the kink points of the system, i.e. the values of income at which marginal tax rates change. The question of interest is the relation between the number of tax brackets and achieved social welfare, averaged across all possible local optima that could be found from arbitrary initial starting points of a stepwise convergence process to a local optimum. The effect on this achieved welfare is derived on varying assumptions about labor supply elasticities. Now intuitively, one might think that the greater the number of tax brackets, the closer the approximation of a piecewise linear system to a Mirrlees-type optimal non linear tax function. On the face of it, this intuition is contradicted by the present study, since over a reasonable range of labor supply elasticities, beyond a certain point achieved welfare falls with the number of brackets, and the optimum number seems to be as small as three. If this were a robust result about a realistic piecewise linear tax system, it would be very interesting from a policy point of view.

However, because of the way in which the model is constructed, this intuition is not really tested and the results are not very interesting from a policy point of view. The main drawback is that the marginal tax rates are more or less arbitrary. The tax system is initially chosen by fixing the number of tax brackets and then randomly selecting disposable income at each kink, subject to the constraint that marginal tax rates cannot exceed 100% i.e. the linear segments of the budget constraint relating net to gross income generated by the tax system cannot have negative slopes. From the policy point of view however, it is the marginal tax rates that are the central focus of interest, both in terms of their levels and degree of progressivity across brackets. To make these arbitrary and just focus on the number of brackets seems of secondary interest.

A second critical point: the social welfare function is not, as is generally the case in the literature, a function of the individual utilities of consumers. It actually excludes the disutilities of labor present in the individual utility functions, which again reduces the interest in the normative results.

To summarize: the basic idea that piecemeal policy changes from arbitrary initial conditions may not yield global optima is well known. To illustrate this in the context of a piecewise linear tax system would be interesting if the model of this system and the policy changes considered were empirically relevant. This does not appear to be the case in the present paper.