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## **Why People Tolerate Underground Economy and Tax Evasion?**

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## WHY PEOPLE TOLERATE UNDERGROUND ECONOMY AND TAX EVASION?

### INTRODUCTION

The aim of this paper is to examine why law-abiding citizens and the government in certain economic, institutional and social circumstances seem to tolerate tax evasion and underground economy<sup>1,2</sup>. We approach the issue in hand on the basis of the interaction *i*) among economic agents, who pursue their self-interest in their deals with the other agents and the government, and *ii*) between the citizen-voter and the ruling political party, which fights (economically) unlawful practices so as to maximize tax revenue *and* minimize vote loss, *ceteris paribus*<sup>3</sup>. The way these interactions are modeled in is manifested through the following outline of what comes next in the text.

Section 1 presents a game-theoretic discussion of our topic, thus avoiding the usual tendency in the literature to exclude criminal activities and financial fraud from consideration, though we prefer to focus on "common" economic illegalities. The discussion utilizes the propositions of standard game theory<sup>4</sup> (including economics of information), but the exposition is rather simple, since it is an economics issue we wish to study and not game theory *per se*. Section 2 expands this discussion by investigating the connection of our topic with the matter of uncertainty. Toward this end, an amalgam of

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<sup>1</sup> J. THOMAS (1992), and C. WILLIAMS- J. WINDEBANK (1995) mention that even the State turns often a blind eye to (economically) unlawful practices.

<sup>2</sup> This is not to say that we identify underground economy with tax evasion; the literature on these subjects has settled this matter satisfactorily. What we mean here is that both underground economy and tax evasion are forms of cheating the State, and it is in this that we are interested analytically.

<sup>3</sup> These considerations will be certainly elaborated in depth as the text proceeds. They comprise a sort of a prelude to the mentality characterizing our approach.

<sup>4</sup> These propositions may be found even in introductory treatments of game theory such as that of R. GIBBONS (1993).

optimal control theory and theory of uncertainty considerations is advanced, but again the presentation is generally simple. The paper concludes with further thoughts and remarks on some of our findings.

Here, it only remains to point out that the game-theoretic analysis in Section 1 is connected methodologically with the intertemporal maximization model of Section 2 on the basis of the fact that a game played repeatedly over time, brings forward for consideration the present value of a sequence of payoffs. Thus, an optimal control problem arises for each individual, a problem that has to take into account the uncertainty stemming from the playing of mixed strategies (and anyway, the future always involves uncertainty). We proceed immediately to the formal analysis.

### 1. THE FORMAL DISCUSSION

Consider at the outset the typical game-theoretic treatment of a citizen response to jointly produce a public good with another citizen. It is a simultaneous-move game of complete information that is based on the prisoner's dilemma model. (See, for instance, Inman, 1987). Citizens 1 and 2 each have to choose whether to contribute an amount of money towards the production of a public good and get *a*) utility  $U_i(R)$ ,  $i = 1, 2$ , if citizen  $j$ ,  $i \neq j$ ,  $j = 1, 2$ , contributes (the same amount) and enjoys  $U_j(R)$  too, and *b*) utility  $U_i(S)$  if  $j$  does not contribute and still enjoys  $U_j(T)$ , since once the good is provided, benefits accrue to both parties. If no one contributes payoffs will be  $U_i(P)$  and  $U_j(P)$ , where  $T > R > P > S$  are amounts of money. This situation is described by the following bimatrix:

		Citizen 2	
		Contribute	Don't
Citizen 1	Contribute	$U_1(R), U_2(R)$	$U_1(S), U_2(T)$
	Don't	$U_1(T), U_2(S)$	$U_1(P), U_2(P)$

