

Revisiting the estimation of the elasticity of taxable income

Jakob Egholt Søgaard and Katrine Marie Tofthøj Jakobsen

University of Copenhagen

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Motivation and policy relevance

One of the key questions in Public Finance is to which degree people adjust their income and labor supply in response to taxes. The strength of such behavioral responses determines the effects of taxation on tax revenue and efficiency (dynamiske effekter og selvfinansieringsgrader), which are key components in evaluating and designing tax reforms. Hence, the size of behavioral responses to taxation (typically measured as elasticities) is also of great interest to the economic ministries (Finansministeriet, 2002 & Skatteministeriet, 2008), not to mention the ongoing work on updating the elasticities used in the tax simulations in the Danish economic ministries (Finansministeriet, 2019).

Since the pioneering work by Feldstein (1995, 1999), the literature has focused on estimating the elasticity of taxable income (ETI), as it captures all behavioral responses to income taxes including hours worked, career choices, work effort, etc. Under certain assumptions the ETI is a “sufficient statistic” for the behavioral effect of taxation that summarizes all we need to know about individuals’ behavior.¹

Project Description

Obtaining credible estimates of the ETI is therefore important both in the academic literature and in actual policy making. Yet, the literature following Feldstein (1995) has identified as many new challenges as it has resolved, and while most modern empirical studies in public and labor economics put great weight on validating identifying assumptions – e.g. common pre-trends in Difference-in-Difference (DiD) estimations – studies of taxable income responses using tax reforms struggle to follow suit.

In this project, we aim at bringing the modern empirical methods into the ETI literature. At its core this literature aims at using the changes in marginal tax rates created by tax reforms to identify behavioral responses to taxation. However, this estimation strategy is complicated by the fact that tax reforms are not random, and the changes in marginal tax rates therefore risk being correlated with other factors leading to biased results.

One important source of bias is so-called mean reversion, which reflects that individuals temporarily may have higher or lower earnings than normal. Hence, individuals in the top of the income distribution are more likely to experience a drop in earnings, while individuals in the bottom are more likely to experience an increase in earnings (income mobility). When evaluating a reduction in marginal tax rate at the top of the income distribution, these underlying movements in the income distribution all else equal bias the elasticity estimates downwards.

¹ While most subsequent studies have highlighted this insight, they have at the same time expanded the scope of the empirical analyses to also include estimates using other income measures such as broad income (before deductions) and labor earnings. We plan to follow this tradition and focus both on taxable income as well as measures closer to labor supply.

To deal with the problems of mean reversion the state-of-art estimation strategy as employed by Gruber and Saez (2002) and Kleven & Schultz (2014) include various control variables for initial income. However, this strategy does not live up to the modern empirical standards, because the identifying assumptions in this approach are unclear and because we lack tools to validate them. Following Kleven & Schultz (2014) only one paper has tried to address this point (Weber, 2014), but the proposed solution only deals with part of the problem and its “technical nature” actually moves the literature further away from modern empirical methods.

Our project builds on our insight that the state-of-art strategy for estimation of the ETI is in essence a Triple Difference Estimation (DiDiD). With this insight we can make the identifying assumption clear: the consistency of the estimated elasticities rely on the assumption of common trend differentials between groups treated differently by tax reforms, and we plan to show how this assumption can be validated econometrically and graphically using methods similar to the validation of common trends in DiD estimations.

Finally, we plan to illustrate our refined estimation strategy using two salient tax reforms in Denmark: The 1987 and 2009 tax reform. In particular the 2009 reform is close to ideal, because it created a significant reduction of the marginal tax rate for the upper part of the income distribution, and because the tax system had been relatively stable in the years leading up to the reform. This pre-period enable us to validate the identifying assumptions needed for the ETI estimates to be causal.

Expected Output

With this project we expect to produce at least one academic paper. The central idea in the project is to develop a refined empirical strategy for the identification of the elasticity of taxable income (and labor supply elasticities). In this context the empirical application using Danish data only serves as an illustration. For that reason we expect our results to be relevant to a broad international audience and to be able to publish the paper in a top field journal or better. At the same time, the actual elasticity estimates are directly relevant for the Danish policy debate.

Time Plan

We have already made some preliminary work on the theoretical motivation for our refined estimation strategy. Once funding is secured we will set up a data project and start the formal data analysis during the summer and autumn. This involves a substantial amount of preparing and cleaning data. In addition, it involves preparing and updating a tax simulator, as the one used by Kleven & Schultz, (2014).

We expect to have the first results ready in the beginning of 2020, and a research paper ready for submission to an academic journal during in the summer of 2020. We also expect to be able to present our results at the EPRN conference in 2020.

Budget

We apply for funding to buy data from Statistics Denmark. We will use Statistics Denmark’s standard dataset and work with the data on the server hosted by the department of Economics. We also apply

funding for a 4 month employment as a scientific assistant for Katrine Jakobsen after her completion of the PhD and for a research assistant.

The research assistant will work on cleaning the data and updating the tax simulator, which is needed in order to implement our estimation strategy.

Katrine Jakobsen will work exclusively on this project after having handed in her dissertation in February 2020 and make the paper ready for submission to an academic journal. This will also involve a shorter research visit at Princeton, where Jakob Søgaard will be in the academic year 2019/2020. During this stay we will present our work at a seminar at Princeton.

The budget is attached.

References

Finansministeriet (2002). Fordeling og Incitamerter 2002. <https://www.fm.dk/publikationer/2002/fordeling-og-incitamerter-2002>

Finansministeriet (2019). Igangsætning af projekt om fornyelse af det empiriske grundlag for arbejdsudbudseffekter af ændringer i skattesystemet. <https://www.fm.dk/nyheder/pressemeddelelser/2019/04/projekt-om-fornyelse-af-arbejdsudbudseffekter-af-aendr-i-skattesystemet>

Feldstein, M. (1995). The Effect of Marginal Tax Rates on Taxable Income: A Panel Study of the 1986 Tax Reform Act. *Journal of Political Economy*, 103(3), 551–572. <https://doi.org/10.1086/261994>

Feldstein, M. (1999). Tax Avoidance and the Deadweight Loss of the Income Tax. *Review of Economics and Statistics*, 81(4), 674–680. <https://doi.org/10.1162/003465399558391>

Gruber, J., & Saez, E. (2002). The Elasticity of Taxable Income: Evidence and Implications. *Journal of Public Economics*, 84(1), 1–32. [https://doi.org/10.1016/S0047-2727\(01\)00085-8](https://doi.org/10.1016/S0047-2727(01)00085-8)

Kleven, H. J., & Schultz, E. A. (2014). Estimating Taxable Income Responses Using Danish Tax Reforms. *American Economic Journal: Economic Policy*, 6(4), 271–301. <https://doi.org/10.1257/pol.6.4.271>

Skatteministeriet (2019). Rapport om Skatteministeriets Økonomiske Virkning (StØV). <https://www.skm.dk/skattetal/analyser-og-rapporter/rapporter/2008/juni/rapport-om-skatteministeriets-oeconomiske-virkning-stoev>

Weber, C. E. (2014). Toward Obtaining a Consistent Estimate of the Elasticity of Taxable Income Using Difference-in-Differences. *Journal of Public Economics*, 117, 90–103. <https://doi.org/10.1016/J.JPUBECO.2014.05.004>