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THE RUNAWAY TAXPAYER
OR: IS PRIOR TAX NOTICE EFFECTIVE AGAINST SCOFFLAWS?

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The Runaway Taxpayer
Or: Is Prior Tax Notice Effective against Scofflaws?[♣]

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Abstract

In this paper we study how prior tax notice (following audit and detection of tax fraud by Tax Authorities) affects individual behaviour in terms of tax compliance. We start with a very stylised theoretical framework, considering a situation in which an individual has been already audited and caught as tax evader, and knows that the Tax Authorities are looking for her to cash the due amount of taxes. We concentrate on the decision to move in order to avoid paying the bill, and derive the optimal number of times an individual should move equalising marginal costs and benefits of the decision. We then carry out an empirical analysis based on real data provided by an Italian collection agency for the period 2004-2007. Our results show that previous notice reduces the probability to move, but its cost is not large enough to correct the individual incentive to escape Tax Authorities.

JEL Codes: H26, H31, K42, D81

Keywords: tax enforcement, individual compliance decisions, prior tax notice

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1. Introduction

Tax evasion is one of the most important problems the Italian Tax Administration needs to tackle. At the macroeconomic level, the latest available estimate of the "tax gap" is at least 7% of GDP (Visco, 2007), a figure much higher than those observed in the other EU countries and similar to other Mediterranean economies (e.g., Schneider and Enste, 2000). Consequently, even if the Italian total tax burden is similar to the EU average, the effective tax distribution among taxpayers is very different. In addition, as in almost all countries, the propensity of the Italian citizens to evade taxes has increased in the last decade (e.g., Cannari and D'Alessio, 2007, for Italy; Schneider and Enste, 2000, for other countries). Several reasons can explain this situation: the production structure of the Italian economic system, characterised by a high share of small-medium sized firms; a low general reprobation among citizens due to tax evasion; the complexity of the Tax Code; but also factors linked to the audit and post-audit stages, like the high percentage of court trials that end with the taxpayers' win, or the inefficiency of the organization of the Tax Authority and of the collection system. With respect to the last of these problems, according to available estimates, only 0.55% of the total amount on the taxpayer's rolls has been cashed by collection agencies in 2002, even less than the 1.8% cashed in 2000-2001 (Servizio Politiche Fiscali UIL, 2005). These data underlines that, in addition to the inefficiency of the Tax Administration, the collection system after tax evasion has been detected plays a crucial role in both the extension and the persistency of tax evasion in Italy as elsewhere[1].

The standard theoretical literature on tax evasion and its extensions (discussed in Section 3) typically take a "prior-to-audit" point of view. It focuses on the determinants of tax evasion, as for instance its responsiveness to variations in the income level and tax-enforcement parameters, using a basic one-period expected utility approach. Some

[1] A vivid example is US. According to Burman (2003), "the IRS assesses almost $30 billion of taxes that *it will never collect*. This is not theoretical tax evasion. The $30 billion represents underpayments of tax that the IRS has identified but cannot collect because its staff is spread so thin. […] According to IRS estimates, 60 percent of identified tax debts are never collected. These unclosed cases include: 75% of identified nonfilers; 79% of taxpayers who use "known abusive devices" to avoid taxes; 78% of taxpayers identified through document matching programs. It is possible that some of these people simply cannot afford to pay their tax debts, but more than half – 56% – of noncompliant taxpayers with incomes over $100,000 get off scot-free. It is demoralizing to honest taxpayers, and encouraging to tax scofflaws, that your odds are better than even of avoiding your tax bill, even if you are caught".

recent contributions investigate the dynamics of tax compliance in order to consider the current compliance as a function of past reports and audit experiences, but their findings on the responsiveness of evasion decisions to past audit experiences do not lead to univocal conclusions. Also the empirical works do not find univocal conclusions: the findings of the laboratory experiments, for instance, partially conflict with those obtained by actual evasion data. Moreover, since real data are lacking, there are very few natural experiments.

Differently from the literature, in this study we take a "post-audit-post-detection" point of view. We focus on individuals who have been already caught by Tax Authorities as noncompliant, and can then decide to runaway, "changing their address" several times in order to hide out and escape collection agents, to avoid paying their bill (i.e., behave as scofflaws): according to the data we obtained from an Italian collection agency, this is what happens in the real world for a considerable number of tax evaders. In order to design our empirical strategy, we provide a very stylised theoretical framework for this behaviour, considering both costs and benefits associated to the decision to "move". As for costs, we consider those borne by taxpayers once they decide to runaway to escape Tax Authorities, and the additional ones of non-compliance associated with the detection experience. Our aim is to identify what is the impact on actual behaviours of this administrative procedure, whose consequences for the taxpayers depend on the enforcement policy adopted by Tax Authorities. We find empirically a negative impact of a previous notice on the probability to move. However, considering also other variables which can affect this decision (e.g., age, gender, and due amount), the implicit (psychological) costs seem to be not large enough to discourage tax evaders to runaway in order to escape Tax Authorities.

The structure of the paper is as follows. Section 2 describes the tax collection procedure in Italy, with a particular emphasis on the collection of taxes by taxpayers' roll. Section 3 reviews the economic literature on tax evasion and the role of prior audit, suggesting that this is the first attempt to assess the "effectiveness" of the audit process, looking at what happen *after* tax evasion has been detected. In Section 4 we propose a simple and stylised model of individual choice to study how the taxpayer's decision to

move in order to avoid paying the bill is affected by prior notice. Section 5 presents the data and our empirical models. Section 6 concludes.

2. The collection of taxes by taxpayers' roll

In this section we briefly describe the institutional features characterising the notice procedure in Italy. The collection of taxes is the final step in taxpayer's obligation, when the taxpayer's payment accrues to the Tax Administration. There are three possible ways for this to happen: (a) the direct withholding taxation by the Tax Administration (e.g., in the case of direct payment of earnings to public employees); (b) the self-taxation, which represents the normal way of tax payment: like in almost all the countries, the Italian tax system is based on voluntary compliance, so that taxpayers are expected to understand and comply with their tax obligations; finally, (c) the collection of taxes by taxpayers' roll, which represents the "extra-ordinary" way of tax payment.

In particular, this is the way taxes are collected after an audit and a detection of fraud has occurred. When - for some individuals - the self-taxation did not (properly) happened, the Tax Authorities that should have received the payments needs first to ascertain the amount of taxes that these individuals should have paid (audit); then authorities issue a tax roll, i.e. a list of taxpayers and of their tax due amounts including fees, interests and collection agency's premium. The tax roll becomes a document of execution with the sign of the legal ownership of the tax authority that issued that tax roll. Notice also that the tax roll clearly includes all payments to be due to a Public Administration, e.g. income taxes and local taxes as well as other revenue receipts, like royalty rents, licence fees and administrative sanctions.

All the tax rolls issued by all the Tax Authorities are periodically sent to a collection agency in charge of collecting taxes in a specific geographical area on the basis of the taxpayers' residence. It is up to the collection agency to *notice* to each individual included in a tax roll the amount of taxes that are requested (in other words, to bring the bill). According to the Italian law, the notice must happen within the set time limit that lie between one and three years according to the kind of audit.

The notice plays a crucial role, because only *noticed* tax debts allow the Tax Authorities to legally expropriate taxpayer assets whenever the taxpayer did not paid her

due amount within the set time limit (two months starting from the day of the notice). The most important problem of the collection agencies is that in many cases the taxpayer is difficult to find or, in extreme cases, her address is unknown (because she hides out). This underlines the importance of the issue we approach in this paper: if the collection agency is not able to discover where the taxpayer hides, then the notice will not take place in the set time limit. Moreover, even if the law provide for the notice to happen without finding the taxpayer, its effectiveness is clearly flawed. This means that the individual will not be affected by her illegal behaviour. Hence, hiding her own address to Tax Authorities (e.g., by frequently changing it) is a way to avoid fiscal obligation and to render meaningless the provisions of the Tax Code.

On the contrary, the individual to whom a tax return form has been noticed has two opportunities: he can pay or not the due amount to the collection agency within two months. If she pays, then her obligation comes to an end. Otherwise she can appeal against the tax return form to the Tax Court, or can simply decide not to pay, behaving as a scofflaw. If he decides not to pay, then the collection agency starts the enforcement within a year from the day of return notice, by expropriating taxpayer assets (if she clearly has some). Therefore, receiving a notice can bear several monetary and psychological costs that are likely to influence taxpayer's future compliance. Identifying this impact is our goal in the analysis to follow.

3. The economic literature on tax evasion and the role of prior audit

Literature on tax evasion typically studies how compliance is affected by prior audit, without asking what happens *after* tax frauds have been detected. In the benchmark economic approach of modelling tax compliance, individual reporting decisions are the result of a process of expected utility maximization, and the taxpayer merely behaves like a gambler. The pioneering models were proposed over thirty years ago in the studies by Allingham and Sandmo (1972), Srinivasan (1973) and Yitzhaki (1974), which were primarily interested in analysing the responsiveness of tax evasion with respect to variations in the (exogenous) income level and standard tax-enforcement

parameters (i.e., audit probability, fine and tax rate).[2] This basic paradigm was followed by a large number of theoretical contributions which generalized the original model in several directions, as well as by a variety of empirical research (based on actual evasion data, surveys on taxpayer attitudes and laboratory experiments) aiming at testing their resulting predictions, especially the ones that are inconclusive or appear conflicting with the common sense.[3] A first important generalization considered the endogeneity of taxpayer's income by adding labour supply to the model, making more ambiguous the effects of enforcement variables on reporting decisions.[4] Another important extension was the development of models where the audit probability is not constant, but is a function of reported income and is determined jointly with tax compliance as part of an equilibrium within a standard game-theory framework.[5] Hinging on the argument that the traditional paradigm, based on rational and selfish agents, tends to predict too much evasion (for given values of fine-audit parameters) compared to the levels actually observed, in the last decades both theoretical and empirical literature on tax compliance has increasingly accounted for social and ethical considerations[6]. Main findings suggest that factors such as, for instance, moral obligations to be honest, the social consequences of being known as a cheater (social stigma), or the taxpayers' perception of the fairness of her tax burden with respect to others, play a major role in explaining individual

[2] Under fairly general assumptions about individual risk preferences, the standard expected utility model supports the propositions that people with higher personal income tend to evade more, and that increasing any of the tax-enforcement parameters will reduce the amount of concealed income. For an exhaustive and critical discussion of the main findings deriving from the basic tax compliance model refer to Cowell (2003) and Sandmo (2006).

