

# An Economic Model of Tax Compliance with Individual Morality and Group Conformity

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*Abstract:* Scholars in public finance traditionally have analyzed tax compliance using the Allighman-Sandmo model. I include in this model both moral and social payoffs for compliance. This approach can explain four pieces of evidence that have not been explained by the traditional model, namely *i)* high level of tax compliance; *ii)* honest responses when individuals pay their taxes, even in the presence of high incentives for tax evasion; *iii)* the level of evasion increases with the tax rate; and *iv)* individuals are more likely to evade when they realize that there is a large number of evaders in society.

*Keywords:* tax compliance, evasion, social norms, honesty, moral values, social interaction.

*Resumen:* Tradicionalmente, el cumplimiento en el pago de impuestos se ha analizado utilizando el modelo de Allighman-Sandmo. En este trabajo los beneficios, tanto morales como sociales, que los individuos obtienen por cumplir con sus impuestos se incluyen en este modelo. Este enfoque permite explicar cuatro inconsistencias que no han sido explicadas por el modelo tradicional entre la teoría y la evidencia empírica, a saber *i)* altos niveles de cumplimiento; *ii)* respuestas honestas, aun ante la presencia de altos incentivos para la evasión; *iii)* aumentos en el nivel de evasión que incrementa en proporción a la tasa de los impuestos; y *iv)* los individuos son más propensos a evadir cuando perciben que el número de evasores es grande.

*Palabras clave:* cumplimiento del pago de impuestos, evasión, normas sociales, honestidad, valores morales, interacción social.

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## Introduction

According to the traditional model of tax compliance by Allingham-Sandmo, both the penalty and the threat of the probability of an audit make people pay their taxes. Yet, there is vast experimental literature that suggests that there are people who never evade, even when the probability of detection is zero (Alm *et al.*, 1992, Baldry, 1986, and Webbley *et al.*, 1991). The contrast between evidence and theory has provoked many to develop new theories. I combine factors of honesty and conformity payoffs in the taxpayers' utility function to fill the gaps between the economic, psychological, and sociological approaches to fully understand tax compliance. A multidisciplinary approach is the solution to instill endogenous honest responses in individuals, even in the presence of marginal incentives for tax evasion. Clearly defining how these combined forces affect the decision of individuals to pay is something that has not been reported in the literature.

The definitions of tax compliance, tax evasion, and tax avoidance are presented in the first section. In the second section, I explain how scholars in public finance traditionally have analyzed tax compliance in the case of personal income tax. Then, I present in detail the most reliable empirical evidence about tax compliance. In section three, I present a large body of evidence concerning the honest behavior of taxpayers. I review the literature of the single-agent model of tax compliance to show the extensions that have been made that allow economic, psychologic, and sociology theories to better explain tax compliance. In section four, I include in the traditional model of tax compliance both moral and social payoffs from compliance. This multidisciplinary approach can explain *i)* high rates of compliance, *ii)* honest responses even when the marginal expected return of evasion is positive, and *iii)* increases in evasion with the tax rate at the interior optima. Section five is the conclusion.

### I. Tax Compliance, Tax Evasion and Tax Avoidance

In this section, I start by differentiating compliance from noncompliance. Then, I discuss the different behaviors of taxpayers, namely, tax evasion and tax avoidance.

*Compliance* with reporting requirements means that the tax payer files all required tax returns at the proper time and that the returns accurately report tax liability in accordance with the Internal Revenue Code, regulation, and court decisions applicable at the time the return is filed. (Roth *et al.*, 1989, p. 21).

On the surface, this is a clear definition of the line between tax compliance and noncompliance. Yet, tax compliance requires adequate record keeping, timely and accurate filing of tax returns, and the payment of all taxes owed.<sup>1</sup> Consequently, a taxpayer can fail to comply either because he made a mistake when filling his tax form, or because he wanted to evade his tax liabilities from the very beginning. In the first case, the taxpayer honestly made a mistake, while in the second the omission was intentional.<sup>2</sup> The result in both cases, noncompliance, is the same, but the motivation of the individual is different. For this reason, noncompliance includes situations where individuals underpaid, or overpaid, their taxes (called underreporting or overreporting).