Fig. 1

The best response for both players is clearly («Don't» (contribute), since if  $j$  contributes,  $U_i(T) > U_i(R)$  while if  $j$  chooses not to pay,  $U_i(P) > U_i(S)$ , given that  $dU(W)/dW$  is positive,  $W$  being wealth. If there is a government, the options «Contribute», and «Don't» are equivalent to «Pay the tax» and «Don't pay the tax», respectively. Yet, the majority of people have no option but to pay the tax. Hence, if, for instance, citizen 2 does not pay the tax, or the same,

if 2 tax evades, society is locked in cell  $[U_1(S), U_2(T)]$ . Now, in reality paying taxes there is not a single law abiding citizen not to know of someone that cheats the State. Why then lawful citizens do not reveal those who evade to the authorities so as to enforce in terms of Fig. 1 cell  $[U_1(R), U_2(R)]$ ? It must be because 2's tax evasion enables 1 to get at least  $U_1(P)$  rather than  $U_1(S)$ . This can happen in many ways, determined by the "cocktail" of factor mentioned in the «Introduction» and that prevent the idea of treating unethically a fellow citizen (by uncovering him to the authorities) from coming to one's mind. These ways render the services of those who evade paying taxes cheaper to buy, i.e. 1 is simply compensated by 2 *via* their interaction in the private sector.

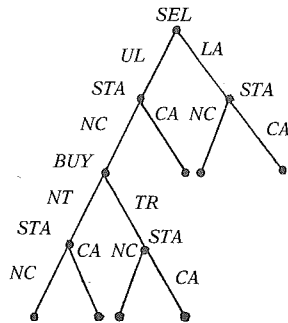


Fig. 2

Consider more formally the extensive form game of Fig. 2. The seller (*SEL*), citizen 2, makes the first move by deciding whether to be lawful, choice *LA*, or unlawful, choice *UL*. The State (*STA*) moves second and has to choose between catching, *CA*, and no catching, *NC*, the seller. Since it has nothing to lose if it plays *CA* and the seller is found innocent, but much perhaps may be lost if the seller has played *UL*, playing *CA* is a dominant strategy. The pure-strategy equilibrium is thus «State: catch» and, hence, «seller: be lawful», and the game ends. But, in an environment of mixed strategies with the seller playing *LA*  $p$  percent of the time and with the State playing *CA*  $q$  percent of the time, it is very likely that the game will continue and that the buyer (*BUY*), citizen 1, will be given the opportunity to decide whether to comply, with the law by ignoring citizen 2 and trading in the official economy, choice *NT*, or benefit from his interaction with the seller, choice *TR*<sup>5</sup>. The State, an-

<sup>5</sup> The State may believe that 2 will pretend to be lawful by playing "be lawful" at least this period.

ticipating this development, should certainly check up on the buyer too, in an effort to trap the unlawful seller in case he had avoided the State previously. But again, this would be meaningful only in a pure strategy context and if the buyer were unlawful. The buyer is, however, a law abiding citizen by assumption, and the State should not have any reason to move for a second time, thereby ending the game. Yet, it will be an end to the benefit of the seller and the buyer, who thus will be induced to play *TR*. The State knows that, and this is why it should check up on the buyer as well. But again, this would be meaningful only in a pure strategy context and if the buyer were unlawful, and so on. There is, in other words, a vicious circle in the argument, because much of the richness of the game has been suppressed by the game's representation as in Fig. 2. Two points need to be addressed: first, how can the buyer be lawful and yet collaborate with the unlawful seller, and second, why should the buyer be playing a mixed strategy.

To tackle the first point, consider the game of Fig. 3. This is the game that would result if the State had not caught the unlawful seller the first time. Fig. 3 incorporates information about the unlawfulness of the seller that was suppressed in Fig. 3, suppressed because all the State cares about is the unlawfulness *per se*, not the kind of the unlawfulness. Inspecting closer the character of the deeds of the seller and the buyer, we shall see that collaboration is to their best interest. In Fig. 3, the seller must decide in case of unlawfulness whether to follow *OE* or *UE*. If the seller is a worker, the choice will involve whether to go underground, choice *UE*, or work in the official economy

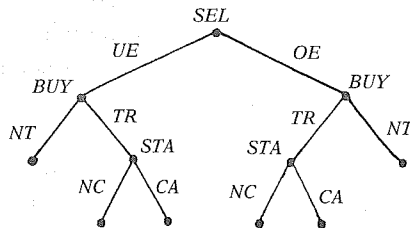


Fig. 3

and report only part of his income to the authorities, choice *OE*, given that citizen 2 is (economically) criminal ex hypothesi. If the seller is a producer, the choice is whether to produce and sell output in the official economy, choice *OE*, or produce underground and sell to both economies, choice *UE*. Regardless the underground or official origin of the output, both choices involve also such practices as providing no receipt when output is sold, etc. These considerations suggest that the choice *OE* captures the case of tax eva-

sion without underground economy and may be one reason not to have been caught previously even in a pure strategy context.