[3] For a comprehensive review of the literature on tax compliance see the recent surveys by Andreoni *et al.* (1998), Slemrod and Yitzhaki (2002) and Cowell (2003).

[4] Such an extension was proposed, among the others, by Pencavel (1979), Cowell (1981) and Sandmo (1981).

[5] These models allowing for strategic interaction between taxpayers and Tax Authority were conceived not only to generate predictions about compliance level, bat also to have some useful insights about a tax agency's optimal audit procedure. See, e.g., the pioneering analyses by Greenberg (1984), Reinganum and Wilde (1985, 1986) and Graetz, Reinganum and Wilde (1986) and the later developments by Mookherjee and P'ng (1989), Sansing (1993), Erard and Feinstein (1994) and Cronshaw and Alm (1995).

[6] Feld and Frey (2002, 2006) mention this issue as a major empirical problem with the standard expected utility framework. On the basis of data for Switzerland (1970-1995), they assert that it is impossible to account for observed compliance only in terms of expected punishment, whereas tax morale, that is the intrinsic motivation of taxpayers to comply with their fiscal obligations, assumes a central role. Indeed, given the average probability of audit, the penalties typically assessed for non-compliance and what one knows about the degree of risk aversion from other contexts, tax evasion should be much higher than it actually is.

evasion decisions and significantly improve the adequacy of the basic paradigm in modelling tax compliance behaviour.[7]

As remarked in Andreoni *et al.* (1998) and Cowell (2003), ignoring the dynamic nature of the reporting problem represents another relevant shortcoming of the basic one-period expected utility approach. Indeed, this approach assumes that each year basically the same gamble takes place, without considering any "memory" in taxpayer reporting decision. However, in practice taxpayers are likely to condition their current compliance on past reports and audit experiences. Individuals that were audited and caught evading incurred several costs. The first is the burden of repaying past due taxes plus interests and penalties charged by the Tax Administration on unreported income. Other relevant costs include pecuniary and psychological costs of enduring audits and court trials, as well as other potential sanctions imposed on individuals found guilty of major crimes. One would expect that all these costs implied by a prior audit somehow affect subsequent tax compliance behaviour. Therefore, accounting for the *repeated* nature of the reporting decision, by allowing the taxpayer to exploit information from multiple time periods, represents an interesting generalization of the basic expected utility model. Nevertheless, there currently exists a very restricted number of theoretical contributions analysing the dynamics of tax compliance, and their findings on the responsiveness of evasion decisions to past audit experiences do not lead to univocal conclusions.

Building within the alternative "prospect theory" framework[8], Kahneman *et al.* (1982) have highlighted the importance of the so-called "possibility effect", a particular heuristic rule used by decision-makers according to which individuals tend to assess the

[7] Among the theoretical contributions going towards the direction to incorporate ethical and social norms into the basic gamble paradigm, see Gordon (1989), Bordignon (1993) and Myles and Naylor (1996). On the empirical side, recent studies discussing the relevance of social and moral dimensions of tax evasion, on the basis of both survey and experimental data, include Evans and Kelly (2001), Torgler (2001, 2003), Cummings *et al.* (2005), Wenzel (2005a,b), Fiorio and Zanardi (2006) and Cannari and D'Alessio (2007).

[8] Recognizing that expected utility paradigm may miss out important features of people's preferences in face of uncertainty, several researchers (mainly working in the field of economic psychology and sociology) have examined tax compliance in the light of the "prospect theory" originally proposed by Kahneman and Tversky (1979). The key issue is that the response to a particular economic incentive (e.g. a change in tax enforcement) would differ according to the context in which it was perceived (framing hypothesis). Cowell (2003) points out that, in spite of the increasing support received by prospect theory with respect to the standard expected utility paradigm, direct empirical tests of conformity of real behaviour with prospect theory have been inconclusive.

probability of a certain event by bringing to mind the number of times that similar events happened in the past. This leads to assume that the taxpayers audited in the past attribute a higher value to the probability to be audited in the future, and then exhibit more compliance in comparison with taxpayer without prior audits, even in the presence of a totally random audit procedure. More recently, Engel and Hines (1999) derive a dynamic tax evasion model including retrospective audits, and find that the cumulative compliance incentives are quite complex and, in general, simulation analysis is required to make predictions. As for, in particular, the taxpayers' response after an audit, their results reveal that there is an incentive to evade a significant amount in the year immediately following the prior audit, overshooting the steady-state level of tax evasion. However, in the second year after the audit, taxpayers become conscious of their excessive evasion in the year before, and therefore increase their compliance to a level above the steady-state. After a short period of dampening oscillation, the process converges to a steady-state where the taxpayer who is no more audited evades the same income share in the following years. Finally, Snow and Warren (2007) have extended the standard expected utility one-period model of tax evasion to an inter-temporal framework where taxpayers face uncertainty about the probability of being audited and update their beliefs taking prior audit experience as relevant information. They show that tax compliance significantly reacts to the Bayesian updating of beliefs about the probability of being audited in the future based on prior audit, in a way which depends on the specific risk aversion characteristics of taxpayers. In particular, for a large variety of risk preferences, Bayesian updating increases present and expected future tax evasion.

On the empirical side, results based on real data are uncommon, and empirical tests on the post-audit-post-detection stage are completely lacking. According to the few studies available, the limited evidence on the tax compliance effect implied by a prior audit experience is not conclusive. Spicer and Hero (1985) have been the first to directly test the "possibility effect" proposed by Kahneman *et al.* (1982) trough a ten-rounds laboratory experiment. Their results reveal a statistically significant negative relationship between tax evasion in the final round and the number of prior audits. The succeeding experiments by Benjamini and Maital (1985) and Webley (1987) also find

that being audited in earlier rounds significantly increase subsequent tax compliance. However, studies based on actual evasion data partially conflict with these experimental findings. Long and Schwarz (1987), analysing panel data on the outcomes of audits carried out by the U.S. Internal Revenue Service (IRS) in 1969 and 1971 on the same taxpayers, conclude that the 1969 audit was only marginally effective in reducing the frequency of evasion in 1971, and was not effective at all as for the average magnitude of non-compliance among those taxpayers who continued to cheat. Erard (1992) studies the deterrent effect of an ordinary prior audit experience using 1982 information from the U.S. Taxpayer Compliance Measurement Program (TCMP), and finds a small and statistically insignificant coefficient for the prior audit variable, revealing a negligible impact of earlier audit experiences on future tax evasion behaviour. The study by Bergman and Nevarez (2006) – based on real data on VAT tax return in Argentina and Chile – suggests a non-negligible impact of prior audit. In particular, audited and sanctioned taxpayers decreases net payments and future compliance, in a sense self-compensating for the "losses" produced by audits. Moreover, the perverse impact of audits is larger for "big" evaders (i.e., the cheaters): the higher tax evasion, the less likely it is taxpayers will reduce noncompliance due to audit; on the contrary, the lower tax evasion, the more likely is taxpayers will increase compliance after the audit. Hence, econometric results so far indicate that resorting to the "stick" to increase tax compliance may not have any long-run effect (or even have an impact contrary to expectations). As Andreoni *et al.* (1998) emphasize, further research is then needed to confirm whether there is any specific deterrent impact associated with a prior audit and to understand the reasons underlying the presence or the absence of such an effect. In the following analysis we bring the investigation one step forward, looking at how audit and detection affect the likelihood Tax Authorities will really cash their money.

4. A simple theoretical model

In order to provide a theoretical framework for our empirical analysis, we develop here a very simple and stylised model of individual choice based on the expected utility paradigm *a là* Allingham-Sandmo, which includes also the costs borne by taxpayers once they decide to runaway to escape tax notice, and the additional costs of non-

compliance associated with the notice experience. More precisely, the reference context is that of an individual who has already decided to evade taxes, has been audited and detected to be a tax evader, and knows that the Tax Authorities are (sooner or later) looking for her for noticing the due amount of taxes. In particular, according to the Italian Law (but the same is true for other countries), and starting from institutional details outlined in previous section, the Tax Authorities need first to ascertain the amount of taxes that the individual should have paid, and then to *notice* to the individual the amount of taxes that are requested. The notice is important, for only noticed tax debts allow authorities to legally expropriate taxpayer assets. Hence, individuals might choose to escape the effects of tax notice, behaving as scofflaws. There are several ways to do so. In the light of the following empirical analysis, here we concentrate on the decision to "change address", i.e. to hide out in order to avoid notice. We assume that "changing address" allows tax evaders to reduce the probability to be really caught by Tax Authorities. We study how the decision to move is affected by the experience of a prior tax notice, i.e. the fact of being caught as tax evaders and having received the request from Tax Authorities to pay due past taxes plus fines.

Let W be the exogenous taxpayer (gross) income, F the amount of taxes evaded plus additional fees imposed once tax evasion has been detected by Tax Authorities, τ the additional costs borne by the taxpayer once she decides to move, κ the additional costs of non compliance because of the notice, T the total burden (both monetary and psychological costs) following tax evasion, s the number of times the individual decides to runaway to escape notice. The expected total burden after tax evasion can be written as:

$$E(T) = p(s)(F+\kappa) + [1-p(s)]0 = p(s)(F+\kappa) \qquad (1)$$

where p is the probability of being detected as a function of the number of times the taxpayer moved. We clearly assume $\frac{\partial p(s)}{\partial s} < 0$, so that the probability of being notified decreases with the number of address changes.