Economists, aware of the differences in intentions, have attempted to isolate in their models the nuances in people's motivations and intentions when they fill out their tax forms and pay their taxes. In theory, tax evasion is considered to be the willful act of noncompliance with the tax law in order to reduce tax liability. On the other hand, tax avoidance consists of procedures to reduce tax liability, which are dubiously within the limits of the law. These include, among others, postponement of taxes or hiring a tax professional to alert one of the tax deductibility of activities already undertaken.<sup>3</sup>

In practice, the main difference between avoidance and evasion is the illegal characteristic of the latter: If noncompliance is proven legally to be a deliberate decision to reduce tax liability, it constitutes tax evasion. But the line between the two is fuzzy. Consequently, tax authorities, lawyers, and taxpayers find it hard to agree about the majority of the ambiguous cases.

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<sup>1</sup> Kinsey (1987).

<sup>2</sup> Failure to comply with tax reporting may also be due to misinformation, misunderstanding or negligence.

<sup>3</sup> Recently, Slemrod and Yitzhaki (1999) have analyzed the possibility of studying tax avoidance and tax evasion as complements.

## II. Theory and Evidence about Tax Compliance on Personal Income Tax.<sup>4</sup>

In the economic models it has been assumed that the behavior of individuals when reporting their taxes is driven primarily by the incentives of the tax system. In this framework, the taxpayer decides how much income to report by solving an expected utility maximization problem, hence, the choice of whether and how much income to declare is akin to a choice of whether and how much to gamble. The taxpayer faces a trade-off between the tax savings from underreporting true income against the risk of audit and the penalties for detected noncompliance. The threat of detection and punishment are responsible for the compliance of the individual. This theory stems from Becker's classic paper on the economics of crime (1968) and was first applied to the problem of tax compliance by Allingham and Sandmo (1972).

In the simple version of the Allingham-Sandmo model, the possibility of avoidance does not exist and the taxpayer is risk neutral. He faces a fixed penalty rate if he is caught evading taxes. The taxpayer must choose how much income  $x$  to declare to tax authorities so that he maximizes his expected utility.

$$E[U] = (1-p) U[y(1-t) + t(y-x)] + pU[y(1-t) - s(y-x)]$$

where  $y$  is his exogenous true fixed income, only known by the individual,  $t$  is the constant tax rate, and  $y(1-t)$  is the true after tax-income. The individual faces a constant probability  $p$  of being audited. If the taxpayer evades taxes and is audited, he must pay a constant penalty  $s$  on all unreported income. The solution of the model indicates that an individual will report zero income whenever the audit probability he faces is less than  $t/(t+s)$ .

Yitzhaki (1974) modified the Allingham-Sandmo model by imposing the penalty on tax understatement, as opposed to unreported income. In this way, the theoretical prediction is that evasion will increase with a reduction in the tax rate. However, Clotfelter (1983), Slemrod (1985), Crane and Nourzad (1986), Baldry (1987), Poterba (1987) and Friedland *et al.* (1978) offer evidence of a positive relation between

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<sup>4</sup> There are other important areas of tax compliance, such as corporate tax law and sales taxes, for instance. However, I will only discuss the case of personal income tax here because of space limits.

evasion and tax rate. Also, there is a vast experimental literature that suggests that there are people who never evade, even when the probability of detection is zero (Alm *et al.*, 1992, Baldry, 1986, and Webbley *et al.*, 1991).

The contrast between theory and evidence has provoked many researchers to extend the traditional model. These attempts are presented in the next section. For the moment, it will be enough to analyze the most reliable empirical evidence about tax compliance: the Taxpayer Compliance Measure Program (TCMP) of the Internal Revenue Service (IRS).<sup>5</sup> The TCMP intensively audits individual tax returns on a stratified random national sample. Even though it fails to detect certain amount of income sources that are exempt from reporting requirements —such as self-employed people and those whose main income is cash— it is recognized as the best data available.

