Journal of Public Economics 107 (2013) 1–18

Contents lists available at ScienceDirect

Journal of Public Economics

journal homepage: www.elsevier.com/locate/jpube

Tax bunching, income shifting and self-employment

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ARTICLE INFO

Article history:
Received 14 June 2012
Received in revised form 9 August 2013
Accepted 9 August 2013
Available online 20 August 2013

Keywords:
Self-employment
Tax bunching
Retained profits
Tax avoidance
Income shifting

ABSTRACT

This paper proposes a dynamic extension to Saez (2010) bunching formula that allows us to distinguish bunching based on real responses and income shifting. We provide direct evidence of income shifting and pronounced bunching in taxable income for the Danish self-employed. If income shifting was neglected in this case, we would estimate a taxable income elasticity in the range of 0.43–0.53 and conclude that taxable incomes were highly sensitive to changes in marginal tax rates. We show, however, that more than half of the bunching in taxable income is driven by intertemporal income shifting, implying a structural elasticity of 0.14–0.20.

1. Introduction

Since Feldstein (1995, 1999), the behavioral response of taxable income to changes in marginal tax rates has been seen as the central parameter in the formulation of tax and transfer policies. A large empirical literature has therefore focused on estimating the taxable income elasticity.[1] In a seminal contribution to this literature, Saez (2010) shows that the compensated elasticity of reported taxable income can be estimated directly from the amount of bunching around the tax cutoffs. It is well-known, however, that tax avoidance and tax evasion among tax-filers are not only empirically relevant, they also bias estimates of behavioral response to tax changes, cf. Slemrod (1994, 2007). Since Saez' bunching method is based on a positive one-to-one relationship between the elasticity and observed bunching in taxable income, the method may result in an upward-biased elasticity estimate if neglected evasion and avoidance imply more bunching.

We therefore propose an extension to Saez' bunching formula that allows us to distinguish bunching based on real responses and pure income shifting. We apply this bunching method to the case of Danish self-employed who can legally shift income intertemporally by retaining earned profits in the firm. Our empirical application provides direct evidence of substantial tax avoidance and pronounced bunching in taxable income. The application is a clear example where tax avoidance cannot be neglected, but using our extension to Saez' method we are able to quantify the relative importance of pure tax avoidance and real behavioral responses to taxes.

Saez' method has recently received a lot of attention and has already been used in several applications (see Saez (2010), Kleven et al. (2011), Chetty et al. (2011), Bastani and Selin (2012), and Kleven and Waseem (2013)). A common finding is that the largest excess mass, and thereby the highest observed elasticity, is found for individuals with self-employment income, whereas bunching for workers is much less pronounced.

We investigate sources that drive the massive amount of bunching for the self-employed. More specifically, we ask the following question: can we interpret the pronounced bunching in *taxable* income for the self-employed as a real behavioral response in *earned* income, or is bunching for the self-employed primarily driven by income shifting and reporting effects?

Several papers have empirically documented income shifting using indirect measures such as expenditure on food, but there are only few papers with direct evidence of income shifting.[2] We observe income shifting directly in the data: tax planning for Danish self-employed consists of deferring taxes through retaining earnings in the firm, transfers to assisting spouses, pension contributions, and classification of personal income as capital income. We show that the key margin facilitating bunching is retained earnings.

The institutional feature allowing the Danish self-employed to retain earnings in the firm is an important smoothing device for the self-employed as they face much more uncertainty and earnings fluctuations compared to workers. Although it may be hard for the self-

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[1] See Saez et al. (2012) for a comprehensive review of this literature.

[2] Slemrod (1996) and Gordon and Slemrod (2000) provide US evidence on shifting between personal and corporate tax bases whereas Kleven and Waseem (2013) provide evidence on shifting between wage income and self-employment income in Pakistan.

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http://dx.doi.org/10.1016/j.jpubeco.2013.08.002

employed to precisely adjust *earned income* to the tax thresholds, they can easily adjust *taxable income* using retained earnings to smooth variations in earned income across years – in part to reduce tax liability. In other words, retained earnings provide self-employed individuals with the possibility to locate themselves exactly at the kinks of the tax system – without adjusting their efforts to earn profits.

Our bunching formula is explicitly derived from a simple dynamic model of income shifting. The model extends the standard static model of consumption and labor supply under progressive income taxation, allowing self-employed to use retained earnings to legally transfer firm profits across years. To capture that a substantial share of income fluctuations seems to be independent of efforts, we model income fluctuations by including a time-varying, exogenous income component. Two central predictions of the model are that i) tax-filers will aim at holding their marginal tax rates constant over time by smoothing variations in taxable income by the use of retained earnings, and ii) we will observe bunching even when taxes have no effects on earned profits.