Under the assumption of risk-neutrality[9], the expected taxpayer utility, once she evaded taxes, can then be written as:

$$E[U(NW)] = W - E(T) - [\tau_1 s + \tau_2(s)] = W - p(s)(F + \kappa) - [\tau_1 s + \tau_2(s)] \quad (2)$$

where *NW* is the total expected income (net of taxes and costs of moving), $\tau_1 s$ and $\tau_2(s)$ are respectively the fixed and variable costs of moving and "changing address". For instance, fixed costs of moving are related to all the basic items the taxpayer needs to bring to her new domicile each time she moves, whereas variable costs of moving are related to the difficulties in finding a new domicile. We assume that the variable costs of moving increase with the decision to move (i.e., $\frac{\partial \tau_2(s)}{\partial s} > 0$), for example because it is more difficult to hide once a tax evader has already done so.

Starting from the risk-neutrality hypothesis, the problem of each individual once she has evaded taxes is to choose *s* in order to maximize the expected income *NW*. F.O.C. for the problem is:

$$\frac{\partial E(NW)}{\partial s} = -\frac{\partial p(s)}{\partial s}(F + \kappa) - \tau_1 - \frac{\partial \tau_2(s)}{\partial s} = 0 \quad (3)$$

from which we obtain:

$$-\frac{\partial p(s)}{\partial s}(F + \kappa) = \tau_1 + \frac{\partial \tau_2(s)}{\partial s} \quad (4)$$

Eq. (4) clearly shows that the taxpayer will decide to move in order to equate marginal costs $\tau_1 + \frac{\partial \tau_2(s)}{\partial s}$ and benefits $-\frac{\partial p(s)}{\partial s}(F + \kappa)$ of this decision. Costs are both fixed and variable, and they are related to changing address; benefits are given by the reduction in the expected tax burden stemming from the reduction in the probability to receive the tax notice. It is immediate to observe from Eq. (4) that a corner solution emerges (i.e., $s^* = 0$), whenever marginal costs of moving are higher than marginal benefits for any $s > 0$; we will take into account this possibility in the empirical part of the paper.

[9] We are aware that individual attitudes toward risk might be important in determining illegal behaviour. However, here we are simply describing with a very simple model costs and benefits related to the choice of moving to escape Tax Authorities as a guide for the empirical analysis. For further comments on this issue see below.

Notice also that, if marginal benefits are higher than marginal costs for any $s > 0$, then the individual optimal strategy is to keep moving away indefinitely.

Apart from these two extreme cases, the above condition (4) implicitly define s^* (the optimal number of times for an individual to move), that is:

$$\frac{\partial E(NW)}{\partial s} = f(s^*, F, \kappa, \tau) = -\frac{\partial p(s)}{\partial s}(F + \kappa) - \tau_1 - \frac{\partial \tau_2(s)}{\partial s} = 0 \qquad \text{(4 bis)}$$

We can then exploit the implicit function theorem to study how s^* changes with respect to changes in exogenous parameters F, κ, and τ. Considering in particular κ (which can be increased by a more severe and effective enforcement policy by Tax Authorities); we have:

$$\frac{\partial s^*}{\partial \kappa} = -\frac{\frac{\partial f(s^*, F, \kappa, \tau)}{\partial \kappa}}{\frac{\partial f(s^*, F, \kappa, \tau)}{\partial s^*}} = \frac{-\frac{\partial p(s)}{\partial s}}{\frac{\partial^2 p(s)}{\partial s^2}(F + \kappa) + \frac{\partial^2 \tau_2(s)}{\partial s^2}} \qquad (5)$$

Since $\left(-\frac{\partial p(s)}{\partial s}\right) > 0$, the sign of Eq. (5) hinges upon the sign of the second derivatives $\frac{\partial^2 p(s)}{\partial s^2}$ and $\frac{\partial \tau^2(s)}{\partial s^2}$. At this point, one should notice that the S.O.C. for a maximum in Eq. (2) implies the denominator in Eq. (5) to be strictly positive. As for the sign of Eq. (5), we are then left with a unique prediction, i.e., $\frac{\partial s^*}{\partial \kappa} > 0$, which we may dub the "predictability effect of moving". Intuitively, running away and frequently changing her own domicile can have two potential effects: on the one hand, it can make individual behaviour more "predictable" for collection agencies and Tax Authorities, with increasing marginal costs $\frac{\partial^2 \tau_2(s)}{\partial s^2} > 0$ and decreasing marginal benefits $\frac{\partial^2 p(s)}{\partial s^2} > 0$.[10] If this is true, then an increase in the additional costs of non compliance - stemming from a notice - will imply a higher s^*, for the individual will obtain a marginal benefit on the increase in κ only at a cost of moving more. On the other hand, running away can

[10] Notice that the denominator of Eq. (5) can be positive even when $\partial^2 \tau_2(s)/\partial s^2 < 0$ but $\partial^2 p(s)/\partial s^2 > 0$ and sufficiently large; or $\partial^2 p(s)/\partial s^2 < 0$ but $\partial^2 \tau_2(s)/\partial s^2 > 0$ and sufficiently large.

imply a "learning effect" for the individual, who will escape more easily Tax Authorities; but this can result only removing the assumption of risk-neutrality.

In other words, assuming risk neutral individuals, our simple analysis suggests that increasing the total fee F imposed by Tax Authorities once evasion has been discovered, or increasing the additional (psychological) costs of non compliance (for instance through a Tax Notice) induces a positive change in the optimal s^*. This is our working hypothesis to be tested in the following empirical analysis, which represents the core of our paper.

5. The econometric analysis

5.1. Empirical strategy

Starting from the simple theoretical model described in the previous section, we study here the choice of moving by using an array of different discrete choice models proposed in the literature. Our dependent variable is clearly s^*, which we consider in a first group of models as the "probability of moving to escape the effects of a tax notice", and then as the "number of times an individual has moved" (exactly like in our theoretical model). We assume s^* to be idiosyncratic to each individual (here scofflaw), and take into account in some models unobserved heterogeneity across individuals. Moreover, in all the models we also provide a rough control for heterogeneity across individual groups, by looking at common cultural factors that the literature deems to be important in influencing tax evasion (like age, gender, the area where an individual was born). Our baseline specification for the first group of models is:

$$\Pr(s_i^* > 0 | z_i) = \Pr(s_i = 1 | z_i) = F(z_i, \alpha) \qquad (6)$$

where the LHS variable is defined as the probability an individual moves, which is clearly equal to 1 when the *i-th* individual has moved at least once (i.e. $s_i^* > 0$), and 0 when she never moved; $F(\cdot)$ is alternatively assumed to be the standard normal CDF and the Logistic CDF (resulting respectively in probit and logit models); z is a vector of regressors, and α a vector of corresponding parameters to be estimated. The vector z includes proxy measures for F (the amount of taxes evaded plus fee imposed once tax evasion has been ascertained by Tax Authorities), and κ (the additional costs of non

compliance). We also add controls for heterogeneity across individuals, like age, gender, and a set of dummy variables for the different geographical areas where an individual was born (which can proxy for cultural differences with respect to tax compliance). We finally explicitly allow for a treatment of unobserved individual heterogeneity by considering – whenever technically feasible – both random and fixed effects specification of our Eq. (6)[11].

In the second group of models, we study directly s^* (i.e., the number of times an individual has moved) by considering standard tobit models. The baseline specification is:

$$s_i = F(x_i, \beta);\ s_i = s_i^*\ if\ s_i^* > 0;\ s_i = 0\ if\ s_i^* \leq 0 \qquad (7)$$

where $F(\cdot)$ is based on the standard normal CDF, x and β are a (partially) different set of regressors and corresponding parameters to be estimated, and the observability rule allows us to take into account the corner solution obtained in the theoretical model, which – from Eq. (4) – occurs whenever marginal costs of moving are higher than marginal benefits (implying $s_i^* \leq 0$). Also in this second group of models, we allow for a treatment of unobserved heterogeneity by considering random effects tobit models.

We also estimate a generalized double-hurdle model, allowing for a possible correlation between the unobserved error terms of the two random processes, the participation process and the one explaining the number of address changes. The specification is:

$$s_i = F(x_i, \beta) + v \quad if\ s_i^* = F(x_i, \beta) + v > 0\ and\ \Pr(s_i > 0) = F(z_i, \alpha) + u > 0 \qquad (8)$$

where z, x, α, and β are defined as before; u and v are the error terms of the two processes distributed as normal random variables:

$$\begin{bmatrix} u \\ v \end{bmatrix} \sim N\left\{0, \begin{bmatrix} 1 & \rho\sigma \\ \rho\sigma & \sigma^2 \end{bmatrix}\right\} \qquad (9)$$

where ρ clearly measures the correlation between the unobserved error terms.

[11] Recall that a fixed effects specification is not feasible in probit models. See e.g. Greene (2008), for details.

5.2. Data and variables

In this section we describe the data on which our empirical test is based, as well as the definition of some key variables used in the analysis. Our data comprise two distinct datasets: one refers to the province of Trento, and the other one to the province of Modena, two well-developed provinces located in the North of Italy, similar in term of inhabitants and per-capita income, but different in terms of political orientation[12]. Data include information on individuals that (at least once) decided not to regularly pay their taxes or other revenue receipts in the period march 2004 - march 2007, and that were audited and detected by Tax Authorities.

