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# **EPRU Working Paper Series**

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## **Tax Avoidance, Endogenous Social Norms, and the Comparison Income Effect**

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# Tax avoidance, endogenous social norms, and the comparison income effect\*

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## Abstract

We present a model of income tax avoidance with heterogeneous agents, assuming the presence of a comparison income effect and of a psychic cost (disutility) of tax dodging. We analyse the policy preferences of the agents, and identify a median-voter political equilibrium. Paralleling previous results in the optimal taxation literature, we show that the comparison income effect calls for a high degree of progressivity of the income tax; additionally, we find that this tendency is strengthened by the psychic cost of avoidance. We then investigate the source of the stigma attached to the act of avoidance and find that such stigma is motivated by the desire to make redistribution more effective, and that it is enhanced by the income comparison effect.

## I Introduction

A problem that economists have traditionally encountered when studying imperfect tax compliance is that, while the phenomenon is quantitatively relevant in all countries (no matter whether they have developed, transition or developing economies), is not nearly as large as it should be. If *homo oeconomicus* were an accurate portrait of the real-world economic agent, then nobody should ever fully comply with the tax rules, as there are immediate and obvious

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gains to be reaped against a small probability of being caught. In reality, while it is presumably true that, given the chance, almost everybody will commit the occasional act of tax dodging, only a minority takes this up as a systematic activity.<sup>1</sup>

There have been various attempts at solving this conundrum. An interesting insight is offered by works like those by Friedman et al. (2000) and Johnson et al. (1997, 1998), arguing that tax dodging is closely related to tax implementation, regulation and corruption, and thus that changes along these dimensions explain most of the variation in non-compliance. We will follow however another branch of the literature, focusing on the existence of social norms against tax dodging; see e.g. Gordon (1989), Myles and Naylor (1996) and Orviska and Hudson (2002). If an individual believes that cheating the government is an intrinsically bad act, that is if she has interiorised a social norm against such behaviour, she will abstain from it even if it is clearly lucrative. Possibly, this line of enquiry goes, in some sense, *deeper* than the preceding one. It is in fact likely that the presence in the society of a negative attitude towards tax dodging will affect both the way the tax system is administered and the way individual citizens relate themselves to it. Where avoiding or evading taxes carries a social stigma there is less scope for corruption among tax officers *and* the tax-payers are more prone to comply with the rules.

One thing which is usually overlooked in the literature on social customs and tax avoidance is the question of how the norm is established. Why should rational, utility-maximising agents create a norm which goes seemingly against their own interest? There is thus a missing link in the analysis; one studies how the norm affect individual behaviour, but does not ask how individual behaviour contributes to establish the norm. This missing link will be addressed in the present paper.<sup>2</sup> In order to do this, we can rely on two important lines of research, since both economists and social psychologists have investigated the spontaneous formation of social norms. In economics, we have the pioneering work of Akerlof (1980) and more recent examples, like Naylor (1990) or Lindbeck et al. (1999), in which social norms, whose importance reflects (among other things) the number of agents that comply with them, are assumed to arise endogenously. In social psychology, there are fundamental works showing that indeed groups tend to create internal rules for behaviour using informal procedures (e.g. Sherif 1936; Hogg

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<sup>1</sup>According to Schneider and Enste (2002) the average size of the shadow economy in the 90's was in the range of 12%, 23% and 39% of GDP for, respectively, developed, transition and developing economies.

<sup>2</sup>For a related attempt, see e.g. Feld and Frey (2005), where tax compliance is interpreted as the outcome of a psychological contract.

and Hardie 1992), and that conformity to the views of the majority is a powerful factor in determining adherence to the norm (e.g. Asch 1955; Baron et al. 1996).<sup>3</sup>

The perspective we take here is that social norms do not exist in a vacuum, they must perform some useful social task in order to first arise and then survive. Specifically, we argue that a social norm against tax dodging serves two purposes. The first is straightforward: when the norm is active, compliance rises, hence there will be less distortion associated with redistributive taxation. In other words, the custom makes redistribution less costly and more effective. The second purpose is somewhat less self-evident: we suggest that another role of the norm is to facilitate social competition. Where people feel a strong urge of bettering themselves, social mobility is high, and the search for status compelling, norms are extremely important in that they prevent competition from degenerating into a rat race; "not playing by the rules", for example achieving status by cheating the government, cannot thus be condoned. If the above is true, then we should find that the norm is stronger, the more competitive the society is; and the same should hold for all customs condemning anti-social behaviour. There is in fact evidence (Triandis, 1989; Smith and Bond, 1993; Bond and Smith, 1996) that people from competitive societies like that of the US conform to customs dictating behaviour in matters of relevance for the society at large, whereas people from more cohesive societies like that of Japan tend to comply mostly with norms prevailing in their own narrowly defined reference group (be that their family or the firm in which they work).

