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Experimental evidence on the relationship between tax evasion opportunities and labor supply

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ABSTRACT

Motivated by the observation that access to evasion opportunities is distributed heterogeneously across the labor market, this paper examines the extent to which labor supply elasticities with respect to tax rates depend on such evasion opportunities. We first discuss the channels through which access to evasion affects labor supply responses and then set up a laboratory experiment ($N=205$) in which all participants undertake a real-effort task over several rounds. Subjects face a tax rate that varies across rounds and are required to pay taxes on earned income. The treatment group is given the opportunity to underreport income, while the control group is not. We find evidence that participants in the treatment group respond differently to changes in the net-of-tax rate than participants in the control group. The effect is more prevalent when tax rates fall. Additionally, the direction of the treatment effect is dependent on the evolution of tax rates across rounds.

1. Introduction

Labor supply elasticities observed in empirical analyses are usually smaller than responses along other margins (Slemrod, 1994) and are often heterogeneously distributed across different types of workers.[1] While there are several reasons why this is the case, this paper explores one possible explanation: access to tax evasion opportunities. It is well known that access to evasion opportunities varies across workers, thus making it easier for some workers to hide income relative to other workers. For example, whereas many wage earners are subject to third-party reporting, rendering tax evasion almost impossible, the self-employed and workers in industries that rely on cash payments have considerable access to evasion. The objective of the present paper is to test whether these differences in evasion opportunities affect the responsiveness of labor supply to changes in tax rates.

We use the theoretical framework of Pencavel (1979) to show that the responsiveness of labor supply to taxes is likely to vary with the opportunity to evade because workers with evasion opportunities are able to adjust their taxable income by

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[1] For example, there is evidence that labor supply elasticities vary by gender, with relatively larger estimates for females (Keane, 2011), tend to decrease in income (Roed and Strom, 2002; Aaberge and Colombino, 2013) and vary by marital status (Bargain et al., 2014).

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exploiting two inter-related margins: labor supply and evasion. In particular, the theoretical framework suggests that while both types of workers respond to tax rate changes via standard income and substitution effects, workers with access to evasion are additionally affected by evasion-induced effects. As a result, evaders' labor supply response to tax changes is expected to differ from that of non-evaders. However, opposing income and substitution effects prevent us from obtaining any clear predictions about the relative magnitude of the effect of access to evasion on the labor supply response.

We rely on an empirical approach to answer the research question because of this ambiguous theoretical effect. This is achieved by combining well-established laboratory experimental designs from the tax evasion and labor literatures. In each of ten rounds, 205 subjects first complete a real-effort labor task, as in Gill and Prowse (2012), and then make a tax payment.[2] We vary the tax rate across rounds in three specific ways that include both tax increases and tax decreases; each variation constitutes a tax evolution. Subjects are randomly assigned to tax evolutions, as well as treatment and control groups that are identical in every respect except access to evasion; while subjects in the treatment group are able to evade taxes by underreporting their earned income, subjects in the control group cannot. Following Fortin et al. (2007) and Alm et al. (2009), for example, subjects in the treatment group face an exogenous audit probability and penalty if they are detected. This experimental design allows us to determine if the responsiveness of effort supply with respect to tax rates varies between the two groups. Since access to evasion is the only difference between the two groups, differences in the responsiveness to tax rate changes can be attributed to the difference in evasion opportunity.

Reliance on experimental methods to answer our research question is motivated by the near impossibility of answering this question with observational data. Tax evasion opportunities are hardly observable,[3] and the standard labor supply elasticities are usually difficult to estimate. Additionally, even if we had good information on evasion opportunities and labor supply responses, clean identification would require us to solve self-selection into jobs with greater access to evasion. The advantage of using an experimental approach is that we are able to randomly assign subjects to treatment states and control the variables of interest, which allows us to cleanly identify the effect of evasion opportunities on labor responses to taxation. Using economic laboratory experimental techniques to analyze supply of effort and tax evasion is not new; see Charness and Kuhn (2011) for a comprehensive survey of the labor effort literature and Graetz et al. (1986), Alm et al. (1992, 2009), and Fortin et al. (2007) for tax evasion examples.[4]

We find evidence that access to evasion affects the extent to which individuals' labor efforts respond to changes in the net-of-tax-rate, and that this effect depends on the institutional setting regarding how tax rates evolve across rounds. The estimated treatment effect, i.e. the difference between the two groups' effort response to a change in the net-of-tax rate, is negative when subjects experience tax increases followed by a tax decrease. On the other hand, the estimated treatment effect is positive when subjects experience tax decreases followed by a tax increase. We also find that the treatment effect is more obvious for tax decreases than for tax increases. Finally, we find that the elasticity of taxable income is considerably higher in the treatment group relative to the control group. The internal validity of the experiment, randomization of subjects into groups, and lack of evidence that subjects did not understand the incentives of the experiment all point to causal treatment effects.

We are among the first to empirically examine the labor supply implications of the observed evidence that tax evasion opportunities are heterogeneously distributed across workers. Whereas most studies based on the seminal theory of Allingham and Sandmo (1972) assume that all taxpayers operate in an environment in which underreporting is available, more recent studies contradict this view. For example, Slemrod (2007) and Kleven et al. (2011) find evidence of almost no evasion among individuals subject to third-party reporting but substantial evasion among the self-employed.[5]

Our paper is related to the literature at the intersection of labor supply and tax evasion. As opposed to theoretical (Sandmo, 1981; Cowell, 1985) and empirical (Lemieux et al., 1994; Frederiksen et al., 2005) contributions that compare formal and informal labor markets, we compare formal labor markets that have two distinct levels of access to evasion. In this respect, our paper is more in line with the theoretical contributions of Pencavel (1979) and Slemrod (2001), who extend the standard labor supply model with taxes to account for tax evasion and avoidance, respectively. Both papers provide theoretical evidence that the ability to reduce one's tax liability through legal or illegal means affects labor supply decisions.

However, the paper most closely related to ours is Collins et al. (1992), which uses a laboratory experimental approach to measure the effect of access to evasion opportunities on the change in labor effort when individuals move from a system with no taxation to a system with either a proportional, “mildly progressive” or “steeply progressive” tax system. In other words, their experiment focuses on the progressivity of the tax structure. Their results indicate that the opportunity to

[2] Modeling labor effort instead of labor supply is common in the laboratory experimental literature on labor supply and is usually done because of the difficulty in modeling labor supply as measured by hours of work; see Dickinson (1999), Falk and Fehr (2003) and Charness and Kuhn (2011) for references and discussion. This issue is discussed further in Sections 2.4 and 5.3.

[3] Slemrod and Weber (2012) survey the empirical tax evasion literature and conclude that it is difficult to obtain credible causal evidence in observational studies. Experiments are one possibility for approaching tax evasion issues in a causal manner.

[4] However, in contrast to our work, most experimental contributions in this field look at the amount of evasion as the outcome of interest. Andreoni et al. (1998) and Torgler (2002) provide surveys on tax compliance in experiments. Additionally, our work is different from studies that look at the effect of changes in gross wages, net wages and tax rates; see Section 5.2 for a more detailed discussion.

[5] Other studies show that bunching around kinks in the tax schedule is mostly prevalent among the self-employed, allowing for the interpretation that other types of workers simply do not have the opportunity to adjust their taxable income due to lack of evasion opportunities (Saez, 2010; Bastani and Selin, 2014; Chetty et al., 2013). Additionally, the tax morale literature shows that the intrinsic willingness to pay taxes is considerably lower among the self-employed relative to wage earners (e.g., Alm and Torgler, 2006; Konrad and Qari, 2012).