The original data unit is the individual tax return form. As described in Section 2, the rolls issued in every set time period by Tax Authorities are sent to the collection agencies, so that every collection agency registers the total amount of each individual's due sum in that period in a tax return form. We have information on 63,211 individual tax return forms accrued to 34,645 individuals (69.6% male and 30.4% female) in the province of Trento; and 170,500 tax return forms accrued to 78,281 individuals (68.4% male and 31.6% female) in the province of Modena. Within each dataset, we selected the sub-samples containing tax return forms accrued to inhabitants in the province of Trento and Modena, independently from their birth place, i.e. accrued only to residents in the two provinces[13]; this provides for a first control for the presence of tickets for traffic violation in our original data. In the Trento dataset, we remained with 13,779 inhabitants (39.8% of all individuals in the dataset) and 28,159 tax return forms (44.5% of all tax return forms in the dataset); in the Modena dataset, these figures amount respectively to 41,453 inhabitants (53.0% of all individuals in the dataset) and 94,268 tax return forms (55.3% of all tax return forms in the dataset).

For each individual's tax return form our data include information on: the day in which the collection agency received the mandate to cash the amount from Tax Authorities; age and gender of the individual to whom each tax return form refers to; the

[12] In particular, Modena is more left-wing oriented than Trento. Political ideology is likely to influence tax evasion; see e.g. Cannari and D'Alessio (2007) for some proxies based on survey data.

[13] Notice that we eliminated from the original sample also all individuals for which place of residence is unknown. The main findings presented in the following section are not affected by these choices. Regressions based on the whole sample are available upon request to the authors.

Municipality in which the individual was resident at the time the tax return form was received by the collection agency; the Municipality (if the individual is Italian) or the State (for foreigners) in which the individual was born; the total due amount (a proxy for F); the existence of a prior notice (i.e., a prior audit, detection, and request to pay the amount of taxes evaded, a proxy for κ) for the same individual to which the form is referred for some (unspecified) previous tax form. Unfortunately, we have information only on the total amount of each tax return form, which corresponds to the sum of all revenue taxes, local taxes, fines, royalty rents, tickets and licence fees accrued to each individual in the period which the tax return form refers to. We provide a second rough control for this data limitation by grouping the total due amount into different classes, and by defining dummy variables referred to each class. Fines and tickets for traffic violation will mostly fall in the lowest classes; hence we are able to "isolate" their role in influencing individual decision to move in order to avoid paying the bill.

For the estimation of the tobit models, we also build additional variables from the original ones; we defined in particular: the number of address changes at time t (*cumulative address change*) as the total number of times s^* an individual has moved up to t; the number of prior notices at time t (*cumulative prior notice*) as the total number of times an individual has received a tax notice up to t (a proxy for the total psychological costs κ); the total due amount at time t (*cumulative due amount*) as the total amount an individual should have paid up to t (a proxy for total F), on the hypothesis that the individual will never pay her obligation[14].

Some descriptive statistics for our sample are reported in Tables 1-6. Table 1 shows the composition of the samples by gender and age class. The age distribution is similar for both sub-samples. Male represents 72.6% in the Trento sub-sample and the 70.1% in the Modena one. The distribution by age class indicates that more than 80% of individuals are aged 25-65, with a half in the class 35-50. The age distribution by gender indicates that the compositions are similar but for the classes 35-50 (more male than female) and >65 (more female than male). Table 2 shows the composition of the

[14] We also estimate a model without imposing this extreme hypothesis, by considering an alternative (but not less extreme) solution in which the individual will always pay her due amount each time she receives the tax form. These hypothesis are driven by the fact that we do not know if the individual has paid the amount charged in each form.

tax return forms by total due amount and gender of the individual to whom they refer to. About one fourth of the tax return forms is less than 100 euro; a half has an amount bigger than 100 euro and less than 1,000 euro. Only a small percentage of the tax return forms has an amount bigger than 10,000 euro. Table 3 shows the composition of the samples by gender and number of tax return forms accrued to each individual. About 40% of the individuals has only one tax return form, while 35% has two or three of them and 12-13% four or five. People collecting more than five tax return forms are 10-13%. Table 4 shows the number of address changes by gender. About a half of the individuals have not changed the address in the period: this is due to the fact that on average they have only one tax return form. About 30% of the individual changed once the address: they have on average three tax return forms. Small percentages of individuals changed more than once the address, because they have a considerable number of tax return forms. Similar conclusions appear considering the number of prior notices: no prior notice occurred if the number of tax return forms is very low, but the number of prior notices increases when the number of tax return forms for individual increases (Table 5). Finally, table 6 reports the summary statistics for all the variables used in the estimated models together with their corresponding definitions.

5.3. Results

Estimates of Eq. (6) and (7) are reported in Tables 7-8 and 9, respectively, and offer a fairly consistent picture of the behaviour of tax cheaters in terms of the decision to runaway in order to escape notice. Looking first at probit models (Tables 7a and 7b), prior notice (a proxy for additional costs of non compliance) decreases the probability of changing address, showing a deterrent role similar to that of prior audit proposed in Kahneman *et al.* (1982), and confirmed also by the empirical literature based on both laboratory experiments and real data discussed in the literature review section (e.g., Spicer and Hero, 1985; Benjamini and Maital, 1985; Webley, 1987; Bergman and Nevarez, 2006). In other words, prior notice goes in the right direction, by increasing for instance psychological costs, hence reducing the incentive to move and avoid paying

the bill[15]. Coefficient estimates are very close in the two sub-samples, suggesting that the behaviour of tax evaders across provinces is quite similar. Moreover, coefficient estimates are very close also across different models, i.e. also considering individual heterogeneity with random effects models (MODEL PROBIT 2). Also for other regressors, estimates appear to be consistent across the two provinces. In particular, we observe a non linear effect of the due amount *F*, which impact is first increasing with respect to the lowest class (up to 100 euros), and then decreasing; but coefficient estimates are not always significant at the usual confidence levels. There is on the contrary a linearly increasing effect of age, statistically significant, with people older than 65 characterised by a higher probability of moving than younger individuals. Moreover, we observe also a gender effect, with females showing a higher probability of moving than males. Finally, country effects are almost always negative, suggesting that individuals borne in places different from where they actually live are less familiar with the social and economic context, hence they move less. A notable and surprising exception (at least for the Trento sub-sample) is given by people borne in Northern European countries; a possible explanation is the sharp increase registered in tax evasion in these countries in the last decades (e.g., Schneider and Enste, 2000).

Logit models (Tables 8a and 8b) confirm these findings: prior notice still shows a negative impact on the probability of moving, with estimated coefficient greater in magnitude with respect to probit estimates as expected[16], and consistent across different specifications and alternative treatments of the unobserved heterogeneity (i.e. random effects, MODEL LOGIT 2, and fixed effects, MODEL LOGIT 3). The non linear relationship observed for the amount classes still holds, and the same is true for the linear relationship in age, which is increasing with respect to the reference class of individuals aged less than 25. Also the gender effect is confirmed, with females characterised by a higher probability of moving. Overall, estimates of Eq. (6) suggest that – after

[15] We also interacted prior notice with the dummies identifying the due amount classes. However, as coefficients were not significantly different from zero, we decided to drop these interactions from the empirical models.

[16] As reported by Amemiya (1981), and discussed also e.g. in Greene (2008), there is a widely observed relationship between logit and probit models; in particular, $\beta^{logit} = 1.6 \times \beta^{probit}$.

controlling for a set of regressors including age, gender, proxies for *F* and for cultural factors – there is a sizeable impact of prior notice on the probability of moving.

Tables 9a and 9b report estimates for tobit models separately for the two provinces, Trento and Modena. Again, as for probit models, results are fairly consistent across the two areas, suggesting that the behaviour of tax evaders is quite similar across geographical districts. Surprisingly, cumulative prior notice has a positive and statistically significant impact on the number of times an individual changes address. In other words, individuals that received an higher number of notices are also the individuals that are characterised by a higher number of address changes *s**. This finding is consistent also across different models, with magnitude increasing once controlling for unobserved heterogeneity with random effects (MODELS TOBIT 2 and 3).

In order to reconcile the impact of previous notice on the probability of moving with the present result on *s**, we need to look deeper in coefficient magnitudes in probit/logit estimates. Consider for instance probit results for Trento (Table 7a, MODEL PROBIT 1): prior notice reduces the probability of moving by -0.278, while being aged more than 65 increases this same probability by 0.373. The combined impact of prior notice and age on the probability of moving is then *positive*. In other words, our estimates suggest that penalties stemming from prior notice go in the right direction in reducing the probability of moving, but are too weak in preventing such a behaviour. Hence, most people – even feeling the psychological burden of their non compliance – prefer to change address and avoid paying the bill. Consistently with our simple theoretical model, we find then support for the "predictability effect of moving", with increasing marginal costs and decreasing marginal benefits associated to the decision to change address.

This discussion shows that there is an hysteresis in the illegal behaviour of tax cheaters, with notice ineffective against scofflaws, a result that can also help explain the ineffectiveness of tax collection agencies in cashing the amount of tax forms. According to latest estimates, in Italy only 0.55% of the total amount on the taxpayer's rolls has been cashed by collection agencies in 2002, even less than the 1.8% cashed in 2000-2001 (e.g. Servizio Politiche Fiscali UIL, 2005); but the same is true also in the US, where 60% of identified tax debts are never collected (Burman, 2003). This result also

helps explain findings by Bergman and Nevarez (2006) on VAT enforcement in Chile and Argentina: tax audits have the perverse effect of increasing tax evasion (at least for the cheaters), again showing an hysteresis in illegal behaviour that enforcement activity by Tax Authorities are not able to stop. A policy implication of this results is that the negative impact of notice on the probability to move should be strengthened, for instance increasing social stigma associated to the illegal behaviour.

As for the role of the other variables, age is a significant determinant of s^* also in tobit models. There is an increasing positive relationship, which however disappears when considering the hypothesis according to which the individual will always pay her due amount each time she receives the tax form (MODEL TOBIT 3). In the latter case, indeed, s^* linearly increases up to the age class 50-65, then starts dropping.[17] Also for the due amount, there is an increasing positive and significant relationship for the first two models, which again disappears for MODEL TOBIT 3 specification. Finally, there is now a negative gender effect, with females moving less than males.