Since both redistribution and social mobility are important especially for the low-income group, they will be the main supporters of a social norm against an anti-social attitude like tax dodging. Much of the strength of the norm will thus depend on whether public opinion is entirely dominated by the high-income classes or whether the middle-to-low-income people carry some weight in shaping the view of the society. This will in turn depend on the solidity of the democratic institutions in the country, e.g. the balance of power between the executive, legislative and judiciary branches of the administration, the independence of the press and other media, etc. In long-established and well-working democracies like the US, the UK or the Scandinavian countries there seem indeed to be more stigma associated with tax dodging than in institutionally more fragile nations like, say, Greece or Italy<sup>4</sup> – not to mention transition or

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<sup>3</sup>There is also a branch of social psychology that investigates the power of the minorities in affecting group behaviour, see e.g. Moscovici (1976) and Alvaro and Crano (1997).

<sup>4</sup>This can be generalised to other aspects of the social structure, like moral accountability of those in power. The recent (summer-fall 2005) Italian central bank scandal is a good example: despite having blatantly violated

developing countries.

The model we employ to investigate the questions posed above is a simple one. Our agents have fixed incomes and must only decide whether to dodge the income tax and if so, to what extent. In fact, adding a variable labour supply would not be difficult in principle, although it would make the analysis more involved. The only relevant, but by no means dissonant, modification would be that of extending the scope of the custom, which should include a work ethic, thus stigmatising in general anti-social attitudes; being idle, cheating on one's taxes, etc. To analyse the role of social competition, we assume that preferences incorporate the so-called "relative utility" or "income comparison effect" (see e.g. Easterlin 2001 for a recent discussion), that is that agents not only care for their own consumption but also for the "distance" between their consumption and that of a reference group. This is an immediate but effective way of capturing the presence of a status-seeking impulse behind the economic decisions of the agent.

Given the agents' choices, we then study their policy preferences and the ensuing political equilibrium in a standard majority voting setting. The winning policy turns out to be the one preferred by the median voter; therefore, there will be a progressive income tax in place at the political equilibrium, and some tax dodging will occur. In line with similar results from the optimal taxation literature, we find that the comparison income effect calls for a high degree of progressivity of the income tax. Additionally, we detect a similar role for the social custom; the progressivity of the tax system is directly related to the strength of the social norm. This is plausible, and consistent with casual observation. For example, a recent reform of the income tax has involved a cut of marginal rates in Italy, beginning from 2005. The necessity of such a reform had been often announced in terms that clearly signal the lack of stigma for non-compliance: the Prime Minister has in fact endorsed avoidance as "good" behaviour, declaring that "[i]f reasonable taxes are demanded, no one thinks about avoiding paying them. But if you ask 50% or more ... *I consider myself morally justified to do everything I can to avoid paying them*"<sup>5</sup>.

Finally, we examine what the preferences of the agents concerning the force of the social norm are. It turns out that the strength of the norm against tax dodging can be directly

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all the rules of a fair competition in a (failed) attempt at preventing a foreign bank from acquiring a controlling position in an Italian bank, the governor did not feel compelled to quit after his behaviour was exposed to the general public because he had not, technically, broken any law (for a journalistic account, see e.g. Gumbel, 2005).

<sup>5</sup>Reported by *Time*, March 1, 2004, p. 17, emphasis added.

related to the strength of the income comparison effect, which is consistent with the evidence cited above as it contributes to explain intercountry differences in the relevance of the social custom (the US is a much more competitive and mobile society than, say, Italy, and the norm should therefore be more binding).

Finally, note that the above succession of steps in the analysis corresponds to a standard backward solution procedure for a model whose timing is as follows: 1) agents establish social norms; 2) agents vote on policy; 3) agents make avoidance decisions.

## II A tax avoidance model

Consider an economy inhabited by agents differing for their gross incomes  $y$ . Gross income is fixed, and distributed continuously along an interval  $(y^-, y^+)$ ; the total number of agents is normalised to unity,  $\int y f(y) dy = 1$ . The government levies a linear income tax on the agents' incomes, with a marginal tax rate  $t \geq 0$  and a uniform grant  $T \geq 0$ . The agents have the option to hide a share of their income from the fisc by exploiting loopholes in the tax code; let  $a \in [0, 1]$  be the percentage of hidden income, such that  $r = (1 - a)y$  is the income actually reported, and  $h = ay$  is hidden income. In order to avoid taxes, the agent incurs in some monetary costs (e.g. by paying a lawyer fee to learn how to circumvent the rules) and in some psychic costs associated with breaking the social norm sanctioning tax avoidance (provided such norm exists).<sup>6</sup> The m-cost function is written  $K(h, y)$ , and the p-cost function is written  $\theta C(h, y)$ , where  $\theta \in [0, 1]$  measures the strength of the social norm (for  $\theta = 0$  the norm is in fact absent). We assume that