According to the most recent TCMP (1988), 40 percent of U.S. households underpaid their taxes for that year, 53 percent paid correctly and 7 percent overpaid. Under the assumption that these payments were due to error in their tax forms, and that a comparable proportion of those who underpay are also due to error, we can conclude that almost 67 percent of the people intended to pay their taxes correctly.<sup>6</sup> Why do people pay their taxes in the United States, if the probability of an audit and the penalty are very low, and more surprisingly, why do they attempt to pay them correctly?<sup>7</sup>

Part of the explanation is the increase in information reported to the IRS by magnetic media, which facilitates the matching of documents.<sup>8</sup> For instance, the IRS requires that both the employee and the employer report the employee's wage. This limits opportunities for evasion in these cases where the main source of income is salaries and wages. This is also the case for income in the form of interest, pensions, and mortgage interest payments. The IRS estimates that, even taking information requirements into account, individuals appear

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<sup>5</sup> The TCMP has only been available to certain research projects and not to the general public.

<sup>6</sup> Andreoni, Erard and Feinstein (1998), p. 820.

<sup>7</sup> If we substitute the audit and penalty rates prevalent in the U. S. economy in the Allingham-Sadmo model, we find that the model overestimates the rate of evasion. Data from federal audits in the U.S. indicates that typically the penalty is applied at a rate of 20 percent of the portion of the underpayment. When  $s$  equals .2, and  $t$  equals .3,  $t/(t-s)$  equals .6, which is far above the fraction of returns audited in the U.S., about 0.015. These results hold for risk-averse individuals as well, according to Slemrod and Yitzhaky (1999) and Erard and Feinstein (1994).

<sup>8</sup> According to the IRS for the year 1992, 75 percent of the tax returns were subject to information reporting. Andreoni, Erard and Feinstein (1998), pp. 821.

to be more honest than might be expected. Although three-fourths of income is subject to information reporting, 91.7 percent of all income that should have been reported was in fact reported for the year 1992.<sup>9</sup>

Putting these numbers in terms of the Gross Domestic Products (GDP), wages, interest income, and dividends constitute around 75 percent of the GDP. These income sources are subject to information requirements. Therefore, the maximum scope of income that can be evaded is 25 percent of the GDP.<sup>10</sup> These statistics lead us to believe that the scope of evasion is very low. Yet, given the low penalty and the small probability of audit, the expected gains for small amounts of evasion should be very appealing for many taxpayers. This is the reason why it is impressive to see a compliance rate that exceeds 90 percent for the American economy.

Up to now the only evidence that has been discussed is from the U.S. Unfortunately, comparable statistics for compliance —such as the TCMP— in other countries do not exist or are very difficult to obtain.<sup>11</sup> This makes it hard to present international comparisons. Anecdotal evidence suggests that the extent of noncompliance is larger in developing countries than in the U.S.

### **III. Theory and Evidence of Moral Values and Social Norms in Tax Compliance**

In this section, I review the literature to show that our knowledge of compliance behavior is still very limited. I argue that the importance of moral values and social interactions to deter noncompliance has not been analyzed in depth. First, I present an overview of the institutional approach to explain how both —formal and informal— institutions shape economic and social outcomes. Then, I describe four single-agent models of tax compliance. The first models how honesty and reputational cost can deter evasion. The second one considers how feelings of guilt and shame reduce the gains from noncompliance. The

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<sup>9</sup> Andreoni, Erard and Feinstein (1998), p. 822.

<sup>10</sup> This 25 percent is formed by self-employed people —such as doctors and lawyers and those individuals whose major source of income is cash, such as waiters. In these cases there is no way to verify the information about their income.

<sup>11</sup> For some international studies see Graetz, M.J. and L.L. Wilde (1985), Skinner, J. and J. Slemrod (1985), James Alm, Roy Bahl, and Matthew N. Murray (1990) on Jamaica, Dick J. Hession *et al.* (1992) on the Netherlands, and Ana de Juan, Miguel A. Lasheras, and Rafaela Mayo (1994) on Spain.

third presents how the issue of fairness related to the tax code and tax enforcement can affect the motivation of individuals to pay their taxes. The last one analyses how the performance of the government can affect the willingness to pay taxes.