Now, when the buyer has to move, he is aware of what he is buying. If the buyer is a firm hiring labour, the firm knows whether it is operating in the black labour market or not. If the buyer is purchasing commodities, he is aware of the origin of the output. In any case, the buyer has, as before, to decide whether to play *TR* or *NT*. When the buyer is a firm, playing *NT* means that the firm refuses to hire black labour and confines its recruitment effort to the official labour market. Similarly, the buyer of a commodity may refuse to buy it and go to the official economy. As far as choice *TR* is concerned, a firm hiring black labour may be lawful in any other respect and may "arrange its books" so as to conceal the use of such labour. Also, the buyer of a product may purchase it without a receipt, but this may be his only wrong doing. It is precisely in this sense that the law abiding citizen 1 may simultaneously be unlawful, thus making it worthwhile for the State to check up on the books of firms and on receipt issuance.

But, why should citizen 1 play *TR* instead of *BT*; after all, *NT* will yield him, in terms of the discussion of Fig. 1,  $U_1(R) > U_1(P)$ . Nevertheless,  $U_i(R)$  would be the payoff only if the government imposed it on the citizens, and the government most probably cannot do so because of the problem of the truthful revelation of preferences. The representation of this problem as a prisoner's dilemma game suggests, in the words of Inman (1987, p. 680), that «the Wicksell-Lindahl process (is) simply mov(ing) non-cooperative behavior from the marketplace into the house of the government». Consequently, even if the various truth-telling mechanisms could be put into practice, no one could know for sure whether this actually would occur; let us not forget the additional problem of vote loss. That is why "better get the safe  $U_1(P)$  rather than the uncertain  $U_1(R)$ ", as the standard conclusion of the theory of uncertainty goes. The difference ( $R - P$ ) is a sort of risk premium, the insurance the risk averse citizen 1 is willing to pay in the form of foregone benefit, presuming of course that this difference is not so large as to make worth 1's while to take the gamble "*R vs. S*" in the fashion of the Friedman-Savage hypothesis; (in fact, recall that average payoffs from cheating the State over those that would be gained lawfully, are for the majority of people small). Real world experience indicates that this must be the case indeed; otherwise all economic activity would be official.

Anyway, let us turn to the second point: why the buyer should be playing a mixed strategy. The considerations of the last two paragraphs are necessary to explain real world experience, but do not suffice. Citizen 1 would still play *NT* instead of *TR* if the quality of the seller's services were not comparable to that of the official economy's services. Regardless 1's attitude towards

risk, he would not bother buying 2's services were  $U_1[E(W)]$ , in case of risk aversion, or  $E[U_1(W)]$ , in case of risk loving (or both, in case of risk neutrality), to be less than  $U_1(P)$ , where  $E$  is the expectations operator. Now, the lemons market model tells us that 1 may expect only "bad" quality products from 2, while the adverse selection model regarding the choice of quality on the part of 2, predicts that anything can happen. This ambiguity, however, disappears when one notes that in an infinitely-repeated-game setting, 1 may always credibly threaten 2 to adopt the trigger strategy of never buying 2's services if 2 is observed to offer bad quality even once. Such a setting is not implausible when one observes that 2 is in reality a group of people and hence, the game is played in practice a great, unknown, number of times. This is important, because the trigger strategy is a Nash equilibrium and because it is to the best interest of each citizen of type 2 to enforce discipline on the other citizens of the same type.