$$K_h > 0, K_{hh} > 0, C_h > 0, C_{hh} > 0; \quad (1)$$

$$K(0, y) = K_h(0, Y) = C(0, y) = C_h(0, Y) = 0, \quad (2)$$

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<sup>6</sup>We model tax dodging as tax *avoidance*, i.e. a riskless but costly activity, as opposed to tax *evasion*, which is instead risky because of the possibility of pecuniary sanctions if discovered (see e.g. Cowell 1990b for a discussion). In fact, the two approaches can be connected using the concept of "cost of evasion", i.e. "the monetary amount that [a] person would just be prepared to pay in order to be guaranteed that he will get away with tax evasion" (Cowell 1990a p. 232), and reinterpreting the cost-of-avoidance function as a reduced form of the cost-of-evasion function. While this does not mean that the two approaches are completely equivalent, it does normally imply that the main insights survive as we shift across them (Balestrino and Galmarini, 2003, discuss the point at some length and provide an example).

and that both  $K(\cdot)$  and  $C(\cdot)$  are homogeneous of degree one in  $h$  and  $y$ . Then, we can write per-unit-of-true-income cost functions as

$$k(a) \equiv K(ay, y)/y = K(a, 1); \quad c(a) \equiv C(ay, y)/y = C(a, 1), \quad (3)$$

and of course we will have that both  $k(\cdot)$  and  $c(\cdot)$  are strictly convex and that

$$k(0) = k'(0) = c(0) = c'(0) = 0. \quad (4)$$

The functions defined in (3) are independent of true income, which makes the model much simpler to analyse and interpret – similar assumptions are used e.g. in Boadway et al. (1994) and Balestrino and Galmarini (2003). Further, we assume that  $\theta$  depends on the beliefs that the agents have on whether tax avoidance should be sanctioned or not, that is on how strongly they feel that the social custom should be in place; we take it that each type has a preference on the strength of the norm, call it  $\theta(y)$ , and that the actual strength of the social norm is some function of these preferences. For concreteness, we take it to be a weighted average, where the weights reflect the ability of the agent to influence public opinion:

$$\theta = \int \theta(y) m(y) f(y) dy, \quad (5)$$

where  $m(y) \in (0, 1)$ ,  $\int m(y) dy = 1$  are the weights. This is a simple way of capturing the endogenous formation of rules and to emphasise the role of the majority in establishing them (see our Introduction).

From the above, we can write the agent's net income or consumption as

$$X = (1 - t + ta - k(a))y + T. \quad (6)$$

The agent's utility depends however not only on her own consumption, but also on her relative position in the society; she is happier whenever her consumption or net income increases, and less happy when the consumption or net income of the reference group increases. To capture this effect in a simple way, we assume that the arguments in the agent's utility function include her consumption as well as the difference between such consumption and the reference standard. Hence, in general such utility function will be written

$$u = U(X, X - S, C), \quad (7)$$

where  $S$  is the reference standard, and where utility is increasing in the first two arguments and decreasing in the third. For reasons of tractability, we will however use a more specific utility



function. Specifically, we postulate that the comparison income effect enters additively, and choose a quasi-linear utility function. More precisely, we let

$$x = (1 - \beta) X + \beta (X - S) = X - \beta S \quad (8)$$

where  $\beta$  is a dummy variable taking values

$$0 \text{ for } X \geq S; \quad \tilde{\beta} \in (0, 1) \text{ for } X < S. \quad (9)$$

This means that only agents with consumption below the standard perceive the comparison income effect; there is in fact some evidence (Ferrer-i-Carbonell 2005) that such effect is asymmetric and is experienced mostly by those who do not achieve the reference level, rather than those who are above it. To keep things simple, we make the extreme assumption that "downward" comparisons do not matter at all.<sup>7</sup>

Then, define utility as

$$u = x(a) - y\theta c(a). \quad (10)$$

Substituting the budget into the utility function and rearranging gives:

$$u = (1 - t + ta - k(a) - \theta c(a))y + T - \beta S. \quad (11)$$

Maximising w.r.t.  $a$ . we get

$$t = k' + \theta c', \quad (12)$$

which is necessary and sufficient for a maximum thanks to the strict convexity of the cost functions. The first order condition (FOC) has the obvious interpretation that, at the optimum, the percentage of hidden income  $a$  equates the marginal benefit (avoided taxation) with the marginal cost (monetary plus psychic). Note that for  $t = 0$  the FOC is satisfied at  $a = 0$ , as it becomes  $0 = 0$  by (4).

