

## **Fiscal awareness: a study of the female attitude towards fraud in Spain**

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## **Abstract**

Our paper studies fiscal awareness in Spain, with a particular focus on the attitude towards tax fraud among the female population. The reason is that women seem to constitute a social group with a specific behaviour in several aspects. We use unexploited data, based on a survey carried out in October of 2007 among the Spanish population by the Fiscal Observatory of the University of Murcia. A total of 29 questions have been posed to 1500 adults, concerning the fiscal awareness of the citizens, their tax morale, their knowledge of the fiscal system, their perception of fiscal efficiency and fiscal fraud, along with socio-economic characteristics of the respondents. The relevant information is extracted from this survey by the way of microeconomic models. More specifically, we use discrete choice models. Given our objective, special emphasis is put on the gender variable and on how it can alter the impact of other variables. For this purpose, we use several interaction variables, obtained by multiplying the gender dummy variable with other independent variables, such as education or the labour situation, among others. Another novelty of our study consists of introducing in the study the cultural dimension of fraud: we allow the individual's attitude towards fraud to depend on the general attitude of the surrounding society towards it. A third novelty refers to taken explicitly into account the knowledge (both subjective and actual) of the main fiscal norms. Our results indicate mainly four facts. Firstly, the level of education in general and the knowledge of fiscal norms are important determinants of the individual's declared attitude towards fraud. Secondly, the societal rejection of fraud definitely and strongly influences the individual attitude towards it. Thirdly, women are less sensitive to the societal rejection of fraud making them on average somewhat more tolerant towards fraud although, fourthly, a higher level of family income drastically reduces the female tolerance towards fraud.

## 1. Introduction: The fiscal awareness

When addressing the concept of fiscal awareness we need, first of all, to highlight its close relation to fiscal ethics and fiscal morale. The three terms – fiscal ethics, tax morale and fiscal awareness – have traditionally been used to refer to the same concept. All three have been applied to the set of attitudes and behaviours of the taxpayer when complying with the Inland Revenue. Yet there are shades of meaning which need to be gone into.

Morale can be defined as having to do with human actions as regards their goodness, while ethics deals with moral and human obligations. Awareness is a wider concept, covering reflexive knowledge. When applied to the field of tax, tax morale refers to the actions of the taxpayer as regards the Inland Revenue. The human obligations dealt with by ethics are those which have to do with complying with the Inland Revenue Office. The reflexive knowledge which is alluded to under the term awareness would imply knowledge of both revenue and expense within the tax world, from a perspective of correct fiscal compliance. Professor Tipke (2002) defines tax ethics as "the theory which studies the morality of actions in tax matters performed by public, legislative, executive and legal powers, as well as by the taxpaying citizen ". Higuera Udías (1982) uses the terms fiscal ethics and fiscal moral indistinctively and Rodríguez Duplá (2001) identifies ethics with moral philosophy. Álvarez García, S. and Herrera Molina, P. M. (2004) focus on the term fiscal ethics, which is addressed from various angles: ethics of the Administration; ethics of the legislator; ethics of the taxpayer; ethics of judges and even ethics of the tax consultant<sup>1</sup>.

In Spain several surveys<sup>2</sup> show that society has not found a way to connect appropriately with the public sector (the driving force behind taxation) nor, inversely, has Administration discovered how to convey effectively the message that there is a constitutional obligation to contribute to society

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<sup>1</sup> As regards the ethics of the taxpayer, Professor Tipke (2002) describes several categories: Homo economicus, a free rider who weighs up the consequences of being discovered by an inspection and the benefits of defrauding taxes. This attitude has some echo in moral theory that considers tax laws as merely penal. The "chalanero", who justifies fraud through the hypothesis that the state takes more than its due to compensate taxpayer fraud. Some older manuals of moral theology reflect a similar opinion which automatically upholds not paying a fourth part of tax duties. The "legal escapologist", who seeks to pay the least possible and uses all the resources and loopholes of the law. Some tax experts defend such a position on the grounds that it acts as a service to the tax officials by obliging them to achieve their aims through good ideas instead of just with money.

<sup>2</sup> There exist several surveys on this subject. Probably the most important ones are the following: the Fiscal Barometer of the Institute of Fiscal Studies ("Instituto de Estudios Fiscales", IEF), the so-called Opinion and Fiscal Attitudes of the Spanish Citizens annually published by IEF since 1995, as well as the Survey on Public Opinion and Fiscal Policy carried out by the Center of Sociological Research ("Centro de Investigaciones Sociológicas", CIS). These surveys, have been exploited in several studies (see for instance Fernández, 2006, Delgado y Gutiérrez, 2006, Gutiérrez, 2005, Delgado *et al.*, 2001a, Delgado *et al.*, 2001b, Delgado *et al.*, 2001c, Díaz y Delgado, 1995)

according to one's ability. Taxpayers and Administration alike see it as a burden and not as something which can be improved, albeit from different standpoints. On the one hand, there is the normative function, controlling behaviours and on the other the obligation to bear an economic burden and the requirement to collaborate in specific actions, and the two are not always conveyed with the right balance for them to strike a chord in the collective conscience of citizens.

The idea of joint responsibility needs to be disseminated to all spheres, at all levels and to all ages. The production and application of norms clearly does little more than control public deficit. It takes even further away from the idea of joint responsibility in sharing costs, generating income and maintaining public capital. A simple idea like the fact that education and health are financed by taxes is not felt as corresponding to us all. In general, the citizen adopts a distant standpoint and views tax obligations as alien, something which really only works because political powers make it work.