Nash equilibrium is also the so-called "reputation equilibrium" of the tit-for-tat strategy of (not) buying next period if this period's services are observed to be (dis)satisfactory in a finitely-repeated-game setting. Yet, it is not as restrictive as the equilibrium of the trigger strategy, which implies that the services of the citizens of type 2 should be at least as good as the services of the official economy: the official economy would exist then only to the extent the State were successful in its campaign against tax evasion and underground economy. However, the size of the official economy becomes bigger under the tit-for-tat strategy, and comes closer to reality when one starts contemplating equilibria in mixed rather than in pure strategies. These considerations prompt an examination of the situation not only from the viewpoint of noncooperative game theory, but also in terms of cooperative theory, since we are really talking about citizens of type 1 and citizens of type 2<sup>6</sup>. According to the dominance approach to cooperative game theory, much of the foregoing discussion suggests that tolerance of tax evasion and underground economy is in both the  $\alpha$ - and  $\beta$ - core of the economy. Denoting by  $V_i(C_i)$  the utility levels that coalition  $C_i$  can "make effective" for its members, the set  $V_2(C_2)$  may be interpreted as either what the members of  $C_2$  cannot be prevented from getting, or as what these members can guarantee themselves. The tolerance solution is a viable one, because the members of  $C_1$  may hurt  $C_2$  simply by withholding its own resources, as theory usually claims, but now in the sense that these resources are directed to the official economy.

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<sup>6</sup> For a brief but concise treatment of cooperative game theory see e.g. A. MASCOLELL (1987).

## 2. FURTHER CONSIDERATIONS

In the noncooperative game theory of the previous section, risk aversion was postulated initially, but no particular assumption was made in so far as the issue of quality is concerned. We then left the matter of the attitude towards risk and quickly discussed cooperative game theory considerations in order to establish further our thesis concerning the tolerance of tax evasion and underground activities. One might say that such an approach to the topic under examination is more or less spherical. To get this "more or less" out of the picture, we discuss in this section the attitude towards risk in more detail. It is argued that the only sensible attitude is risk aversion, thus concluding that citizens of type 2 are characterized by the so-called "preference reversal phenomenon".

To start with, assume that the private sector may produce only one consumption good, which in per capita terms is  $G$ . The official and the underground economy produce this good independently, each with its own technology. If we denote the per capita stock of capital by  $K$ , gross official and underground production is  $F_1(K_1)$  and  $F_2(K_2)$ , respectively, with  $K = K_1 + K_2$ . Similarly, official and underground consumption is  $G_1$  and  $G_2$ , with  $G = G_1 + G_2$ . The capital stock depreciates over time at the exponential rate  $m_i$ ,  $i = 1, 2$ . If, for instance, neither gross production nor consumption were to take place, the path of capital would be described by  $\dot{K}_i(t) = -m_i K_i(t)$ , whose solution is  $K_i(t) = K_{i0} \exp(-m_i t)$ , where  $K_{i0}$  is the initial value of  $K_i$ , i.e. the value at time  $t = 0$ . Of course, production does take place, and the capital stock is also depleted by the flow of consumption  $G_i(t)$  at time  $t$ . In this manner, the rate of change of  $K_1$  is

$$\dot{K}_1(t) = F_1[K_1(t)] - m_1 K_1(t) - G_1(t) \quad (1)$$

In the case of tax evasion and underground activities, there is in addition the "policy wedge"  $\nu$ ,  $0 < \nu < 1$ , against them so that

$$\dot{K}_2(t) = \nu [F_2[K_2(t)] - m_2 K_2(t) - G_2(t)] \quad (2)$$

This is equivalent to assuming that any government revenue comes out of this policy wedge. The objective is now to find  $G_1(t) \geq 0$  and  $G_2(t) \geq 0$  that maximize

$$\int_0^{\infty} U(G_1 + G_2) \exp(-ht) dt$$

subject to the constraints (1) and (2), with  $K_{i0}$  being determined exoge-



neously<sup>7</sup>. It is clear that all individuals are supposed to have the same utility function and rate of discount  $h > 0$ ; they attach less utility to future consumption than to current consumption. Moreover, it is assumed that  $F'_i(0) = 0$ ,  $F'_i > 0$ ,  $F''_i < 0$ , as usually, and  $F'_i(\infty) < h + m_i < F'_i(0)$ , to guarantee the existence of an equilibrium, where the number of primes denotes order of derivative with respect to  $K_i$ . Presumably  $U'(0) = \infty$  and  $U' > 0$ , but for now we leave the matter of the sign of  $U''$  open; this sign captures the attitude towards risk.