Since the intertemporal tax planning of the self-employed involves shifting of income between current and future taxable income, the welfare loss of taxation depends on the present value of the tax revenue. The fact that taxable income today is very responsive to the location of kinks in the tax schedule does not mean that the present value of tax revenue is very responsive because increased retained earnings will be taxable in the future. In other words, the possibility of retaining earnings creates a fiscal externality (cf. Saez et al. (2012)). Therefore, the elasticity of current taxable income is clearly not a sufficient statistic for welfare analysis in the present context. Instead, we need to obtain an elasticity that captures not only the effect of a tax increase on taxable income today, but also on future tax revenue through earnings retained. We show that in the context of our model, the present value of the behavioral response to a tax increase is summarized by a single structural parameter in the utility function. We refer to this parameter as the *structural elasticity*.

We derive two ways of identifying the structural elasticity that fully index the behavioral response. Both ways are based on a decomposition of observed bunching in taxable income into bunching due to real responses and bunching due to pure income shifting. In order to distinguish between the two types of bunching behavior, we use a key insight from the model that persons with a real response completely off-set income shocks in taxable income by the use of retained earnings, while persons purely income shifting will only partly off-set these shocks in taxable income. The first method is simply to apply Saez' bunching formula on earned income adjusted for income shocks. The strategy for the alternative method is to identify the persons who are bunching due to pure income shifting and subtracting this mass from the total bunching mass in taxable income.

Using high quality Danish individual tax register data from 1994 to 2009, we analyze self-employed taxpayers' bunching at the kink points of the personal income tax schedule. We find clear evidence of bunching around the largest kink points in the tax schedule for both workers and self-employed. Compared to wage earners, the self-employed display substantial tax bunching at the kinks of the Danish progressive tax-system. While the excess mass around the largest kink is 0.2% for wage earners, the excess mass for the self-employed is 7.2% at this kink.

Tax bunching is concentrated among the self-employed who either retain or withdraw earnings from the firm. On average, 20.8% of the self-employed that retained earnings in the period 1994–2009, were located within a window of ± 500 DKK (1$ ≃ 5 DKK) around the top kink. About half of this group is *exactly* at the top kink ($\pm 1$$).[3] In contrast to this, tax bunching is very limited for the group that neither retains nor withdraws earnings. The fact that taxable income for the self-employed is much more responsive to changes in the marginal tax rate reflects that the self-employed can adjust taxable income at almost zero marginal cost.

We find that using Saez (2010) method directly on either earned income or taxable income results in estimated elasticities ranging from 0.01 to 0.02 and from 0.43 to 0.53 respectively. Although these estimates can be interpreted as lower and upper bounds of the structural elasticity of interest, the interval is clearly too wide to be very informative. However, using the two estimators derived from our dynamic model, we estimate that 50–70% of the bunching in taxable income is due to income shifting; implying a structural elasticity of 0.14–0.20. Hence, our empirical application to the case of Danish self-employed illustrates the importance of income shifting and the potential consequences of neglecting it.

While our bunching method and empirical application could seem specific to the intertemporal income shifting case of the Danish self-employed, we can interpret our model of income shifting more broadly. The bunching method can be adapted to the case of income shifting between persons (transfers to assisting spouses, or joint taxation of couples), shifting between different tax bases (capital income vs. labor income) and intertemporal income shifting.

The rest of the paper is organized as follows. In Section 2, we describe the data and provide some institutional background. In Section 3, we formulate a stylized two period model of consumption, supply of efforts to earn profits and intertemporal income shifting. Section 4 presents our empirical results. Section 5 concludes.

2. Data and institutional background

2.1. Bunching at the kinks of the tax schedule

We have access to a high quality panel data set covering the entire Danish population in the period 1994–2009. The data set, compiled by Statistics Denmark, is mainly based on the Income Tax Register which contains highly reliable and detailed information on incomes and tax returns. Besides this, we have access to a large set of socioeconomic variables from the IDA database (Integrated Database for Labor Market Research).

Only persons aged 25–59 years are considered. Unless we explicitly state the opposite we only consider persons whose main occupation is self-employment. A Danish self-employed can transfer income to an assisting spouse and thereby potentially reduce tax liabilities. The maximum amount which can be transferred was in 2001 171,100 DKK. Unfortunately, we only have information on transfers to assisting spouses for 1994–2001. For self-employed, whose spouses are not self-employed, we can uncover part of these transfers for 2002–2009. Therefore, for the entire sample 1994–2009, we restrict attention to self-employed whose spouses' primary or secondary occupation is not self-employment.

We neither observe the distance to the various tax cutoffs, nor the marginal tax rates — at least not directly. We therefore construct our own tax simulator taking a number of special deductions and joint taxation of couples into account. Using this simulator, we can replicate actual tax payments very precisely. For 95% of all individuals in our sample, the simulated tax payments are within a distance of $+/-5$ DKK from the actual tax payments.

In the period under study, personal income was taxed according to a piecewise linear tax system with five brackets before 1996 and four brackets from 1996 and onwards. In 2001, for example, the marginal tax rate begins at approximately 8% for incomes lower than 33.400 DKK. Above this level, a bottom tax is levied, increasing the marginal tax rate to approximately 44% for incomes lower than 179,900 DKK.[4] For incomes above this level an additional *middle tax* is levied, such

[3] If we widen the window to ± 7500 DKK the excess mass at the top bracket is 28.6%.

[4] The exact marginal tax rate depends on the municipality in which the person lives.