Economic models in general have neglected the presence of codes of conduct –such as moral and ethical constraints– that can prevent people from cheating on their income tax forms. I will argue that the extension of economic, psychological, and sociological approaches can help us explain taxpayers' high rate of compliance. Particularly, this multidisciplinary approach will allow us to see honest responses, even in the presence of marginal incentives for tax evasion. However, we first need to understand the combined role of all these factors in the taxpayer's decision.

The combination of enforcement, penalties, prices, income, and institutions limits the set of possibilities of individuals in the economy. North (1990) defines institutions as “humanly devised constraints that shape human interaction”.<sup>12</sup> Institutions can be formal –like constitutions, statute law, and regulations– or informal –like self-enforced codes of behavior, norms, and conventions in society.

Individuals create institutions to set the limits of what people in a certain group are allowed to do, or alternatively, to determine under what conditions people are not able to undertake certain actions. In general, institutions also establish punishment and sanctions. According to what individuals know about how and to what extent the rest of the society respects and obeys the laws, this information provides them with the basis for the formation of their expectations about the behavior of the society. Individuals –based on these expectations– will make their strategic choices.<sup>13</sup>

In the traditional model of tax compliance, this view of the individual's choices within a *social* environment is missing: only the threat of external sanctions (audits and penalties) generates compliance. The fact that informal institutions can deter noncompliance has been excluded from the model. If it is true that the threat of external

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<sup>12</sup> North, Douglass, *Institutions, Institutional Change and Economic Performance*, Cambridge University Press (1990), p. 3.

<sup>13</sup> My interest is not the study of institutions *per-se*. I will only consider them as the constraints that individuals impose on themselves, either formally or informally. There is a body of literature about the origins, creation, evolution, and persistence of institutions: Calvert (1995), (1998), Eggertsson (1990), Greif, Milgrom and Weingast (1998), Kreps (1990), Milgrom, North and Weingast (1990) and North (1990).

punishment is important, it is also true that informal institutions — such as codes of behavior and honesty— can also constrain people's choices.<sup>14</sup> Kinsey (1987) summarizes the body of literature that analyzes compliance from the sociological, psychological, and legal points of view, emphasizing how social norms and individual attitudes can explain tax behavior. For instance, the moral evaluation of crime affects the level of deterrence of the legal sanctions. Legal sanctions over immoral crimes can have higher deterrence because they are reinforced by the individual's self-imposed codes of morality.

Sometimes individuals are constrained by codes of conduct, even though they can get away with violations. Alm *et al.* (1992) finds some compliance when there is no chance of being caught. In principle, no rational actor that sees a wide possibility of evasion would couple, so there must be something more, besides external punishment, that restrains the individual from tax cheating. Gordon (1989) incorporates this result in a model by including nonpecuniary costs of evasion in the utility of the taxpayer. The act of evading taxes may induce anxiety, guilt or a negative self-image in taxpayers. These exogenous psychic and stigma costs allow us to rationalize this sort of motivation. Unfortunately, they are exogenous and cannot explain different levels of honesty among individuals or social groups.

The process of being audited carries various social risks, such as loss of reputation among family members, friends, and colleagues. In an extreme case, an audit can put the taxpayer's job at risk. People commonly discuss issues related to their taxes among family members and at their jobs. Grasmick and Bursik (1990) found that feelings of shame and loss of respect when people evade taxes are self-imposed costs that decrease the likelihood of noncompliance. They differentiate between shame and embarrassment. The former is something that the individual feels personally; it does not depend on others, while embarrassment includes peer pressure, family and significant others.

To reconcile theory with this piece of evidence, Erard and Feinstein (1994), based on psychological theories, introduce in the utility function of the taxpayer sentiments of shame and guilt, which reduce the perceived benefits from cheating. In general, individuals respond to both peer pressure and social sanctions.<sup>15</sup> In this way, both conscience

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<sup>14</sup> Becker (1996) suggests that rich people are interested in spreading the norms of honesty to the rest of society, for example.

