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Are income and consumption taxes ever really equivalent? Evidence from a real-effort experiment with real goods

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ABSTRACT

The public finance literature demonstrates the equivalence between consumption and labor-income (wage) taxes. We introduce an experimental paradigm in which individuals make real labor-leisure choices and spend their earned income on real goods. We use this paradigm to test whether a labor-income tax and an equivalent consumption tax lead to identical labor-leisure allocations. Despite controlling for subjects' work ability and inherent labor-leisure preferences and disallowing saving, subjects reduce their labor supply significantly more in response to an income tax than to an equivalent consumption tax. We discuss the economic implications of a policy shift to a consumption tax.

1. Introduction

1.1. Background

In this paper, we offer an experimental test of the equivalence between consumption and wage taxes. We design an experimental environment in which, confronted with a real-effort task, subjects decide how to allocate their time between labor and leisure. We then compare labor-leisure allocations between two tax treatments, one with a consumption tax and another with an equivalent wage tax. Our experimental design allows us to control for possible sources of variation across subjects, notably, their ability at the real-effort task and their pre-tax labor-leisure preferences.

Since Hobbes (1651) and continuing with Mill (1871), the question of whether to tax consumption or income arises repeatedly in tax policy debate. Over the past three decades, most OECD countries – the US being a notable exception – have shifted their tax mix from income to consumption taxation, mostly in the form of VAT (see OECD, 2008).[3]

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[3] The US also explored such a shift. In January 2005, the US President George W. Bush commissioned a panel to propose a comprehensive reform to the tax code (President's Advisory Panel on Federal Tax Reform, 2005). The panel considered replacing the entire income-tax system with a national sales tax. However, the complexity of replacing the current tax regime with a broad-based consumption tax inhibited its adoption.

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The classic Haig–Simons definition (according to which income equals consumption plus changes in wealth (savings)) highlights that the major distinction between an income tax (on all income sources) and a consumption tax is the former's taxation of savings.[4] The taxation of savings distorts the taxpayer's inter-temporal consumption allocation, an often-invoked argument in favor of shifting to a consumption tax. In a second-best setting, redistributive goals may justify the taxation of savings despite its distortive effects.

The public finance literature has long been occupied with the question of the optimal mixture between income and consumption taxes for redistributive purposes. In a seminal study, Atkinson and Stiglitz (1976) (AS) extend Mirrlees' (1971) pioneering study on optimal income taxation by allowing for several consumption goods. AS demonstrate that, with certain restrictions on the underlying preferences, taxing consumption becomes redundant and the social optimum is attainable by levying a labor-income (wage) tax only. An implication of the AS result is the undesirability of taxing savings (interest income). AS and a large body of the subsequent literature[5] are premised on the equivalence between a linear wage tax and a comprehensive uniform consumption tax (levied on the set of all consumption goods).[6] In fact, wage taxes can be thought as pre-paid consumption taxes, while consumption taxes like the VAT and retail sales taxes are viewed as post-paid consumption taxes. With a dearth of behavioral evidence on the topic, the literature regards these two taxes as equivalent.

1.2. Our contribution

To test the equivalence of consumption and wage taxes, we introduce a new experimental paradigm in which both work and leisure choices earn subjects payments in real goods. This paradigm consists of an incentivized, two-stage individual choice problem that requires subjects to allocate their time between leisure (rewarded with a payment for each unit consumed) and a real-effort task. Their performance at the real-effort task in the first stage earns them income, which they allocate in the second stage between two consumption goods. After gaining experience in this environment, we introduce a tax. In the labor-income tax (*IT*) treatment, a 50% flat wage tax is imposed on earned income. In the equivalent consumption tax (*CT*) treatment, a 100% ad-valorem tax is levied on both consumption goods. No savings are permitted in either treatment. Notice that both tax regimes entail a 50% erosion in the individual's purchasing power without changing the relative prices of the consumption goods. That is, in both tax treatments subjects face the same budget constraint. Controlling for differences in labor-market productivity (i.e., differences in performance of the real-effort task) and inherent labor-leisure preferences using pre-tax treatments, we test whether these two equivalent tax regimes in fact lead to identical labor-leisure choices.

Although we have designed these two tax treatments to be theoretically equivalent, we propose a behavioral hypothesis that suggests individuals will work more and consume less leisure in the *CT* treatment than in the equivalent *IT* treatment. Our hypothesis is based on money illusion, that is, individuals' observed tendency to think in nominal rather than in real terms. An individual suffering from money illusion will typically display a reluctance to accept a nominal wage cut or to sell a house at a nominal loss.[7] Likewise, we anticipate that when deciding how much to work individuals in *CT* will not fully think through what their nominal wage will be worth after the imposition of consumption taxes. By contrast, the impact of an equivalent (measured in real purchasing power terms) wage tax is apparent at the time individuals make their labor-supply decisions. In our experimental framework, we expect that this differential perception of the taxes will translate into individuals choosing to work less under a wage tax than under an equivalent consumption tax. Put differently, we predict that individuals' short-sightedness will lead them to underestimate the burden associated with an indirect consumption tax (that erodes real purchasing power via price increases) relative to the corresponding burden associated with an immediately visible direct wage tax.

Our results corroborate our conjectures and appear consistent with the money illusion explanation. Indeed, individuals in *IT* reduce their labor supply by 1/3 on average compared to the no-tax treatment, significantly more than the 15% decrease in labor supply in *CT*. Furthermore, this differential labor supply response across tax treatments holds over the entire range of labor-market abilities and persists over time. This finding bears major implications for tax policy design by establishing a novel perceptual argument for shifting to a consumption-tax base.

1.3. Relation to the literature

While ours is the first test of the equivalence between an income and a consumption tax, several authors (Borck et al., 2002; Kerschbamer and Kirchsteiger, 2000; Riedl and Tyran, 2005; Ruffle, 2005) have tested experimentally the

[4] See Haig (1921) and Simons (1938).

[5] See, for example, Deaton (1979), Saez (2002) and Kaplow (2006).

[6] In a neo-classical framework, any two tax schedules that yield the same choice set and budget constraint should have no impact on a rational individual's choice (nor on government fiscal considerations) and hence should be equivalent for tax design purposes. The public finance literature demonstrates the equivalency of several other pairs of tax instruments that are *prima facie* different. Notable examples include social security taxes levied on employees and employers and commodity taxes imposed on producers and consumers.

[7] See Shafir et al. (1997) for early survey evidence on money illusion as well as Fehr and Tyran (2001, 2007) for experimental evidence and Brunnermeier and Julliard (2008), Cohen et al. (2005) and Kooreman et al. (2004) for evidence based on naturally occurring data.