We denote the solution as

$$a = a(t, \theta). \quad (13)$$

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<sup>7</sup>In the social psychology jargon, upward and downward comparisons are sometimes referred to as "self-improvement" and "self-enhancement", respectively (Wood and Taylor 1991). Our assumption is then equivalent to saying that self-improvement motives (which suggest an effort to improve one's status) dominate over self-enhancement motives (which instead suggest some complacency in that the agent looks at those who do worse just to feel better). Falk and Knell (2004) provide an economic analysis that includes both types of comparisons and takes the important step of endogenising the reference standard (letting the agents "choose the Joneses").

Given quasi-linearity, and first-degree homogeneity of the cost functions, neither gross income nor the reference standard affect the solution.<sup>8</sup> Straightforward comparative statics analysis yields:

$$a_t > 0; a_\theta < 0, \quad (14)$$

that is, the avoidance activity increases when the tax rate rises and decreases when its sanctionability increases.<sup>9</sup> We also make the following assumption on the behaviour of second derivatives:

**Assumption 1** a)  $a_{tt} \geq 0$ ; b)  $a_{t\theta} \leq 0$ .

This assumption is satisfied by e.g. a quadratic cost function for both monetary and psychic costs; in general it requires a restriction on the sign of the third derivatives of the cost functions. It has a plausible interpretation: part *a*) says that the fraction of hidden income increases with the tax rate at a non-decreasing pace, whereas part *b*) says that whenever the social norm becomes more stringent, the fraction of hidden income becomes less (or at least not more) reactive to increases in the tax rate.

As for reported income,  $r(\cdot) = y(1 - a(\cdot))$ , it is easy to see using (14) that  $r$  decreases as  $t$  increases, and increases with  $\theta$ , since  $r_z = -ya_z$ ,  $z = t, \theta$ . Moreover, we have  $r_y = (1 - a) > 0$ , that is, reported income rises with true income. However, hidden income  $h = ay$ , also rises with income ( $h_y = a > 0$ ). This is consistent with the observation that tax avoidance is normally an activity at which high-income agents are more successful (see e.g. Slemrod 2001).<sup>10</sup>

Finally, consider net income or consumption. Define

$$\pi(t, \theta) \equiv 1 - t(1 - a(t, \theta)) - k(a(t, \theta)) > 0 \quad (15)$$

as the complement to unity of the *effective* tax rate, the percentage of income which is actually lost due to taxation, including the benefits and costs of avoidance.<sup>11</sup> We can then write  $X(\cdot) =$

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<sup>8</sup>Quasi-linearity also implies that neither the poll-tax nor the parameter  $\beta$  have any impact on the avoidance decision.

<sup>9</sup>Details on the comparative statics are given in the Appendix.

<sup>10</sup>This is not necessarily true for all forms of imperfect compliance. Black markets activities appear to be mostly carried out by low-income agents; see e.g. Lemieaux et al. (1994) and Anderberg et al. (2003).

<sup>11</sup>It is possible to show that (12) implies  $1 > t(1 - a) + k + \theta c \geq t(1 - a) + k$ , so that  $\pi$  is indeed positive. To see this consider the  $-(k' + \theta c') \equiv -\gamma$  curve, which is decreasing in the  $[0, 1]$  interval. The optimal  $a$  is given by the intersection between that curve and a straight line representing the value of  $t$ . Then  $t(1 - a) + k + \theta c \equiv$

$\pi(\cdot)y + T$ . First, note that

$$\pi_\theta = (t - k') a_\theta < 0; \quad (16)$$

$$\pi_t = -(1 - a) + (t - k') a_t, \quad (17)$$

where the sign of the first derivative follows from (12) and (14). The effect w.r.t.  $t$  is ambiguous since when the marginal tax rate is positive and rises, the effective tax rate rises too because taxation is more stringent but at the same time falls because the percentage of hidden income increases. Hence, we have

$$X_\theta = y\pi_\theta < 0; \quad X_t = y\pi_t; \quad X_T = 1; \quad X_y = \pi > 0. \quad (18)$$

That is, consumption rises with income and is positively affected by an increase in the poll-subsidy, but falls when the norm sanctioning tax avoidance becomes more stringent; changes in the tax rate have an ambiguous effect.

An important consequence of  $a(\cdot)$  being independent from income is that the agent's positions on the true income distribution carry over to both the reported and net income distributions; most notably the agents with, respectively, mean and median true income also have mean and median reported and net income. We shall use frequently this fact in what follows, as it facilitates the interpretation of the policy results.

### III Preferences over policy and the political equilibrium

For simplicity, and in line with most of the literature, we shall assume that the reference standard is given by the mean consumption level,

$$S = \overline{X}(t, T; \theta) = \pi(t, \theta) \overline{y} + T, \quad (19)$$

where the upper bar denotes an average value and where the second equality sign follows because all agents have the same  $a(\cdot)$  and hence the same  $\pi(\cdot)$ . Note, from (18), that

$$\overline{X}_t = \pi_t \overline{y}; \quad \overline{X}_T = 1; \quad \overline{X}_\theta = \pi_\theta \overline{y} < 0. \quad (20)$$

We are now ready to start with the policy analysis. We assume a simple Downsian model of political competition where the candidates are solely office-motivated and commit to policies before the election. The outcome of the elections is decided by majority voting.

