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Reference dependent preferences, hedonic adaptation and tax evasion: Does the tax burden matter?

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ABSTRACT

We study the effects of the tax burden on tax evasion both theoretically and experimentally. We develop a theoretical framework of tax evasion decisions that is based on two behavioral assumptions: (1) taxpayers are endowed with reference dependent preferences that are subject to hedonic adaptation and (2) in making their choices, taxpayers are affected by ethical concerns. The model generates new predictions on how a change in the tax rate affects the decision to evade taxes. Contrary to the classical expected utility theory, but in line with previous applications of reference dependent preferences to taxpayers' decisions, an increase in the tax rate increases tax evasion. Moreover, as taxpayers adapt to the new legal tax rate, the decision to evade taxes becomes independent of the tax rate. We present results from a laboratory experiment that support the main predictions of the model.

1. Introduction

How does the tax burden affect tax compliance? Is the level of the tax burden important to explain cross-country differences in tax compliance? How does a change in the tax rate influence the level of tax evasion?

Although these are fundamental questions to design effective fiscal policies, they have not been considered with the same attention. In this respect, the benchmark analysis is the classical expected utility model developed by Allingham and Sandmo (1972). The authors consider the problem faced by a taxpayer who chooses how much of an exogenous income to report for the payment of a proportional (income) tax. With a given probability, the choice of the taxpayer is audited and, in the case of ascertained evasion, she is convicted to pay (in addition to the taxes) a sanction that is proportional to the evaded income. Under these assumptions, an increase in the tax rate exerts two opposed effects on the choice of the taxpayer. On the one hand, it lowers the after-tax income from full compliance. If the taxpayer has a *decreasing absolute risk aversion* utility

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function, then the fiscal shock makes her less likely to evade. On the other hand, an increase in the tax burden implies a higher return to evading, while the potential penalty remains unchanged. Thus, the net effect of the fiscal change on the level of tax evasion is ambiguous and depends on the specific form of the utility function of the taxpayer. However, as shown by Yitzhaki (1974), if the penalty is proportional to the amount of tax evaded, then the model predicts, under decreasing absolute risk aversion, a positive relationship between the tax rate and the level of income reported by the taxpayer.

The comparative static predictions of the traditional model are not intuitive and have been criticized by those who believe that a rise in the tax burden tends to stimulate (rather than discourage) evasion. Unfortunately, the empirical evidence is not conclusive and, to some extent, seems to depend on the specific features of the econometric strategy employed. Time-series econometric studies using either aggregate or average measures of noncompliance generally find a negative relationship between the tax rate and the level of tax compliance (see Crane and Nourzad, 1987; Poterba, 1987; Pommerehne and Weck-Hannemann, 1996).[1] Cross-sectional studies using data on individual audited tax returns report mixed results. While Clotfelter (1983) finds that the level of the tax burden is positively associated with tax evasion, other contributions document either a nonsignificant correlation (among others, Cox, 1984; Slemrod, 1985; Kamdar, 1995) or (even) a negative relationship (Feinstein, 1991).

Also experimental studies generate ambiguous evidence. Two of the earliest within-subject experiments (Friedland et al., 1978; Baldry, 1987) find that a reduction in the tax rate is associated with a higher level of tax compliance. However, the robustness of this result has been questioned by between-subject designs. Indeed, while in a study conducted on US students, Alm et al., 1992, 1995 observe a positive relationship between the tax rate and the amount evaded, in a subsequent experiment involving Spanish subjects, Alm et al. (1995) document contradictory results.

A possible explanation for this empirical impasse is that tax evasion decisions are more complex than what the classical model postulates. For instance, tax compliance can depend on frames and references, which in turn adapt to circumstances and events.

Cumulative Prospect Theory (Tversky and Kahneman, 1992) represents the leading approach to incorporate the notion of reference dependent preferences in behavioral economic models. According to this theory, rather than being measured in absolute levels, economic outcomes are evaluated as gains or losses relative to a reference. Applications of Prospect Theory to tax evasion have been recently proposed by various researchers (e.g., Shepanski and Shearer, 1995; Bernasconi and Zanardi, 2004; Kirchler, 2007; Dhami and al-Nowaihi, 2007; Rablen, 2010). These contributions have investigated specific aspects of the theory, such as the *subjective weighting of probabilities*, the *diminishing sensitivity* of gains and losses, the property of *loss-aversion*.[2]

While studies have introduced reasonable assumptions on the formulation of references in tax evasion decisions, less attention has been devoted to analyze how taxpayers react and adapt to changes in fiscal conditions over time. In this paper, we extend the existing analysis by considering how the adaptive process of the reference used by the taxpayers in taking their decisions influences the level of tax evasion.

Psychologists use the term *hedonic adaptation* to refer to "*processes that attenuate the long-term emotional or hedonic impact of favorable and unfavorable circumstances*" (Frederick and Loewenstein, 1999, p. 302). By hedonic adaptation, reference dependent preferences tend to adjust to changes in pre-existing conditions such that the behavioral response to repeated stimuli can be limited in time.

Recently, hedonic adaptation has been extensively used by behavioral economists to analyze consumers' habit formation, the response to changes in health conditions and investment decisions (Frederick and Loewenstein, 1999). Moreover, there is substantial evidence showing that reference points adapt to favorable and unfavorable events at a different speed (Arkes et al., 2008, 2010; Lyubomirsky, 2011).

Our analysis offers new insights on how hedonic adaptation affects taxpayers' perception of fiscal variables and their decision to evade. First, we study how taxpayers (instantaneously) react to a change in the tax rate. In particular, we find that an increase in the tax rate discourages taxpayers' compliance. Second, we show that, once taxpayers completely adapt their reference to the new fiscal conditions, the level of tax evasion is independent of the tax burden, a prediction that is also consistent with the old adage in public finance stating that "*an old tax is no tax*"(Bastable, 1892).[3] We find supporting experimental evidence in favor of the predictions of our model. Moreover, in our experiment, we also find that subjects tend to adjust faster to tax cuts than to an increase in the tax rate.

The rest of the paper is structured as follows. In Section 2, we briefly review the literature analyzing the relationship between tax evasion and the tax burden. In Section 3, we present a theoretical framework that introduces reference dependent preferences and hedonic adaptation in a model of tax evasion decisions. In Section 4, we describe the experiment aimed at testing the main theoretical predictions and we present the results. We conclude in Section 5 with a discussion of the policy implications of our analysis.

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[1] Various empirical analyses have also been conducted to study the relationship between fiscal pressure and the size of the shadow economy. In general, times-series analyses conducted within country document a negative effect (among others, Johnson et al. (1997), Giles et al. (2001), Dell'Anno (2007)). On the contrary, cross-sectional analyses involving different countries find either a weak or a nonsignificant relationship between the size of the underground economy and the fiscal burden (see Schneider and Enste (2000) and Torgler and Schneider (2009)).

[2] The analytical features of Prospect Theory are well-known and well-documented by the behavioral literature. For a recent comprehensive discussion of the properties of Prospect Theory, see Wakker (2010).

[3] A related adage is that "*an old tax is a good tax*" (see, Buchanan, 1967). The interest for these adages in the tax evasion literature has been brought to our attention by Dhami and al-Nowaihi (2007).