To check the robustness of the results discussed above, we have also estimated a generalized double-hurdle model (Table 10). Main findings concerning the participation process (i.e., the probability of "changing address"), as well as the number of times the individual moves (i.e., the cumulative "address change"), are confirmed in the two provinces, with a slightly higher impact of both prior notice and cumulative prior notice with respect to PROBIT and TOBIT estimates.

6. Conclusions

In this paper we study whether prior tax notice affects individual behaviour in terms of tax compliance. We consider the post-audit-post-detection context, i.e. we focus on individuals who have been already caught by Tax Authorities as non compliant and can then decide to runaway in order to avoid paying the amount of evaded taxes. We then concentrate on the decision to move, and consider the costs borne by taxpayers once

[17] This evidence is consistent with previous econometric studies using U.S. TCMP data, which highlighted that non-compliance is significantly less common and of lower magnitude among households where the head is over age 65, and for the audit classes where the proportion over age 65 is greater. For more details see Andreoni *et al.* (1998, p. 840). A negative relationship between propensity towards non-compliance and age is found in a recent study by Cannari and D'Alessio (2007) using data from the 2004 Survey of Household Income and Wealth collected by the Bank of Italy.

they decide to runaway to escape notice and the additional costs of non-compliance associated with a prior tax notice experience. The problem is substantial for at least two reasons: only a small percentage of the total amount on the taxpayers' rolls is cashed by collection agencies every year; actual data by collection agencies indicates that in many cases the taxpayers' address is unknown, and a considerable percentage of taxpayers change address several times so as to avoid the impact of notice.

In order to provide a framework for our empirical analysis, we propose a very simple and stylised theoretical model for the individual decision to move. As for the impact of prior tax notice on this decision, under the risk-neutrality hypothesis, we identify a "predictability effect of moving". This arises whenever changing address several times makes individual more predictable for collection agencies, so that the number of times an individual decides to runaway to escape notice will increase.

Our empirical analysis (based on real data provided by a tax collection agency) shows that prior tax notice decreases the probability of changing address; this result is consistent among tax evaders resident in the two Italian provinces we analysed. Moreover, we find that individuals with a higher number of prior notices are also the individuals characterised by a higher number of address' changes. This implies that the previous notice is able to reduce the probability to move, but its cost is not large enough to correct the individual incentive to escape the effects of notice.

Our conclusions can help to draw some policy recommendations in order to increase the percentage of the total amount on the taxpayers' rolls cashed by collection agencies. Prior notice seems to be ineffective in most cases in reducing non compliance, so that psychological costs associated with this administrative action should be strengthened, e.g., by setting a shorter period within which the enforcement procedure may be applied and by publishing the names of tax evaders with a high number of "address changes" and large unresolved liabilities. Moreover, it could be worth increasing monetary costs by imposing a levy on tax evader's bank account, as well as by making more difficult for her to get a loan or to buy or sell real and financial properties.

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Table 1. Sample structure (inhabitants) by gender and age class

Province of Trento						
	Total		Male		Female	
Age class	Number	%	Number	%	Number	%
≥18 and ≤25	503	3.7	376	3.8	127	3.4
>25 and ≤35	3,302	24.0	2,428	24.3	874	23.2
>35 and ≤50	5,583	40.5	4,203	42.0	1,380	36.6
>50 and ≤65	2,670	19.4	2,006	20.0	664	17.6
>65	1,721	12.5	995	9.9	726	19.3
Total	13,779	100.0	10,008	100.0	3,771	100.0

Source: Own elaborations on Defendini data.

Province of Modena						
	Total		Male		Female	
Age class	Number	%	Number	%	Number	%
≥18 and ≤25	1,525	3.7	1,131	3.9	394	3.2
>25 and ≤35	10,691	25.8	7,538	25.9	3,153	25.5
>35 and ≤50	17,251	41.6	12,471	42.9	4,780	38.6
>50 and ≤65	6,962	16.8	4,991	17.2	1,971	15.9
>65	5,024	12.1	2,943	10.1	2,081	16.8
Total	41,453	100.0	29,074	100.0	12,379	100.0

Source: Own elaborations on Defendini data.

Table 2. Sample structure (tax return forms) by gender and class of total due amount

Province of Trento							
		Total		Accrued to male		Accrued to female	
Class of due amount (€)		Number	%	Number	%	Number	%
>0	and ≤50	2,982	10.6	2,012	9.2	970	15.3
>50	and ≤100	4,756	16.9	3,491	16.0	1,265	19.9
>100	and ≤200	6,117	21.7	4,560	20.9	1,557	24.5
>200	and ≤500	5,849	20.8	4,614	21.2	1,235	19.4
>500	and ≤1,000	3,040	10.8	2,580	11.8	460	7.2
>1,000	and ≤2,000	1,856	6.6	1,531	7.0	325	5.1
>2,000	and ≤5,000	2,409	8.6	2,035	9.3	374	5.9
>5,000	and ≤10,000	566	2.0	498	2.3	68	1.1
>10,000	and ≤50,000	497	1.8	412	1.9	85	1.3
>50,000		87	0.3	74	0.3	13	0.2
Total		28,159	100.0	21,807	100.0	6,352	100.0

Source: Own elaborations on Defendini data.

Province of Modena							
		Total		Accrued to male		Accrued to female	
Class of due amount (€)		Number	%	Number	%	Number	%
>0	and ≤50	9,160	9.7	6,318	8.9	2,842	12.4
>50	and ≤100	14,269	15.1	10,463	14.7	3,806	16.6
>100	and ≤200	23,212	24.6	16,591	23.3	6,621	28.8
>200	and ≤500	20,955	22.2	16,191	22.7	4,764	20.7
>500	and ≤1,000	9,674	10.3	7,952	11.2	1,722	7.5
>1,000	and ≤2,000	5,810	6.2	4,737	6.6	1,073	4.7
>2,000	and ≤5,000	7,931	8.4	6,443	9.0	1,488	6.5
>5,000	and ≤10,000	1,653	1.8	1,325	1.9	328	1.4
>10,000	and ≤50,000	1,398	1.5	1,120	1.6	278	1.2
>50,000		206	0.2	162	0.2	44	0.2
Total		94,268	100.0	71,302	100.0	22,966	100.0

Source: Own elaborations on Defendini data.

Table 3. Sample structure (inhabitants) by gender and number of tax return forms per individual

Province of Trento						
	Total		Male		Female	
Tax return forms per individual	Number	%	Number	%	Number	%
1	5,887	42.7	3,933	39.3	1,954	51.8
>1 and ≤3	4,734	34.4	3,459	34.6	1,275	33.8
>3 and ≤5	1,724	12.5	1,386	13.8	338	9.0
>5 and ≤10	1,149	8.3	973	9.7	176	4.7
>10 and ≤20	275	2.0	248	2.5	27	0.7
>20	10	0.1	9	0.1	1	0.0
Total	13,779	100.0	10,008	100.0	3,771	100.0

Source: Own elaborations on Defendini data.

Province of Modena						
	Total		Male		Female	
Tax return forms per individual	Number	%	Number	%	Number	%
1	16,249	39.2	10,499	36.1	5,750	46.4
>1 and ≤3	14,439	34.8	9,930	34.2	4,509	36.4
>3 and ≤5	5,446	13.1	4,202	14.5	1,244	10.0
>5 and ≤10	4,233	10.2	3,491	12.0	742	6.0
>10 and ≤20	1,058	2.6	926	3.2	132	1.1
>20	28	0.1	26	0.1	2	0.0
Total	41,453	100.0	29,074	100.0	12,379	100.0

Source: Own elaborations on Defendini data.

Table 4. Sample structure (inhabitants) by gender and number of address changes

Province of Trento									
	Total			Male			Female		
Address changes per individual	Number	%	Average tax return forms	Number	%	Average tax return forms	Number	%	Average tax return forms
0	7,157	51.94	1.28	4,853	48.49	1.32	2,304	61.10	1.22
1	4,359	31.64	3.04	3,314	33.11	3.14	1,045	27.71	2.71
>1 and ≤3	1,898	13.77	5.61	1,517	15.16	5.71	381	10.10	5.19
>3 and ≤5	301	2.18	9.51	268	2.68	9.69	33	0.88	8.09
>5 and ≤10	62	0.45	13.10	54	0.54	13.24	8	0.21	12.13
>10	2	0.01	15.50	2	0.02	15.50	0	0.00	0.00
Total	13,779	100.00	2.67	10,008	100.00	2.88	3,771	100.00	2.11

Source: Own elaborations on Defendini data.

Province of Modena									
	Total			Male			Female		
Address changes per individual	Number	%	Average tax return forms	Number	%	Average tax return forms	Number	%	Average tax return forms
0	20,099	48.49	1.32	13,222	45.48	1.36	6,877	55.55	1.24
1	13,242	31.94	3.12	9,417	32.39	3.24	3,825	30.90	2.82
>1 and ≤3	6,882	16.60	5.78	5,371	18.47	5.94	1,511	12.21	5.20
>3 and ≤5	997	2.41	9.63	856	2.94	9.76	141	1.14	8.87
>5 and ≤10	228	0.55	13.19	204	0.70	13.23	24	0.19	12.88
>10	5	0.01	27.00	4	0.01	26.00	1	0.01	31.00
Total	41,453	100.00	2.9	29,074	100.00	3.15	12,379	100.00	2.32

Source: Own elaborations on Defendini data.