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$\int_0^a t dz - \int_a^1 \gamma(z) dz < t \equiv \int_0^1 t dz$ , since  $-\gamma(z) < t$  for  $z \in (a, 1)$  by (12). Clearly, if  $t(1 - a) + k + \theta c < t$  then  $t(1 - a) + k + \theta c < 1$  for  $t \leq 1$ .

To begin with, let us investigate the agents' policy preferences. Indirect utility will be written:

$$V(t, T; \theta, y) = (1 - t + ta - k(a) - \theta c(a))y + T - \beta \bar{X}(\cdot). \quad (21)$$

The marginal rate of substitution between policy tools is

$$-\frac{V_t}{V_T} = -\frac{(a-1)(y - \beta \bar{y}) - \beta \bar{y} a_t \theta c'}{1 - \beta}, \quad (22)$$

where we used (17) and the fact that  $t - k' = \theta c'$  by (12). The MRS is monotonic in type, since

$$\frac{\partial(-V_t/V_T)}{\partial y} = \frac{1-a}{1-\beta} > 0. \quad (23)$$

This observation is important because monotonicity of the MRS guarantees that the indifference curves in the policy space satisfy a so-called "single-crossing" condition, which in turn ensures that a median-voter equilibrium exists under majority voting (see Gans and Smart 1996 for details). In fact, the single-crossing condition implies that, for any two tax rates  $t'$  and  $t''$  such that  $t' > t''$  and any two agents  $y'$  and  $y''$  such that  $y'' > y'$ , if  $y'$  prefers  $t''$  to  $t'$ , then also  $y''$  prefers  $t''$  to  $t'$ ; in words, agents "on the same side" of the income distribution have consistent policy preferences.

The government's budget constraint, written in per capita terms, is simply

$$t\bar{r}(t, \theta) = T, \quad (24)$$

where we used the fact that the total size of the population is normalised to unity. Note that, since all agents hide the same fraction  $a$  of their income, we have that

$$\bar{r}(t, \theta) = (1 - a(t, \theta))\bar{y}. \quad (25)$$

We can interpret the budget equation as expressing  $T$  as a function of  $t$  (and  $\theta$ ) and check whether the revenue curve in the  $(t, T)$ -space (holding  $\theta$  fixed) is strictly concave, i.e. if  $T_t > 0$  and  $T_{tt} < 0$ .<sup>12</sup> We note that  $T_t = \bar{r} + t\bar{r}_t$ , where  $\bar{r}_t = -\bar{y}a_t < 0$  by (14); this is positive as long as

$$\left| \frac{t}{\bar{r}} \bar{r}_t \right| < 1 \quad (26)$$

i.e. if the elasticity of reported income w.r.t. the tax rate is less than unity (which is empirically plausible, see e.g. Kopczuk 2005). The second derivative is  $T_{tt} = 2\bar{r}_t + t\bar{r}_{tt}$ , and is negative

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<sup>12</sup>Incidentally, notice that  $T_\theta = t\bar{r}_\theta > 0$ , i.e. if the social norm becomes more stringent, revenue will go up.

since  $\bar{r}_{tt} = -\bar{y}a_{tt} \leq 0$  by Assumption 1. Strict concavity of the revenue curve is thus generally guaranteed.

Consider now the ideal tax rate. It can be identified by solving  $V_t = 0$  for  $t$  after substituting  $T$  with the revenue constraint  $T(t, \theta)$ :

$$V_t = (a - 1)(y - \beta\bar{y}) - \beta\bar{y}a_t\theta c' + (1 - a)\bar{y} - t\bar{y}a_t = 0. \quad (27)$$

Recalling that for agents with income above the mean we have  $\beta = 0$  (because those are also the ones with net income above the standard), while for the others we have  $\beta = \tilde{\beta} \in (0, 1)$ , we find that:

$$t(\theta, \beta, y) = \frac{(1 - a)}{a_t} \left( \left(1 + \tilde{\beta}\right) - \frac{y}{\bar{y}} \right) - \tilde{\beta}\theta c' \text{ for } y < \bar{y}; \quad (28)$$

$$t(\theta, \beta, y) = \frac{(1 - a)}{a_t} \left( 1 - \frac{y}{\bar{y}} \right), \text{ for } y \geq \bar{y}. \quad (29)$$