<sup>15</sup> Meier, *et al.*, (1984).



and the attachment to significant others —friends, family, etc.— are sources of punishment, which like state-imposed legal sanctions, vary in both their certainty and their severity. The problem with Erard and Feinstein's approach is that the taxpayer will not experience the threat of embarrassment if the people whose opinion's are most valued do not discover his crime. Thus, they should incorporate how the perceived probability of detection by significant others can also act as a deterrent as well.

Fairness is another social factor that can explain tax compliance. There are two factors in the perception of fairness. The first one is related to the tax burden of the taxpayer compared to the burden of other individuals. Spicer and Becker (1980) in experimental research found that the amount of taxes evaded increase when people are told that their tax burden is higher than the rest of the group. Nevertheless, there is no agreement on the empirical evidence about this point. Webley *et al.* (1991) found that there is no relation between the perceived inequalities and the compliance of the taxpayer. The second factor is the perception about the rate of compliance among people: the more other people pay their taxes, the more people will think that it is fair for them to pay theirs. Geeroms and Wilmots (1985) show a mutual dependence between evasion and the percentage of the population who is evading. Cowell (1990) provides evidence of the relation between perceptions and attitudes of individuals with tax compliance. Myles and Naylor (1996) modify the expected utility model to introduce a social custom source of utility. In this way, the individual gains utility when he complies honestly with the tax law.

The fourth approach to explain compliance admits the relationship between the taxpayer and the government. Spicer and Lundstedt (1976) find that taxpayers will refuse to pay their taxes if they feel that the government is wasting their taxes. Webley *et al.* (1991) found a positive relationship between government performance and compliance. Frey (1992), in a principal-agent model, considers that the motivation of the taxpayer to comply depends on internal and external factors. Regulation or pricing mechanisms (external factors) can "crowd-out" the internal motivation of the individual to comply. Tighter monitoring and higher penalties can negatively affect the taxpayer's morale schema, since they imply that authorities do not trust taxpayers. Cowell and Gordon (1988) link the two sides of the government budget, income and expenditure, by introducing public goods. In this way they want to link the performance of the government with the satisfaction of the taxpayers.

They find that when tax rates increase, evasion decreases. However, these results go against the empirical evidence. Bordignon (1993) introduces fairness considerations of the fiscal system. He rationalizes ethical norms by making them dependent on the tax structure, the supply of public goods, and the perceived behavior of other taxpayers. The perception of the taxpayer about the fairness of the system determines the willingness to pay taxes: the more the tax burden and public goods provision differs from an individual's moral idea, the less willing individuals will be to pay their taxes. Borgidnon finds that there is a percentage of the population that does not evade, even when incentives exist to cheat.

The purpose of this section has been to show that there is incomplete knowledge about the effect of moral and social dynamics on the models of tax compliance.<sup>16</sup> A proposal about how to incorporate both elements in a theoretical analysis of tax compliance is presented in the following section. A natural question would be why, after 25 years, do researchers keep on modifying the Allingham-Sandmo model, instead of creating a whole new approach? The answer is twofold. First, literature and empirical evidence have not reached any definitive conclusion about the effect of penalties.<sup>17</sup> Nevertheless, it has been consistently reported in literature that the probability of punishment is important to dissuade noncompliance.<sup>18</sup> Second, the model is parsimonious, which is very appealing to many researchers.

#### **IV. A Model of Tax Compliance with Individual Morality and Group Conformity**

I use the Gordon (1989) model and the Myles and Naylor (1996) model to include both individual morality and group conformity in the

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<sup>16</sup> The basic Allingham and Sandmo model has been extended in a variety of dimensions. For instance, Pecanvel (1979) finds that the inclusion of endogenous labor supply makes the sign of the response of the reported income ambiguous to changes in the parameters of the model. Other extensions of the model include uncertainty about the true tax liability and the impact of different enforcing rules on evasion. For a comprehensive survey of this literature see Cowell (1990) and Slemrod and Yitzhaky (1999). Nevertheless, all these modifications do not consider moral aspects and social interactions in their analysis.