Dropping the time symbol  $t$ , the Hamiltonian of the above maximization problem is

$$H = \exp(-ht)U(G) + l_1[F_1(K_1) - m_1K_1 - G_1] + l_2v[F_2(K_2) - m_2K_2 - G_2]$$

and the necessary optimality conditions are

$$\frac{\partial H}{\partial G_1} = \exp(-ht)U'(G) - l_1 = 0 \quad (3)$$

$$\frac{\partial H}{\partial G_2} = \exp(-ht)U'(G) - l_2v = 0 \quad (4)$$

$$l_1 = -\frac{\partial H}{\partial K_1} = -l_1[F'_1(K_1) - m_1] \quad (5)$$

$$l_2 = -\frac{\partial H}{\partial K_2} = -l_2v[F'_2(K_2) - m_2] \quad (6)$$

along with (1) and (2) in which  $\dot{K}_i$  represents now the derivative  $\partial H/\partial \dot{K}_i$ .  $l_i$  is certainly the present value of  $K_i$  at  $t$ , value measured in terms of utility. To examine the consumption paths, we obtain, by differentiating equations (3) and (4) with respect to  $t$  and using (5) and (6), that

$$\dot{G}_1 = -\frac{U'(G)}{U''(G)} \left\{ [F'_1(K_1) - m_1] - h \right\} \quad (7)$$

$$\dot{G}_2 = -\frac{U'(G)}{U''(G)} \left\{ v[F'_2(K_2) - m_2] - h \right\} \quad (8)$$

<sup>7</sup> Recall the infinite horizon of the games of the previous section. The modeling of the citizen problem advanced in the present section, follows standard optimal control theory; see eg. the textbook of D. LEONARD - N. VANLONG (1992).

To interpret equations (7) and (8), note that were  $U'' > 0$ ,  $\dot{G}_i$  would be positive if the net marginal product of  $K_i$  were smaller than the subjective rate of discount. But, this would mean that it pays to have a higher future consumption relative to current consumption if the cost of postponing exceeds the gains it provides via its marginal effect net the capital return, where the cost of postponing consumption is given at the margin by  $h$ . This is clearly absurd, since one would logically expect the opposite to hold. Therefore, the sign of  $U''$  should be negative, which in turn indicates the presence of risk aversion.

To talk about risk within this context of optimal control analysis pre-supposes that individuals are indifferent between  $G(t)$  and a gamble involving at least the two events  $\bar{G}(t)$  and  $\underline{G}(t)$  with probabilities  $pr$  and  $(1-pr)$ , respectively, with  $0 < pr < 1$ . That is, methodologically, the utility index used may be susceptible of optimal control analysis and yet have reference to choice under uncertainty, on the basis of the axiom of continuity made by the theory of behavior under uncertainty<sup>8</sup>. The extra information that this requires on the part of the individuals is there, since  $\nu$  is a constant, i.e. common knowledge. This constancy could simplify the analysis greatly, because it implies that the actual (rather than the continuity axiom) probabilities and  $G$ 's now and in the future are known and hence, our typical individual could be taken to be an expected utility maximizer. But then, our constraints (1) and (2) would be meaningless. Therefore, we prefer to utilize the continuity axiom even more so when the constancy of  $\nu$  is later relaxed and the amount of information available to individuals is not as large as under a constant  $\nu$ . Of course, that does not imply that the probabilities of the continuity axiom will be the actual ones, but individuals use them as a yardstick for the enhancement of their welfare given the currently available mathematical tools. That suffices for our purposes here, since we are interested in the sign of  $U''$  and subsequently, in the intertemporal direction of  $G$  in general rather than with precision<sup>9</sup>.

Returning back to this subject, note that in equation (8) the net productivity of  $K_2$  is multiplied by  $\nu$ , but this does not change our conclusion concerning general risk aversion, since  $U'/U''$  is the same regardless of  $i$ ; indeed, there is no a priori reason why the attitude towards risk should be linked with the identity of the citizen. Yet, the multiplication by  $\nu$  does reduce the net return to  $K_2$  and, depending on the effectiveness of the campaign against tax evasion and underground economy,  $\dot{G}_2$  may end up being negative. Despite this,  $\dot{G} = \dot{G}_1 + \dot{G}_2 > 0$ , because it is easily checked through the optimality conditions that if  $\nu = 1$ , then  $F'_1 - m_1 = F'_2 - m_2$  and, hence,  $F'_1 - m_1 > \nu(F'_2 - m_2)$

<sup>8</sup> For the considerations pertaining to the theory of uncertainty see e.g. P. ANAND (1995).

