

The Elasticity of Reported Income: Evidence from Danish Panel Data

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Motivation

Behavioral responses to taxation are crucial to decisions about tax policy reform. Many public policies involve a trade-off between distributional equity and allocational efficiency. Under quite general conditions, the efficiency effect of a tax reform is given by the impact of changed behavior on government revenue (e.g. Kleven and Kreiner, 2005). Hence, all those behavioral responses which affect government revenue — in other words, all those kinds of behavior which are taxed — are important to the efficiency of policy reforms.

Most of the academic literature and most discussions among policy makers focus on labor supply behavior in its standard dimensions: hours worked and labor force participation. But there are many other dimensions of labor supply that may be responsive to taxation. For example, higher taxes may lead to lower effort on the job, and they can have adverse effects on the incentives to improve skills by taking education or engaging in on-the-job training. Taxation can also affect the type of jobs that people take (in terms of profession, geographical location, etc.) and it may affect search and labor mobility. All of these different responses can affect taxable earnings and government revenue, thereby creating efficiency losses in the economy. Despite the tremendous focus on hours worked, these other dimensions of labor supply response may be just as important from the point of view of government revenue and economic efficiency.

Moreover, the relationship between efficiency and behavioral revenue effects implies that we should go beyond thinking just about labor supply in its various dimensions. Instead, we should be thinking about changes in taxable income more generally. Taxable earnings may respond to taxation through several other margins than labor supply. For example, individuals may be able to change the form of payment for labor services into something which is more leniently taxed. This includes fringe benefits such as corporate cars, in-house sports facilities, free lunch and dining, laptop computers, etc. It also includes turning labor income into capital income (typically carrying a lower rate of tax) by being paid in stock options instead of a traditional wage income. Alternatively, taxable income can respond if higher taxes lead to a more aggressive interpretation of tax rules (e.g., claiming questionable deductions) or tax evasion (understating income, claiming unjustified deductions). Tax-induced changes in avoidance or evasion affect government revenue, hence creating efficiency losses in the same way that labor supply responses

do.

A pessimistic response to these comments would be that it is simply unrealistic to ever estimate all of the numerous responses to taxation that are important for government revenue and efficiency. The identification of each separate response involves important econometric issues, and some of the responses — such as tax evasion — are inherently unobservable. As an example of the difficulties in applied econometric work, the empirical labor supply literature, despite its long tradition and accessibility to good data, still leaves controversies about the magnitude of hours-of-work responses to tax and welfare reform. Since this really only deals with one small corner of behavioral responses, it would seem impossible to ever get exact estimates of the revenue and efficiency effects of tax reform. The implication is that most policy recommendations will continue to rest on shaky foundations.

However, while these remarks are quite defeatist, there is a way out. Because of the equivalence between efficiency effects and revenue effects, we do not need to estimate all of the responses separately. Instead, we simply need to know the total response of reported income (taxable income) to changes in tax rates. Since we have information on taxable income from individual tax returns, it is in fact possible to estimate this parameter. This research project will be the first to estimate the elasticity of taxable income with respect to the marginal tax rate for Denmark.

Literature

The literature on the elasticity of taxable income is a new one, and so far it has focused almost exclusively on the United States. The first papers to estimate this parameter were Lindsey (1987) and Feldstein (1995). Feldstein used the Tax Reform Act of 1986 as a natural experiment, employing a panel of individual tax returns to compare changes in taxable income (from before to after the reform) across different groups of individuals. To identify the effect, he exploited that the reform involved much sharper reductions in marginal tax rates at the high end of the income distribution than at the middle of the distribution. Feldstein found extremely high elasticities at the top of the distribution — a central estimate around 2 — suggesting very large efficiency costs from taxation and Laffer-effects associated with tax reduction at the top. His paper has become very influential, instigating a large literature on the topic. The subsequent literature, recently surveyed by Saez (2004), discussed various econometric issues in Feldstein's study, considered alternative specifications and other time periods and used other data sources. Most of these papers estimated elasticities that are lower than Feldstein's. For example, the paper by Gruber and Saez (2002) — possibly the most convincing study so far — finds an elasticity around 0.4. This is still a lot higher than most estimates of hours-of-work elasticities.