<sup>17</sup> Roth *et al.*, 1989, p. 6., Grasmick and Bursik (1990).

<sup>18</sup> Jensen, *et al.*, (1978) provides empirical evidence that the risk of apprehension and punishment are a deterrent to noncompliance. Kleppler and Nagin (1989) argue that the perception of the probability of punishment is different for each line item and find variation in the rate of evasion among different line items.

analysis. In this way, the utility of the taxpayer depends on his final level of income ( $Y$ ) and on the income concealed from the tax authority ( $I$ ).

$$U\{Y\} - vI - N(1-\mu) I \quad (1)$$

Where:

$$Y = y(1-t) + xtI$$

$Y$  (terminal income) depends on the fixed gross income ( $y$ ) which is liable to tax, the proportional tax rate ( $t$ ), and the fixed probability of being caught ( $p$ ). The tax on any income found to have been concealed from the authorities ( $tI$ ) is subject to surcharge at a rate  $s$ . The rate of return to a dollar of evaded tax ( $x$ ) is given by

$$X = \begin{cases} 1 & \text{with probability } 1-p \\ -s & \text{with probability } p \end{cases}$$

Hence,

$$\begin{aligned} Y &= y(1-t) + tI && \text{if the individual is not audited} \\ &= y(1-t) - stI && \text{if the individual is audited} \end{aligned}$$

The utility level for a taxpayer who chooses to evade is given by:

$$U^E = \underset{(1)}{\text{Max}} \{p U[y(1-t) - stI] + (1-p) U[y(1-t) + tI]\} - vI - NI(1-\mu)$$

The model differs from Allingham-Sandmo's traditional model in three ways. First, the penalty for discovered evasion depends on the tax understatement, rather than on the income understatement, as Yitzhaki first suggested in 1974. Hence, the model reflects more accurately what happens in the real world.<sup>19</sup> Second, there is a fixed cost that represents the anxiety the individual will feel for not

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<sup>19</sup> This modification means that as  $t$  rises, the reward for a successful understatement of a dollar rises, but the cost of detected understatement rises proportionately. In this way, the tax rate has no effect on the terms of the tax evasion gamble.

complying ( $v$ ) per unit of evasion. Third, the taxpayer's utility decreases with each unit of income concealed, as a consequence of knowing that he is not following the social norm ( $N$ ). This cost depends on the number of non-evaders that exist in his group ( $1 - \mu$ ), where  $\mu$  is the fraction of evaders in the group ( $0 < \mu < 1$ ). Assuming that taxpayers maximize their expected utility, the first order condition (FOC) is:

$$U_Y Y_I - v - N(1 - \mu) = 0$$

Where:

$$Y_I = xt$$

$$\Rightarrow t E \{U_Y x\} - v - N(1 - \mu) = 0$$

$$\Rightarrow \text{FOC} : \varepsilon \equiv E \{U_Y x\} = \underbrace{\frac{v + N(1 - \mu)}{t}}_c \quad (2)$$

The right hand side of (2) represents both the marginal moral and social cost of evasion for the individual ( $C$ ).

SOC requires  $\varepsilon_I < 0$

$$\varepsilon_I = t E \{U_{YY} Y_I x\}$$

$$= t^2 E \{U_{YY} x^2\}$$

$$< 0, \text{ because } U_{YY} < 0$$

Hence, SOC is satisfied. We substitute  $I = 0$  in (2) to find the marginal expected return of evasion ( $k$ ):