Table 5. Sample structure (inhabitants) by gender and number of prior notices

Province of Trento									
	Total			Male			Female		
Prior notices per individual	Number	%	Average tax return forms	Number	%	Average tax return forms	Number	%	Average tax return forms
0	12,390	89.92	2.37	8,962	89.55	2.55	3,428	90.90	1.87
1	839	6.09	4.17	615	6.15	4.38	224	5.94	3.57
>1 and ≤3	411	2.98	6.24	310	3.10	6.39	101	2.68	5.78
>3 and ≤5	93	0.67	8.90	79	0.79	8.99	14	0.37	8.43
>5 and ≤10	44	0.32	12.27	40	0.40	12.35	4	0.11	11.50
>10	2	0.01	19.50	2	0.02	19.50	0	0.00	0.00
Total	13,779	100.00	2.67	10,008	100.00	2.88	3,771	100.00	2.11

Source: Own elaborations on Defendini data.

Province of Modena									
	Total			Male			Female		
Prior notices per individual	Number	%	Average tax return forms	Number	%	Average tax return forms	Number	%	Average tax return forms
0	35,279	85.11	2.47	24,549	84.44	2.68	10,730	86.68	1.99
1	4,092	9.87	4.30	2,908	10.00	4.55	1,184	9.56	3.70
>1 and ≤3	1,669	4.03	6.60	1,272	4.38	6.82	397	3.21	5.89
>3 and ≤5	285	0.69	9.63	231	0.79	9.81	54	0.44	8.85
>5 and ≤10	123	0.30	12.67	109	0.37	12.80	14	0.11	11.64
>10	5	0.01	20.40	5	0.02	20.40	0	0.00	0.00
Total	41,453	100.00	2.9	29,074	100.00	3.15	12,379	100.00	2.32

Source: Own elaborations on Defendini data.

Table 6. Definition of variables and summary statistics

Variables	Definition	Mean (St. dev.)	
		TRENTO	MODENA
Continuous variables			
cumulative address change	Number of address change at time *t*	1.58	1.63
		(1.34)	(1.41)
cumulative prior notice	Number of prior notices at time *t*	0.43	0.48
		(1.14)	(1.09)
Dummy variables			
address change	The individual has moved to escape tax notice	0.54	0.52
prior notice	The individual has experienced a prior notice	0.13	0.15
male	The individual is a male	0.81	0.79
female	The individual is a female	0.19	0.21
due amount < 100 €	The amount of the tax roll is less than 100 €	0.24	0.21
100 < due amount < 2,000 €	The amount of the tax roll is between 100 and 2,000 €	0.61	0.64
2,000 < due amount < 50,000 €	The amount of the tax roll is between 2,000 and 50,000 €	0.15	0.14
due amount > 50,000 €	The amount of the tax roll is over 50,000 €	0.00	0.00
cumulative due amount < 50 €	The individual due amount is less than 50 €	0.00	0.01
50 < cumulative due amount < 100 €	The individual due amount is between 50 and 100 €	0.01	0.01
100 < cumulative due amount < 200 €	The individual due amount is between 100 and 200 €	0.05	0.04
200 < cumulative due amount < 500 €	The individual due amount is between 200 and 500 €	0.15	0.16
500 < cumulative due amount < 1,000 €	The individual due amount is between 500 and 1,000 €	0.14	0.15
1,000 < cumulative due amount < 2,000 €	The individual due amount is between 1,000 and 2,000 €	0.14	0.15
2,000 < cumulative due amount < 5,000 €	The individual due amount is between 2,000 and 5,000 €	0.21	0.21
5,000 < cumulative due amount < 10,000 €	The individual due amount is between 5,000 and 10,000 €	0.15	0.14
10,000 < cumulative due amount < 50,000 €	The individual due amount is between 10,000 and 50,000 €	0.12	0.12
cumulative due amount > 50,000 €	The individual due amount is over 50,000 €	0.03	0.02
18 < age < 25	The age of the individual is between 18 and 25	0.02	0.02
25 < age < 35	The age of the individual is between 25 and 35	0.23	0.24
35 < age < 50	The age of the individual is between 35 and 50	0.47	0.50
50 < age < 65	The age of the individual is between 50 and 65	0.21	0.18
age > 65	The age of the individual is over 65	0.06	0.06
born_NW Italy	Individual born in North West Italy	0.06	0.04
born_NE Italy	Individual born in North East Italy	0.51	0.01
born_Center Italy	Individual born in Center Italy	0.06	0.39
born_South Italy	Individual born in South Italy	0.13	0.29
born_world zone 5	Individual born in North Europe	0.01	0.01
born_world zone 6	Individual born in Continental Europe	0.02	0.01
born_world zone 7	Individual born in East and South East Europe	0.08	0.03
born_world zone 8	Individual born in North Africa	0.10	0.13
born_world zone 9	Individual born in Center and South Africa	0.01	0.03
born_world zone 10	Individual born in Asia	0.01	0.03
born_world zone 11	Individual born in North America or England as well as Australia	0.00	0.00
born_world zone 12	Individual born in Center and South America	0.02	0.01
born_world zone 13	Individual born in Arabia	-	0.00
Sample size		19,105	66,772

Table 7a. Probit estimates for Province of Trento

Regressors[a,b]	MODEL PROBIT 1[§] coefficient[d]	st. error		MODEL PROBIT 2[§] coefficient[d]	st. error	
Prior notice	-0.278	0.027	***	-0.292	0.031	***
female	0.057	0.024	**	0.047	0.029	
100 < due amount < 2,000 €	0.048	0.022	**	0.071	0.024	***
2,000 < due amount < 50,000 €	0.048	0.030		0.083	0.033	**
due amount > 50,000 €	-0.106	0.145		0.020	0.157	
25 < age < 35	0.093	0.061		0.123	0.073	*
35 < age < 50	0.105	0.060	*	0.134	0.072	*
50 < age < 65	0.174	0.062	***	0.218	0.074	***
age > 65	0.373	0.070	***	0.386	0.083	***
born_NW Italy	-0.071	0.039	*	-0.096	0.048	**
born_Center Italy	-0.087	0.041	**	-0.116	0.051	**
born_South Italy	-0.053	0.029	*	-0.085	0.036	**
born_world zone 5[c]	0.209	0.086	**	0.201	0.105	*
born_world zone 6	-0.044	0.071		-0.096	0.085	
born_world zone 7	-0.085	0.036	**	-0.139	0.044	***
born_world zone 8	-0.156	0.032	***	-0.199	0.041	***
born_world zone 9	0.210	0.104	**	0.176	0.124	
born_world zone 10	-0.140	0.093		-0.199	0.118	*
born_world zone 11	-0.382	0.207	*	-0.449	0.244	*
born_world zone 12	-0.081	0.066		-0.147	0.082	*
constant	0.008	0.061		0.076	0.073	
nr. observations	19,105			19,105		
Log-likelihood	-13,049.06			-12,895.82		
LR test [p-value]	245.91 [0.000]			-		
Wald test [p-value]	-			209.39 [0.000]		
Pseudo R^2	0.01			-		

[§] MODEL 1: probit on pooled data, MODEL 2: probit with individual random effects.

[a] Dependent variable is *Prob*[*address change*].

[b] Reference individual: male, due amount < 100 €, age < 25, born in NE Italy, no prior audit.

[c] World zone: 1 = NW Italy, 2 = NE Italy, 3 = Center Italy, 4 = South Italy, 5 = North Europe, 6 = Continental Europe, 7 = East and SE Europe, 8 = Nort Africa, 9 = Center and South Africa, 10 = Asia, 11 = North America, England and Australia, 12 = Center and South America.

[d] Significance level: *** 1%, ** 5%, *10%.

Table 7b. Probit estimates for Province of Modena

Regressors[a,b]	MODEL PROBIT 1[§] coefficient[d]	st. error		MODEL PROBIT 2[§] coefficient[d]	st. error	
Prior notice	-0.280	0.014	***	-0.303	0.015	***
female	0.114	0.012	***	0.111	0.014	***
100 < due amount < 2,000 €	0.010	0.012		0.027	0.013	**
2,000 < due amount < 50,000 €	-0.083	0.017	***	-0.042	0.018	**
due amount > 50,000 €	-0.276	0.098	***	-0.201	0.104	*
25 < age < 35	0.103	0.036	***	0.130	0.041	***
35 < age < 50	0.141	0.035	***	0.176	0.040	***
50 < age < 65	0.215	0.036	***	0.263	0.042	***
age > 65	0.452	0.040	***	0.495	0.046	***
born_NW Italy	-0.040	0.025		-0.041	0.030	
born_NE Italy	-0.103	0.042	**	-0.122	0.050	**
born_South Italy	-0.061	0.012	***	-0.073	0.015	***
born_world zone 5[c]	0.084	0.060		0.040	0.071	
born_world zone 6	-0.009	0.045		-0.025	0.053	
born_world zone 7	-0.098	0.028	***	-0.137	0.034	***
born_world zone 8	-0.124	0.016	***	-0.159	0.019	***
born_world zone 9	0.036	0.029		0.020	0.034	
born_world zone 10	-0.102	0.028	***	-0.132	0.034	***
born_world zone 11	0.144	0.105		0.119	0.122	
born_world zone 12	-0.126	0.044	***	-0.148	0.053	***
born_world zone 13	0.400	0.363		0.382	0.405	
constant	-0.051	0.036		-0.013	0.041	
nr. observations	66,772			66,772		
Log-likelihood	-45,701.62			-45,335.11		
LR test [p-value]	1,083.31 [0.000]			-		
Wald test [p-value]	-			954.17 [0.000]		
Pseudo R^2	0.01			-		

[§] MODEL 1: probit on pooled data, MODEL 2: probit with individual random effects.

[a] Dependent variable is *Prob*[*address change*].

[b] Reference individual: male, due amount < 100 €, age < 25, born in Center Italy, no prior audit.

[c] World zone: 1 = NW Italy, 2 = NE Italy, 3 = Center Italy, 4 = South Italy, 5 = North Europe, 6 = Continental Europe, 7 = East and SE Europe, 8 = Nort Africa, 9 = Center and South Africa, 10 = Asia, 11 = North America, England and Australia, 12 = Center and South America, 13 = Arabia.

[d] Significance level: *** 1%, ** 5%, *10%.