<sup>9</sup> This point is clarified further in the next paragraph.

for  $\nu \neq 1$ , which in turn implies that  $\dot{G}_1 > |\dot{G}_2|$ . That is, it is implicitly assumed (reasonably enough) that the resources released from cracking-down the underground economy are reoriented towards the official economy, thus enhancing official output and consumption. It is less likely for  $\dot{G}_2$  to become negative if we let  $\nu$  vary with time, since, as equation (9) indicates

$$\dot{G}_2 = -\frac{U'(G)}{U''(G)} \left\{ \left[ \nu(F'_2(K_2) - m_2) - h \right] + \frac{\dot{K}_2}{\nu} \right\} \quad (9)$$

we have now the extra positive term  $\dot{K}_2/\nu$  added to the difference between net capital productivity and discounting rate. The variation of  $\nu$  introduces the "Scrooge element" of directly connecting  $\dot{G}_2$  and hence,  $U(G)$  with the capital. This reinforces our conclusion that risk aversion is the rule given that, according to equation (9), the likelihood of  $\dot{G}_2$  turning negative would increase were risk loving to be assumed at least in so far as the underground economy is concerned. Who would want less future consumption *vis-à-vis* today?  $U''$  has to be negative. Individuals have to be risk averse if they want more tomorrow, and they do want *ex hypothesi*. It is from this point of view that, as it was mentioned earlier, we are interested in the general rather than the precise direction of  $G(t)$ ; it makes sense even intuitively given the complex and uncertain world in which individuals have to act.

But, assuming away Friedman-Savage behavior, why should one take the gamble of going underground instead of the certainty of keeping straight? Certainly, it cannot be that the stakes underground are too high, neither that these stakes are too likely, since everyone would be pledged to the gamble<sup>10</sup>. More precisely, consider the following pair of bets

$$\text{Straight-bet: } \left\{ \begin{array}{l} \text{win } X \text{ with} \\ \text{certainty} \end{array} \right. \quad \text{vs. Cheat-bet: } \left\{ \begin{array}{l} q \text{ chance of } Y \\ (1-q) \text{ chance of } y \end{array} \right.$$

where  $(1-q)$  is the probability of getting caught by the authorities, while  $Y$ ,  $X$  and  $y$  are amounts of money such that  $Y > X > y$ . As far as the interaction between citizens 1 and 2 is concerned, 2 sells to 1 the Cheat-bet «buy black labour and/or official or underground output without a receipt and win  $Y$  or  $y$  with probabilities  $q$  and  $(1-q)$ , respectively». The analysis, however, of the preference reversal phenomenon would predict that were citizens 2 to be

<sup>10</sup> This is a different way of interpreting the findings of T. LEMIEUX - B. FORTIN - P. FRECHETTE (1994) that the Canadian tax and transfer system only slightly affects the allocation of Canadians' worktime between the underground and the official economy.

asked to buy (rather than sell) one of the two bets, 2 would buy the Straight-bet. We use the term "predict", because there has not been any evidence concerning this matter. Nonetheless, there is extensive experimental evidence that corroborates the robustness of the preference reversal phenomenon in general and therefore we expect it to hold in our case as well. There is a reversal of preferences because the expected utility model and many non-expected utility models imply that the bet chosen (here, the Straight-bet) should also be the one with the higher certainty equivalent (which here, however, is found to be the Cheat-bet). Note that such a reversal is not the case to the extent that citizen 1 and the government are concerned. Citizen 1 would buy from 2 the Cheat-bet (under of course the qualifications of the previous section), but he would also sell it to 2 were this to be possible for him<sup>11</sup>. The government has, by its very conception as an institution, no option but to both buy and sell the Straight-bet.