Despite the importance of the elasticity of taxable income, there exists almost no studies of this parameter outside the United States. For Europe, we are aware of only two studies: one for Norway (Aarbu and Thoresen, 2001) and one for Sweden (Ljunge and Ragan, 2005). The Swedish study is especially interesting and finds results consistent with those of Gruber and Saez (2004).

Data and Estimation Method

A large part of the observed variation in tax rates across different individuals and over time is endogenous — it reflects for example the income choices that we are attempting to estimate — and therefore cannot be used as a source of identifying variation. A widely used approach to get out of this problem is to look for policy reforms involving different treatment effects across individuals to provide the needed exogenous variation. An example of this approach is the difference-in-differences estimator using tax reforms as natural experiments (such as Feldstein, 1995), which may be seen as a special case of a fixed-effects, instrumental variables estimation (Moffitt and Wilhelm, 2000). More sophisticated versions of this approach use several tax reforms in the estimation and attempt to control for different macro environments for different individuals.

We have an agreement with the Center for Applied Microeconometrics (CAM) to use their panel data set which draws on Danish register and survey data from 1981 to 2004. The CAM panel includes tax return data (various income concepts and deductions) along with labor market and demographic information at the individual level. As just mentioned, to obtain credible estimates we need to consider a time period involving tax reforms. The period we consider encompasses three large tax reforms — the 1987, 1994 and 1998 reforms — along with a number of smaller adjustments in the tax code at the national as well as the commune level. Since the tax reforms involved gradual phase-in, most years in the period involve reform-induced (exogenous) tax rate changes. Moreover, the tax reforms affected different points in the income distribution to different degrees, which we can use to identify the effects. Our method will be strongly inspired by Gruber and Saez (2004) who used an American panel running from 1979-1990, a period comprising several tax reforms, to estimate the elasticity. Like them, we plan to carry out a fixed-effects estimation using reform-induced tax rate changes as an instrument for the observed tax rate changes at the individual level. In the estimation, we will allow for heterogeneity in the responses across different income levels.

Applications and Policy Relevance in a Danish Context

The elasticity of taxable income is probably the single most important parameter to analyze

the revenue and efficiency effects of tax reform and to make decisions about the design of tax schemes. Its estimation has several important applications. First, the optimal size and shape of income redistribution schemes relies crucially on behavioral revenue effects and hence the elasticity of taxable income (e.g. Saez, 2001, 2004). Only when we know the value of this elasticity, can we give reliable policy advice as to the best profile for marginal tax rates (e.g., is it better to reduce marginal taxes at the top or at the bottom?), and only then can we say if it would be beneficial to introduce an Earned Income Tax Credit in Denmark and what shape it should take. Second, the elasticity of taxable income is an important determinant for the marginal cost of public funds and hence for the evaluation of public projects. If the US estimates were to carry over to Denmark, the marginal cost of funds and hence the costs of financing public projects is a lot higher than previously expected, which has implications for the optimal size of the public sector. Finally, the value of this elasticity is needed to calculate degrees of self-financing — so-called ‘selvfinansieringsgrader’ — associated with tax cuts, and it can identify if and where Laffer-effects are possible.

While these applications are important in any country, they are perhaps particularly important in a Danish context at the present moment. We are facing important discussions on welfare reform which can make the Danish fiscal policy long-run sustainable in a situation of population ageing along with additional pressures from globalization, increasing demand for publicly provided health services and education, and changed norms. As reflected by *Velfærdskommissionens* final report and the government’s reform proposal, the discussion will center around reforms which can increase employment in order to collect more tax revenue and to reduce pressure on expenditures. The estimation of the elasticity of reported income has two implications for this discussion. First, while the strong focus on employment is clearly important and relevant, it is probably also too narrow-minded. Whether we talk about the efficiency or the sustainability of fiscal policy, the important factor is taxable income which is a broader concept than employment. Second, if targeted tax cuts become part of the welfare reform strategy, it is important to lower taxes where they have the strongest effect on taxable income. This is something we do not know enough about at the present moment, rendering the existing policy advice somewhat shaky. This project intends to take a step towards understanding where such tax cuts ought to be implemented.

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