Since  $\bar{a}_t > 0$  by (14), it follows that agents with higher than average income would prefer income subsidisation, but since we ruled out this possibility they will settle for a corner solution,  $t = 0$ . The agent with exactly average income would prefer no policy. This is also the utilitarian optimum, i.e. the policy that maximises the sum (here equivalent to the mean) of utilities: clearly, the absence of policy is the most efficient solution, since it eliminates the social waste of resources associated with avoidance. However, if an agent desires to achieve some redistribution in her favour, she will willingly trade off some efficiency against the desired amount of redistribution; all agents with less than average income prefer a positive rate of income tax, no matter whether this generates tax dodging (an efficiency loss). Close inspection of (28) will readily reveal that the ideal tax rate is monotonically decreasing in income for  $y < \bar{y}$  (see the Appendix for details). This is actually a straightforward variant of a well-known result from the literature on the political economy of income taxation (see e.g. Meltzer and Richards 1981), although we replaced the usual distortion due to a variable labour supply with the waste of resources devoted to tax dodging.

Given our assumptions on the political competition, recalling that the median-voter theorem applies, *and* adding the usual assumption that the median income is below the mean income (which is true for virtually all real-world income distributions), we can conclude that at the political equilibrium there will be a positive tax rate, and that a certain amount of tax avoidance activity will thus be carried out. Letting  $y^m$  denote median income, and ignoring the term  $\tilde{\beta}\theta c'$

(which is approximately zero)<sup>13</sup>, we can in fact write the winning policy as

$$t(\theta, \beta, y^m) = \frac{(1-a)}{a_t} \left( \left(1 + \tilde{\beta}\right) - \frac{y^m}{\bar{y}} \right). \quad (30)$$

The budget-balancing value of the universal grant will be established via the relationship  $T(t(y^m, \theta, \beta), \theta)$ .

It is interesting to note that the ideal policy problem for agents with below-mean income (including in particular the median income agent) is well-behaved in the sense that  $V_{tt} < 0$ ; this allows us to perform a meaningful comparative statics analysis to check the impact of changes in  $\beta$  and  $\theta$  on the equilibrium tax rate.<sup>14</sup> We find that

$$t_{\beta}(\theta, \tilde{\beta}, y^m) > 0; \quad t_{\theta}(\theta, \tilde{\beta}, y^m) > 0. \quad (31)$$

The first result parallels similar results obtained in the optimal taxation literature (see e.g. Boskin and Sheshinski 1978 and Ireland 2001), where it has been found that the comparison income effect calls for a high degree of progressivity of the income tax, and more generally, that it justifies, from a normative standpoint, the existence of a redistributive tax system. Here, we argue that also from a positive standpoint the comparison income effect has an important role to play; it helps to explain why redistributive tax systems are effectively in place in virtually all the developed countries. The reason is obvious: each voter whose income is below the mean, in particular here the decisive one, views a positive rate of income tax as a means to achieve some redistribution in her own favour *as well as* a means to reduce the net income of the reference individual; thus, income taxation works from both ends, by boosting one's consumption *and* by decreasing the reference consumption.

The second result is specific to our contribution, and offers a complementary explanation of the prevalence of redistributive tax systems; it says that the stronger is the social norm against tax avoidance, the higher will be the tax rate at the political equilibrium. The straightforward reason is that when tax dodging carries social stigma, redistribution can be pushed farther because it entails a lower efficiency loss (it generates less avoidance activity).

So far, we discussed the impact of the income comparison effect and of the social custom on the "statutory", as opposed to "effective", rate of income tax. However, an increase in the tax rate as determined by the law does not necessarily bring about an increase of the actual tax

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<sup>13</sup>Indeed,  $\tilde{\beta}$ ,  $\theta$  and  $c'$  are all less than unity.

<sup>14</sup>Details of the analysis are given in the Appendix.

rate faced by the agent. The latter, as we already know from (15), is

$$\tau(t, \theta) = t(1 - a(t, \theta)) + k(a(t, \theta)) \quad (32)$$

with  $\tau_z = -\pi_z$ ,  $z = t, \theta$ . It is then easy to see that, since  $\pi_t$  is ambiguous in sign by (17), so are

$$\frac{d\tau(t(\theta, \tilde{\beta}, y^m), \theta)}{d\beta} = -\pi_t t_\beta \quad \text{and} \quad \frac{d\tau(t(\theta, \tilde{\beta}, y^m), \theta)}{d\theta} = -\pi_t t_\theta - \pi_\theta. \quad (33)$$

We can however argue the following. If we evaluate the above derivatives at  $\theta = 0$ , we find that since  $\pi_t|_{\theta=0} = a - 1 < 0$  and  $\pi_\theta|_{\theta=0} = 0$ ,<sup>15</sup> then  $d\tau/d\beta > 0$  and  $d\tau/d\theta > 0$  by (31). When the norm against tax dodging begins to take shape, then a stronger comparison income effect and a stronger social custom both imply a larger statutory tax rate as well as a larger effective tax rate. However, this marginal result does not necessarily generalise to a global result.