But, note something interesting with the government. Although things are more or less simple with respect to the private sector, the government may choose some of the time the Straight-bet and the rest of the time the Cheat-bet if for some reason(s)  $q \times 0 + (1-q) \times \sum_t (Y_t - y_t - \sigma) \geq \varphi \sum_t X_t$

$$\Rightarrow \frac{\sum_t (Y_t - y_t - \sigma)}{\sum_t X_t} \geq \frac{\varphi}{1-q} \quad (10)$$

where  $\varphi$  is the tax rate,  $\sigma$  is the (fixed) cost of chasing violators,  $(Y - y - \sigma)$  is the net-of-cost government revenue from seizing wrongdoing, and  $\sum_t$  is the summation operator over time; (we have presumed for simplicity risk neutral authorities). The simplest situation that (10) captures is that it may be profitable for the government in terms of government revenue, to let someone violate the law and then penalize this violation, thus getting  $Y - y - \sigma > \varphi X$ . In general, we have:

TABLE 1 - Values of the Ratio  $\varphi/(1-q)$

$\varphi \backslash 1-q$	0.01	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	0.99
0.2	20	2	1.0	0.666	0.50	0.4	0.333	0.286	0.250	0.222	0.202
0.3	30	3	1.5	1.000	0.75	0.6	0.500	0.429	0.375	0.333	0.303
0.4	40	4	2.0	1.333	1.00	0.8	0.666	0.571	0.500	0.444	0.404
0.5	50	5	2.5	1.666	1.25	1.0	0.833	0.714	0.625	0.555	0.505
0.6	60	6	3.0	2.000	1.50	1.2	1.000	0.857	0.750	0.666	0.606

<sup>11</sup> That is, 1 would behave as 2 does if 1 could. Were we to assume Freidman-Savage behavior, such a behavior would characterize only 2, and there is no a priori reason to postulate different patterns of behavior for the two types of citizens.

It is clear from this table that even if the ability to track down underground activities is small, the government does not have to impose high penalties to those convicted in order to satisfy (10), save some extreme but also implausible cases. If, for instance,  $1-q=0.3$ ,  $\varphi=0.3$  and  $X=10$ , a  $Y-y-\sigma=10$  suffices for (10) to hold. But, if  $1-q=0.01$ ,  $\varphi=0.3$  and  $X=10$ , then  $(Y-y-\sigma)$  should be at least 300 for (10) to hold, which, of course, is implausible. Anyway, the point of these considerations is that they offer further support to the discussion of the previous section: the government may play a mixed strategy intendedly, or unintendedly, since this is to what the absence of complete effectiveness in the campaign against tax evasion and underground economy amounts to. Moreover, if the government adopts a mixed strategy purposefully, it too will be characterized by preference reversal whenever it does not arrest someone known to have broken the law. This, despite any intentions for such an arrest in the next round of the play, since the suspect may have gone straight by then.

#### CONCLUDING REMARKS

This paper implies that all of us cheat at least a little bit the State and that we may not be sure that the State does not want us to do so. But that, I guess, is the normal state of affairs. Why should one wait to save one's business or get a job until the exodus from a recession when one can do better by cheating the State, especially when the State's policies are for one reason or another unreliable? Why should one not to cheat the State if one is not respected by the State? And, why, in the bottom line, would anyone turn down an advantageous but against State's interests offer by a fellow citizen, whose even survival may depend on the acceptance of this offer? On the other hand, why should the ruling party risk losing votes in the next election by being too harsh to those who cheat the State? Why should the State try to enforce laws that may be "correct" (as e.g. laws regarding child work) but that impede growth? Why, after all, should the State devote resources to chase underground activities and tax evasion when the cost of the operation exceeds the possible gains?

This is not to say that I or other people agree with these practices and situations, but as the saying goes, «our societies are not societies of angels». I do agree however with one thing: underground activities and/or tax evasion may be a necessary evil whenever they stabilize the economy and whenever they aid economic development. For example, Soldatos (1992) argues theoretically that the underground economy comprises a stabilizing factor of the economy, and in 1995 he also presented statistical evidence from Greece reinforcing this view. In so far as economic development is concerned, it suf-

fices to note that history is full of paradigms of unlawful practices that fostered economic development and that the State came finally to recognize and protect (see e.g. Cameron, 1993).

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