Table 8a. Logit estimates for Province of Trento

Regressors[a,b]	MODEL LOGIT 1[§] coefficient[d]	st. error		MODEL LOGIT 2[§] coefficient[d]	st. error		MODEL LOGIT 3[§] coefficient[d]	st. error	
prior notice	-0.445	0.043	***	-0.478	0.050	***	-0.311	0.069	***
female	0.091	0.038	**	0.077	0.047		-	-	
100 < due amount < 2,000 €	0.076	0.036	**	0.116	0.040	***	0.194	0.052	***
2,000 < due amount < 50,000 €	0.076	0.048		0.135	0.054	**	0.276	0.068	***
due amount > 50,000 €	-0.171	0.233		0.028	0.257		0.605	0.295	**
25 < age < 35	0.149	0.098		0.201	0.120	*	0.262	0.368	
35 < age < 50	0.167	0.096	*	0.219	0.117	*	0.324	0.403	
50 < age < 65	0.279	0.099	***	0.357	0.121	***	0.304	0.455	
age > 65	0.601	0.112	***	0.634	0.136	***	0.265	0.607	
born_NW Italy	-0.113	0.062	*	-0.157	0.079	*	-	-	
born_Center Italy	-0.140	0.065	**	-0.190	0.084	**	-	-	
born_South Italy	-0.085	0.046	*	-0.138	0.059	**	-	-	
born_world zone 5[c]	0.337	0.140	**	0.331	0.174	*	-	-	
born_world zone 6	-0.071	0.114		-0.156	0.139		-	-	
born_world zone 7	-0.136	0.057	**	-0.228	0.072	***	-	-	
born_world zone 8	-0.250	0.051	***	-0.325	0.066	***	-	-	
born_world zone 9	0.338	0.169	**	0.289	0.204		-	-	
born_world zone 10	-0.224	0.149		-0.326	0.192	*	-	-	
born_world zone 11	-0.613	0.334	*	-0.732	0.399	*	-	-	
born_world zone 12	-0.129	0.106		-0.237	0.134	*	-	-	
constant	0.012	0.098		0.124	0.120		-	-	
nr. observations	19,105			19,105			12,332		
Log-likelihood	-13,049.06			-12,895.62			-5,073.06		
LR test [p-value]	245.90 [0.000]			-			42.57 [0.000]		
Wald test [p-value]	-			207.27 [0.000]			-		
Pseudo R^2	0.01			-			-		

[§] MODEL 1: logit on pooled data, MODEL 2: logit with individual random effects, MODEL 3: logit with individual fixed effects.

[a] Dependent variable is *Prob*[*address change*].

[b] Reference individual: male, due amount < 100 €, age < 25, born in NE Italy, no prior audit.

[c] World zone: 1 = NW Italy, 2 = NE Italy, 3 = Center Italy, 4 = South Italy, 5 = North Europe, 6 = Continental Europe, 7 = East and SE Europe, 8 = Nort Africa, 9 = Center and South Africa, 10 = Asia, 11 = North America, England and Australia, 12 = Center and South America.

[d] Significance level: *** 1%, ** 5%, *10%.

Table 8b. Logit estimates for Province of Modena

Regressors[a,b]	MODEL LOGIT 1[§] coefficient[d]	st. error		MODEL LOGIT 2[§] coefficient[d]	st. error		MODEL LOGIT 3[§] coefficient[d]	st. error	
prior notice	-0.448	0.022	***	-0.494	0.024	***	-0.434	0.032	***
female	0.182	0.020	***	0.180	0.023	***	-	-	
100 < due amount < 2,000 €	0.017	0.020		0.043	0.021	**	0.113	0.028	***
2,000 < due amount < 50,000 €	-0.132	0.027	***	-0.068	0.030	**	0.155	0.037	***
due amount > 50,000 €	-0.446	0.158	***	-0.329	0.171	*	-0.035	0.195	
25 < age < 35	0.165	0.057	***	0.212	0.066	***	0.332	0.191	*
35 < age < 50	0.226	0.056	***	0.286	0.065	***	0.233	0.208	
50 < age < 65	0.343	0.058	***	0.428	0.068	***	0.038	0.233	
age > 65	0.727	0.065	***	0.805	0.075	***	-0.462	0.335	
born_NW Italy	-0.064	0.041		-0.067	0.049		-	-	
born_NE Italy	-0.165	0.067	**	-0.199	0.082	**	-	-	
born_South Italy	-0.097	0.019	***	-0.119	0.024	***	-	-	
born_world zone 5[c]	0.134	0.096		0.066	0.115		-	-	
born_world zone 6	-0.014	0.072		-0.040	0.087		-	-	
born_world zone 7	-0.157	0.045	***	-0.223	0.055	***	-	-	
born_world zone 8	-0.198	0.026	***	-0.258	0.031	***	-	-	
born_world zone 9	0.058	0.047		0.033	0.056		-	-	
born_world zone 10	-0.162	0.045	***	-0.214	0.056	***	-	-	
born_world zone 11	0.233	0.170		0.196	0.200		-	-	
born_world zone 12	-0.202	0.071	***	-0.240	0.086	***	-	-	
born_world zone 13	0.651	0.601		0.642	0.677		-	-	
constant	-0.081	0.058		-0.022	0.067		-	-	
nr. observations	66,772			66,772			46,828		
Log-likelihood	-45,701.84			-45,334.94			-19,304.29		
LR test [p-value]	1,082.86 [0.000]			-			220.52 [0.000]		
Wald test [p-value]	-			938.17 [0.000]			-		
Pseudo R^2	0.01			-			-		

[§] MODEL 1: logit on pooled data, MODEL 2: logit with individual random effects, MODEL 3: logit with individual fixed effects.

[a] Dependent variable is *Prob*[*address change*].

[b] Reference individual: male, due amount < 100 €, age < 25, born in Center Italy, no prior audit.

[c] World zone: 1 = NW Italy, 2 = NE Italy, 3 = Center Italy, 4 = South Italy, 5 = North Europe, 6 = Continental Europe, 7 = East and SE Europe, 8 = Nort Africa, 9 = Center and South Africa, 10 = Asia, 11 = North America, England and Australia, 12 = Center and South America, 13 = Arabia.

[d] Significance level: *** 1%, ** 5%, *10%.

Table 9a. Tobit estimates for Province of Trento

Regressors[a,b]	MODEL TOBIT 1[§] coefficient	st. error		MODEL TOBIT 2[§] Coefficient	st. error		MODEL TOBIT 3[§] coefficient	st. error	
cumulative prior notice	0.146	0.009	***	0.267	0.008	***	0.444	0.010	***
female	-0.089	0.025	***	-0.034	0.031		-0.261	0.034	***
cumulative due amount < 50 €	0.059	0.283		-0.071	0.242		-0.350	0.127	***
100 < cumulative due amount < 200 €	0.205	0.094	**	0.197	0.082	**	-0.395	0.125	***
200 < cumulative due amount < 500 €	0.392	0.087	***	0.371	0.078	***	-0.319	0.124	***
500 < cumulative due amount < 1,000 €	0.657	0.088	***	0.582	0.079	***	-0.338	0.124	***
1,000 < cumulative due amount < 2,000 €	0.862	0.088	***	0.794	0.079	***	-0.366	0.125	***
2,000 < cumulative due amount < 5,000 €	1.152	0.087	***	1.090	0.078	***	-0.372	0.126	***
5,000 < cumulative due amount < 10,000 €	1.736	0.088	***	1.702	0.079	***	-0.201	0.125	
10,000 < cumulative due amount < 50,000 €	2.419	0.089	***	2.552	0.082	***	-0.182	0.132	
cumulative due amount > 50,000 €	2.520	0.103	***	3.394	0.100	***	0.067	0.134	
25 < age < 35	0.299	0.065	***	0.267	0.076	***	0.396	0.082	***
35 < age < 50	0.253	0.064	***	0.355	0.075	***	0.563	0.081	***
50 < age < 65	0.223	0.066	***	0.373	0.078	***	0.602	0.084	***
age > 65	0.288	0.075	***	0.483	0.087	***	0.427	0.093	***
born_NW Italy	-0.009	0.041		-0.020	0.049		0.028	0.058	
born_Center Italy	0.161	0.043	***	0.030	0.051		-0.024	0.060	
born_South Italy	0.109	0.030	***	0.011	0.039		0.053	0.047	
born_world zone 5	0.461	0.088	***	0.326	0.090	***	0.164	0.103	
born_world zone 6	-0.021	0.075		-0.092	0.096		-0.221	0.089	**
born_world zone 7	-0.045	0.038		-0.082	0.052		-0.172	0.057	***
born_world zone 8	-0.003	0.034		-0.096	0.042	**	-0.074	0.053	
born_world zone 9	0.182	0.107	*	0.190	0.145		0.027	0.126	
born_world zone 10	-0.127	0.100		-0.006	0.125		-0.192	0.119	
born_world zone 11	-0.589	0.231	**	-0.383	0.263		-0.563	0.304	*
born_world zone 12	0.051	0.070		-0.069	0.080		-0.099	0.102	
constant	0.007	0.105		-0.201	0.106	*	0.885	0.147	***
nr. observations	19,105			19,105			19,105		
Log-likelihood	-30,254.18			-25,873.68			-28,027.97		
LR test [p-value]	5,545.99	[0.000]		-			-		
Wald test [p-value]	-			8,290.87	[0.000]		2,361.88	[0.000]	
Pseudo R^2	0.08			-			-		

[§] MODEL 1: tobit on pooled data, MODEL 2: random effects tobit with *cumulative* due amount, MODEL 3: random effects tobit with due amount.
[a] Dependent variable is *cumulative address change.* [b] Reference individual: male, 50 < cumulative due amount < 100 €, age < 25, born in NE Italy.