## IV Endogenous formation of the social norm

In the analysis so far, we have treated  $\beta$  and  $\theta$  as exogenous, and independent from each other. However, we shall argue presently that the strength of the social custom condemning tax dodging depends also on the comparison income effect. To see this, we turn to the analysis of the origin of the social norm. Just like agents have preferences over policy, they have preferences over the extent to which tax avoidance should be socially condemned; do they feel that tax dodgers must be sent to jail, or rather think that their activities are justifiable after all? It turns out that in the present framework, there are two reasons why it is collectively rational to impose a social norm against tax dodging.

Let us move a further step backward and consider how indirect utility is affected by changes in the parameter  $\theta$  (expressing the force of the social norm) when the equilibrium policy is in place. Let us then write

$$W(\theta, y) = (1 - t^m + t^m a(t^m) - k(a(t^m)) - \theta c(a(t^m)))y + T(t^m, \theta) - \beta \bar{X}(t^m, \theta) \quad (34)$$

where  $t^m = t(y^m, \beta, \theta)$  and  $a$  is chosen optimally given  $t = t^m$ .

We can now ask what the preferred  $\theta$  would be for each agent. If we maximise  $W(\cdot)$  w.r.t.  $\theta$ , under the constraint that  $\theta \geq 0$ ,<sup>16</sup> we have that

$$W_\theta = V_{t^m} t_\theta^m - \beta \bar{X}_\theta - y c \leq 0; \quad \theta \geq 0; \quad \theta V_\theta = 0. \quad (35)$$

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<sup>15</sup>This is because  $t = k'$  when  $\theta = 0$  by (12).

<sup>16</sup>We assume that the constraint  $\theta \leq 1$  is always satisfied.

level of $y$	Marg. benefit		Marg. cost	value of $\theta$
$y < y^m$	$V_{t^m} t_\theta^m - \beta \bar{X}_\theta$	=	$yc$	$\theta > 0$
$y = y^m$	$-\beta \bar{X}_\theta$	=	$yc$	$\theta > 0$
$y \in (y^m, \bar{y})$	$-\beta \bar{X}_\theta$	=	$yc - V_{t^m} t_\theta^m$	$\theta > 0$
$y \geq \bar{y}$	0	>	$yc - V_{t^m} t_\theta^m$	$\theta = 0$

Table 1: The pattern of preferred strength of the social norm

where  $V_{t^m} = V_t|_{t=t^m}$  and  $V(\cdot)$  is defined by (21).

Consider first agents with income below the *mean*. For them, we have an interior solution, i.e.:

$$V_{t^m} t_\theta^m - \beta \bar{X}_\theta = yc, \quad (36)$$

which can be interpreted as *net* marginal benefit ( $V_{t^m} t_\theta^m - \beta \bar{X}_\theta$ ) equating marginal cost ( $yc$ ).<sup>17</sup> The marginal cost of  $\theta$  is simply the total disutility of violating the norm. The marginal benefit is instead more complicated, as it includes the impact on the equilibrium tax rate as well as that on the reference standard. We know that an increase in  $\theta$  produces a higher equilibrium tax rate, as  $t_\theta^m > 0$  by (31); hence, a marginally higher  $\theta$  will represent a gain for all agents with income below the *median*, who would prefer a higher tax rate than the equilibrium one (for them  $V_{t^m} > 0$ ), and a loss for all agents with income above the *median* ( $V_{t^m} < 0$ ), while agents with *median* income will be unaffected ( $V_{t^m} = 0$ ). As far as the reference standard is concerned, all agents below the *mean* income benefit from a marginal increase in  $\theta$ , since it will reduce average consumption,  $\bar{X}_\theta < 0$  by (20).

For agents with income equal or above the *mean*, we have instead a corner solution, since for them  $V_{t^m} < 0$  and  $\beta = 0$ , so that  $W_t = V_{t^m} t_\theta^m - yc < 0$ , and therefore  $\theta(y) = 0$ ; for the high-income agents the social norm does not generate any benefit, only costs.

The condition (36) takes thus different forms depending on the level of the agent's income; table 1 summarizes. The comparative statics does not yield unambiguous results; however, considering the various conditions in turn, there is a presumption that, as income increases, the individually preferred strength of the social norm should tendentially decrease; benefits appear to rise, and costs to fall, with income. Moreover, it is also to be expected that the individually

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<sup>17</sup>The second order condition  $V_{t^m t^m} (t_\theta^m)^2 + V_{t^m t_{\theta\theta}^m} - \beta \bar{X}_{\theta\theta} - ya_\theta c' < 0$  is taken to be satisfied. This requires that  $(V_{t^m t^m} (t_\theta^m)^2 + V_{t^m t_{\theta\theta}^m} - \beta \bar{X}_{\theta\theta}) < 0$  and larger (in absolute value) than  $-ya_\theta c' > 0$ .



optimal  $\theta$  will rise with  $\beta$ , as a larger  $\beta$  appears to entail a larger benefit from  $\theta$ ; as we mentioned above, a custom against a form of anti-social behaviour like dodging taxes is particularly felt when there is a strong social competition.