$$= (1 - p) U' (y (1 - t)) t + p U' (y (1 - t)) (-st)$$

$$= k \equiv \underbrace{U' (y (1 - t)) t}_{+} (1 - p - ps) > 0$$

Note that  $(1-p-ps)$  is the expected rate of return to a dollar of evaded tax. In this way, the economic problem of the tax evader is equivalent to the analysis of portfolio selection, where gross income ( $y$ ) is the initial endowment and where *declared income* and *concealed income* ( $I$ ) play the role of a safe asset (with zero return) and a risky asset (with return  $x$ ). In this way, the individual conceals income depending on the marginal expected rate of return of evasion ( $k$ ). Thus, if  $(1-p-ps) \leq 0$  then  $k \leq 0$  and nobody evades. If  $(1-p-ps) > 0$ ,  $k$  is positive and we have two cases: if  $[v + N(1 - \mu)] / t \leq k$  people will evade. In contrast, if  $[v + N(1 - \mu)] / t \geq k$  people will not evade. In the latter case, we reconcile theory with the fact that there are honest responses when individuals pay their taxes, even when the marginal return of evasion is positive (Baldry, (1986), Webbley *et al.*, (1991) and Alm *et al.*, (1992)). In other words, people will not evade if the marginal moral and social cost of evasion ( $[v + N(1 - \mu)] / t$ ) is greater than the marginal expected return of evasion ( $k$ ).

The differentiation of (2) with respect to  $v$  indicates that, at the interior optima, dishonest taxpayers will evade more:

$$\frac{\partial I}{\partial \mu} < 0$$

Also, those at the interior optima will pay less if the the percentage of taxpayers who do not comply increases:

$$\frac{\partial I}{\partial \mu} > 0$$

Now, we can do some comparative statics to analyze the effect of an increase in  $t$  over the amount of income concealed from the tax authority ( $I$ ):

$$\frac{\partial I}{\partial t} = - \frac{((v + N(1 - \mu)) / t) + \varepsilon_t}{\varepsilon_t} \quad (3)$$

SOC requires  $\varepsilon_t < 0$

$$\Rightarrow \text{sign} \left\{ \frac{\partial I}{\partial t} \right\} = \text{sign} \{ \text{numerator} \}$$

First, consider only the term  $\varepsilon_t$

$$\varepsilon_t = U_{YY}(-y + xI)x$$

Where

$$Y_t = (xI - y)$$

$$\Rightarrow \varepsilon_t = \{U_{YY}Y_t x\} \tag{4}$$

Now,

$$Y = y - yt + xIt$$

$$Y = y + tY_t$$

$$\Rightarrow Y_t = \frac{Y - y}{t}$$

Then (4) becomes:

$$\varepsilon_t = E \left\{ U_{YY} \left( \frac{Y - y}{t} \right) x \right\}$$

The Arrow-Pratt measure of absolute risk aversion is:

$$A_Y = -\frac{U_{YY}}{U_Y}$$

And the parameter of relative risk aversion is:

$$R_Y \equiv -\frac{YU_{YY}}{U_Y}$$

Hence,

$$\varepsilon_t > 0 \text{ if } A_x < 0 \text{ and } R_x > 0$$

Therefore, it is possible to have a positive relation between evasion and the tax rate in the economy at the marginal level. This model is a primitive attempt to reconcile theory with the empirical evidence that I have already described. Nevertheless, it is a necessary step in order to make some aspects of honesty and group conformity endogenous in the utility of taxpayers.

## **V. Conclusions**

Traditionally, the economic models predict that individuals will pay their taxes because of the threat of external sanctions. However, considering only formal rules give us an incomplete notion of constraints in society. I provide evidence of the important role that moral values and social interactions play in enforcing compliance. There is empirical evidence that supports the claim that norms decrease the possibility of committing a fraud. I recognize that people react to external sanctions —otherwise police and jails would not be necessary in societies— but there is also evidence that shows that external punishment cannot completely explain honest responses when people pay their taxes. In this paper I argue that the combination of economic, psychological, and sociological factors can help us explain honest behavior in taxpayers. Specifically, I include in the Allingham-Sandmo model payoffs for both honesty and conformity payoffs. This approach can explain *i)* high rates of compliance, *ii)* honest responses even when the marginal expected return of evasion is positive and, *iii)* increases in evasion with the tax rate at the interior optima.

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