Table 9b. Tobit estimates for Province of Modena

Regressors[a,b]	MODEL TOBIT 1[§] coefficient	st. error		MODEL TOBIT 2[§] Coefficient	st. error		MODEL TOBIT 3[§] coefficient	st. error	
cumulative prior notice	0.149	0.005	***	0.244	0.005	***	0.446	0.006	***
female	-0.107	0.014	***	-0.016	0.017		-0.216	0.019	***
cumulative due amount < 50 €	-0.049	0.088		-0.072	0.076		-0.058	0.087	
100 < cumulative due amount < 200 €	-0.155	0.080	*	-0.186	0.071	***	0.050	0.086	
200 < cumulative due amount < 500 €	-0.009	0.076		-0.030	0.068		-0.018	0.086	
500 < cumulative due amount < 1,000 €	0.304	0.076	***	0.269	0.068	***	-0.009	0.086	
1,000 < cumulative due amount < 2,000 €	0.580	0.076	***	0.607	0.069	***	-0.021	0.086	
2,000 < cumulative due amount < 5,000 €	0.867	0.076	***	0.979	0.069	***	0.013	0.087	
5,000 < cumulative due amount < 10,000 €	1.414	0.076	***	1.598	0.069	***	0.055	0.086	
10,000 < cumulative due amount < 50,000 €	2.075	0.077	***	2.389	0.070	***	0.282	0.090	***
cumulative due amount > 50,000 €	2.382	0.083	***	3.057	0.077	***	0.288	0.090	***
25 < age < 35	0.437	0.041	***	0.401	0.042	***	0.567	0.053	***
35 < age < 50	0.545	0.041	***	0.585	0.042	***	0.887	0.053	***
50 < age < 65	0.526	0.042	***	0.689	0.044	***	1.031	0.055	***
age > 65	0.609	0.046	***	0.843	0.049	***	0.814	0.059	***
born_NW Italy	-0.015	0.029		-0.029	0.035		-0.062	0.038	
born_NE Italy	-0.100	0.047	**	-0.143	0.059	**	-0.091	0.069	
born_South Italy	0.003	0.014		-0.012	0.018		-0.017	0.021	
born_world zone 5	0.163	0.067	**	0.192	0.088	**	0.070	0.088	
born_world zone 6	-0.085	0.051	*	0.017	0.106		-0.053	0.072	
born_world zone 7	-0.113	0.032	***	-0.023	0.043		-0.139	0.046	***
born_world zone 8	-0.067	0.018	***	-0.030	0.025		-0.126	0.028	***
born_world zone 9	0.016	0.033		0.133	0.039	***	-0.187	0.047	***
born_world zone 10	-0.124	0.032	***	-0.260	0.043	***	-0.030	0.052	
born_world zone 11	0.164	0.117		0.080	0.155		0.048	0.156	
born_world zone 12	-0.268	0.050	***	-0.167	0.062	***	-0.118	0.065	*
born_world zone 13	0.117	0.390		0.440	0.546		0.010	0.531	
constant	0.172	0.085	**	-0.137	0.080	*	0.270	0.101	***
nr. observations	66,772			66,772			66,772		
Log-likelihood	-109,345.31			-92,491.76			-99,860.57		
LR test [p-value]	17,743.12	[0.000]		-			-		
Wald test [p-value]	-			25,882.29	[0.000]		6,153.11	[0.000]	
Pseudo R^2	0.08			-			-		

[§] MODEL 1: tobit on pooled data, MODEL 2: random effects tobit with *cumulative* due amount, MODEL 3: random effects tobit with due amount.

[a] Dependent variable is *cumulative address change.* [b] Reference individual: male, 50 < cumulative due amount < 100 €, age < 25, born in Center Italy.

Table 10a. Estimates of the generalized double-hurdle model for Province of Trento

Regressors[a,b]	PARTECIPATION PROCESS coefficient	st. error		NUMBER OF TIMES coefficient	st. error	
prior notice	-0.375	0.028	***	-	-	
cumulative prior notice	-	-		0.234	0.013	***
female	0.138	0.030	***	-0.167	0.035	***
100 < due amount < 2,000 €	-0.013	0.025		-	-	
2,000 < due amount < 50,000 €	-0.157	0.033	***	-	-	
due amount > 50,000 €	-0.389	0.148	***	-	-	
cumulative due amount < 50 €	-	-		-2.412	0.300	***
100 < cumulative due amount < 200 €	-	-		-2.545	0.129	***
200 < cumulative due amount < 500 €	-	-		-2.410	0.103	***
500 < cumulative due amount < 1,000 €	-	-		-2.319	0.095	***
1,000 < cumulative due amount < 2,000 €	-	-		-2.177	0.096	***
2,000 < cumulative due amount < 5,000 €	-	-		-1.986	0.097	***
5,000 < cumulative due amount < 10,000 €	-	-		-1.711	0.095	***
10,000 < cumulative due amount < 50,000 €	-	-		-0.974	0.096	***
cumulative due amount > 50,000 €	-	-		-0.151	0.097	
25 < age < 35	0.054	0.074		0.137	0.098	
35 < age < 50	0.064	0.072		0.103	0.096	
50 < age < 65	0.146	0.075	**	0.054	0.098	
age > 65	0.534	0.092	***	-0.113	0.109	
born_NW Italy	-0.099	0.045	**	0.099	0.056	*
born_Center Italy	-0.150	0.046	***	0.334	0.058	***
born_South Italy	-0.082	0.033	**	0.169	0.041	***
born_world zone 5[c]	0.170	0.099	*	0.373	0.108	***
born_world zone 6	-0.047	0.086		0.138	0.101	
born_world zone 7	-0.092	0.041	**	0.102	0.052	*
born_world zone 8	-0.203	0.035	***	0.270	0.047	***
born_world zone 9	0.254	0.130	**	-0.011	0.136	
born_world zone 10	-0.165	0.106		0.150	0.140	
born_world zone 11	0.100	0.505		-0.684	0.461	
born_world zone 12	-0.092	0.077		0.136	0.098	
constant	0.254	0.074	***	3.333	0.137	***
Nr. observations	19,105					
Log-likelihood	-27,286					
σ				1.17	0.013	***
ρ				-0.27	0.039	***

[a] Dependent variables are *Prob*[*address change*] and *cumulative address change*.

[b] Reference individual: male, due amount < 100 €, 50 < cumulative due amount < 100 €, age < 25, born in NE Italy, no prior audit.

[c] World zone: 1 = NW Italy, 2 = NE Italy, 3 = Center Italy, 4 = South Italy, 5 = North Europe, 6 = Continental Europe, 7 = East and SE Europe, 8 = Nort Africa, 9 = Center and South Africa, 10 = Asia, 11 = North America, England and Australia, 12 = Center and South America.

[d] Significance level: *** 1%, ** 5%, *10%.

Table 10b. Estimates of the generalized double-hurdle model for Province of Modena

Regressors[a,b]	PARTICIPATION PROCESS coefficient	st. error		NUMBER OF TIMES coefficient	st. error	
prior notice	-0.376	0.014	***	-	-	
cumulative prior notice	-	-		0.246	0.008	***
female	0.203	0.015	***	-0.226	0.020	***
100 < due amount < 2,000 €	-0.051	0.013	***	-	-	
2,000 < due amount < 50,000 €	-0.291	0.018	***	-	-	
due amount > 50,000 €	-0.577	0.100	***	-	-	
cumulative due amount < 50 €	-	-		-0.035	0.086	
100 < cumulative due amount < 200 €	-	-		-0.093	0.078	
200 < cumulative due amount < 500 €	-	-		0.005	0.074	
500 < cumulative due amount < 1,000 €	-	-		0.227	0.075	***
1,000 < cumulative due amount < 2,000 €	-	-		0.484	0.076	***
2,000 < cumulative due amount < 5,000 €	-	-		0.781	0.075	***
5,000 < cumulative due amount < 10,000 €	-	-		1.490	0.076	***
10,000 < cumulative due amount < 50,000 €	-	-		2.158	0.077	***
cumulative due amount > 50,000 €	-	-		2.626	0.094	***
25 < age < 35	0.014	0.047		0.301	0.066	***
35 < age < 50	0.034	0.046		0.366	0.065	***
50 < age < 65	0.119	0.047	**	0.263	0.067	***
age > 65	0.457	0.053	***	0.215	0.071	***
born_NW Italy	-0.046	0.030		0.041	0.040	
born_Center Italy	-0.107	0.049	**	0.046	0.068	
born_South Italy	-0.078	0.014	***	0.103	0.019	***
born_world zone 5[c]	0.076	0.070		0.195	0.090	**
born_world zone 6	0.019	0.054		-0.128	0.072	*
born_world zone 7	-0.088	0.034	***	0.042	0.048	
born_world zone 8	-0.126	0.018	***	0.069	0.027	***
born_world zone 9	0.067	0.036	*	0.038	0.047	
born_world zone 10	-0.133	0.031	***	0.114	0.045	**
born_world zone 11	0.109	0.118		0.328	0.150	**
born_world zone 12	-0.148	0.050	***	0.030	0.071	
born_world zone 13	1.248	1.990		-0.684	0.729	
constant	0.245	0.047	***	0.890	0.099	***
Nr. observations	66,772					
Log-likelihood	-95,115					
σ				1.261	0.008	***
ρ				-0.320	0.018	***

[a] Dependent variables are *Prob*[*address change*] and *cumulative address change*.

[b] Reference individual: male, due amount < 100 €, 50 < cumulative due amount < 100 €, age < 25, born in Center Italy, no prior audit.

[c] World zone: 1 = NW Italy, 2 = NE Italy, 3 = Center Italy, 4 = South Italy, 5 = North Europe, 6 = Continental Europe, 7 = East and SE Europe, 8 = Nort Africa, 9 = Center and South Africa, 10 = Asia, 11 = North America, England and Australia, 12 = Center and South America, 13= Arabia.

[d] Significance level: *** 1%, ** 5%, *10%.