The actual value of  $\theta$  will be determined by (5); crucially, we see that in general it will be positive, since the majority of the agents have a preference for condemning tax dodging. In a sense, it is the desire for redistribution that motivates the presence of a social stigma attached to avoidance: if at the political equilibrium prevails a positive rate of income tax, then it will also prevail in the society a view of avoidance as socially unacceptable. But it is also true that whenever such a view is established, there will be a tendency for the tax system to be more progressive, at least in statutory terms (we have already seen that it is uncertain whether higher legal tax rates correspond to higher effective tax rates – see the discussion at the end of the previous section). This is because stigmatizing tax dodgers makes redistribution more effective *and* because it makes easier to achieve the reference standard. Thus, the intensity of the income comparison effect is key for determining how relevant will be the norm. The strength of the norm will however depend also on the shape of the income distribution and, importantly, on the weights; in particular, if these are positively correlated with income, the social norm will have less impact than otherwise.

## V Concluding remarks

We have modelled the behaviour of taxpayers trying to decide the amount of income they can hide from the fiscal authorities, assuming that their choices are affected, among other things, by the presence of a social norm stigmatizing tax dodging. After identifying the taxpayers' equilibrium, we have evaluated their political preferences, and found that the political equilibrium is of the median voter variety. Finally, we have investigated the source of the social custom, and discussed its impact on the policy prevailing at the political equilibrium. In particular, we argued that this norm makes the tax system more likely to be *statutorily* progressive; the question whether this results also in the tax system being more *effectively* progressive remains unresolved.

We found that the strength of the social norm depends on two factors. First, such a norm plays a useful social role because it makes redistribution more effective; second, it facilitates social competition. As such, it is valued mostly by the low-income individuals, who have much to benefit both from redistribution and social mobility. Hence, it will be particularly felt in

societies with stable democratic institutions in which even the poor can make their voice heard by the general public. This is consistent with the observation that in mature democracies like those of the Anglo-Saxon or Scandinavian countries there is much more stigma associated with anti-social acts like tax dodging than in less stable democracies, like those of some Southern European countries or those of the transition and developing countries.

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## Appendix

As mentioned in the main text, this appendix illustrates the details of the comparative statics, both for the agent's and the political equilibrium.

### Comparative statics of the agent's equilibrium

At an interior solution we know that

$$u_a = t - k'y - \theta c' = 0; \quad u_{aa} = -k'' - \theta c'' < 0 \quad (\text{A1})$$

It is then immediate to compute:

$$u_{a\theta} = -c' < 0; \quad u_{at} = y > 0; \quad (\text{A2})$$

Thus:

$$a_\theta = -\frac{u_{a\theta}}{u_{aa}} < 0; \quad a_t = -\frac{u_{at}}{u_{aa}} > 0. \quad (\text{A3})$$

as reported in (14).

### Comparative statics of the political equilibrium

The ideal tax rate, *for all agents below the average income*, is found by solving

$$V_t = (a - 1)(y - \beta \bar{y}) + (1 - a)\bar{y} - t\bar{y}a_t - \beta \bar{y}a_t\theta c' = 0 \quad (\text{A4})$$

for  $t$ . In order to simplify the derivation of the comparative statics results it is important to recognise that the last term in (A4) is in fact negligible since  $\beta\theta c' \simeq 0$ . Then

$$V_{tt} = a_t(y - (1 + \beta)\bar{y}) - t\bar{y}a_{tt} < 0; \quad (\text{A5})$$

the sign follows because  $a_{tt} \geq 0$  by Assumption 1. Then, we have

$$V_{ty} = a - 1 < 0; \tag{A6}$$

$$V_{t\beta} = -\bar{y}(a - 1) = r > 0; \tag{A7}$$

$$V_{t\theta} = a_{\theta}(y - (1 + \beta)\bar{y}) - t\bar{y}a_{t\theta} > 0; \tag{A8}$$

the sign of  $V_{t\theta}$  follows because  $a_{t\theta} \leq 0$  by Assumption 1. This yields

$$t_y = -\frac{V_{ty}}{V_{tt}} < 0; \quad t_{\beta} = -\frac{V_{t\beta}}{V_{tt}} > 0; \quad t_{\theta} = -\frac{V_{t\theta}}{V_{tt}} > 0. \tag{A9}$$

The sign of the first derivative tells us that the ideal tax rate is decreasing in income, as explained informally in the main text. The signs of the second and third derivatives, when applied to the winning policy, the median voter's preferred tax rate, confirm (31).