In particular we need to enjoin the younger generations, largely undefined in terms of ethics and social morals, to become a new generation which understands and shares the importance of public needs, and so moves towards a progressive eradication of tax fraud and a fairer tax system.

The present paper addresses fiscal awareness with a special focus on the gender aspect of it. More concretely we want to identify whether there is a gender difference with respect to fiscal awareness and to identify which aspects and determinants of it are affected by gender. The analysis is based on unexploited survey data collected in October 2007 by the *Fiscal Observatory* of the University of Murcia<sup>3</sup> among the Spanish citizenship. The paper is organized as follows. In Section 2, we present a synthetic review of the literature related with the empirical analysis of the determinants of fiscal evasion. Section 3 is dedicated to the econometric analysis of the new 2007 survey. The objective is to identify, by the use of discrete choice models, the factors that explain the degree of tolerance to fraud of the citizens with a special focus on a possible gender differentiation and the novelties of taking into account the degree of tolerance to fraud in the surrounding environment and the subjective and actual levels of knowledge of the fiscal norms by the taxpayer. Section 4 concludes.

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<sup>3</sup> This observatory was created in 2005 by Gloria Alarcón García and Elena Quiñones Vidal, in order to address the issue of the *current state of fiscal awareness among Spanish citizens*, as well as the *values*, the *perceptions* and the *motives* behind it.

## **2. Previous empirical studies and results**

In empirical studies the factors which determine the taxpayer's fiscal awareness and therefore his or her attitude towards tax evasion and tax fraud can be analysed using different methods. Some are based on data bases concerning fiscal investigation or inspection; others use experimental data; a third and really important group make use of surveys. The level of income, the level of education, together with social and demographic factors as well as the fiscal sanctions are some of the factors with influence on taxpayers' behaviour (Alarcón et al 2009).

As far as results based on inspection procedures are concerned, an important one is the relationship between income and tax rates, in the sense that an increase in the tax rate means higher levels of tax evasion. While Clotfelter (1983) and Feinstein (1991) reached conclusions which supported this idea, Allingham and Sandmo (1972) and Yizhaki (1974) reached however the opposite result. Data concerning the fiscal investigation has also been used in order to test the relationship between sanctions and tax evasion, given the intentionally dissuasive role of sanctions. The results of Witte and Woodbury (1985), as well as Dubin and Wilde (1988) and Keppler and Nagin (1989) confirm the effectiveness of this dissuasive role.

The experiments are another direct source from which we can obtain useful information to contrast alternative theories concerning the taxpayer's behaviour. They usually consist of simulations of real situations where the declaration about general income must be done. Some of the results obtained with this method are due to Alm and Mckee (1992), Becker et al. (1987) and Slemrod et al. (2001). They support the idea that the fiscal inspections help reducing the evasive behaviours.

A third source of information consists of the surveys. In Spain some interesting projects use surveys. The aforementioned annual survey of the Institute of Fiscal Studies, under the name of Opinions and Fiscal Attitudes of the Spanish Citizens, analyze the evolution of the fiscal attitude of the Spanish population. Recent studies (2006 and 2007) reveal opposite opinions concerning the fiscal fraud. On the one hand, half of the respondents believe the tax payments have increased in the last ten years whereas the rest believe they have been reduced. At the same time, it is believed that fiscal fraud has become worse in the last ten years. Since 2006, the results highlight a widely accepted feeling in the Spanish society according to which the fiscal attitude strongly depends on the citizen occupation: 45% of the sample thought that the firm-owners were the citizens who commit more fiscal fraud. It was believed that the liberal professionals were the second most

dishonest group followed by the self-employed since these are groups about which the fiscal administration has less information. On the other hand, the wage-workers, who are extremely controlled by the Fiscal Administration, are considered to be the most honest ones concerning taxes.

Another important survey is The Public Opinion and Fiscal Policy survey from the CIS. Its last results (year 2007) reveal, once again, the fact that the citizens perceive negatively the fraud. In 2007, 47.3% believes the fraud to be quite high, whereas 36 % thinks it is very high. On top of this, nearly 44% thinks the situation is worsening. 70% agree that the only reason for declaring is the possibility of being caught.

The above mentioned surveys have been explored from a purely statistically descriptive perspective. However, survey results can be exploited with econometric models. In this perspective, Martínez-Vázquez y Torgler (2005) studies the fiscal morality during the years of Spanish democracy. Their conclusions indicate that women, the elderly and low income families as the most fiscally responsible groups. Another interesting paper is Prieto et al (2006), in which the factors of influencing the degree of tax evasion are estimated using an ordered probit model. One of the independent variable is politic preferences, which reveals to be very significant.

Recently, Alarcón et al. (2009) estimate with a probit discrete choice model the determining factors of the degree of citizen's tolerance towards tax evasion. The main conclusions can be summarised as follows: a monthly income greater than 2,500 euros, college education studies and the perception of fairness of the fiscal system are all factors which favours fiscal morale. On the other hand, being a self-employed or having a low level of studies exert negative effects.

In the present paper we carry out an econometric analysis of the factors that influence the degree of tolerance towards fiscal evasion. The novelty of the study is threefold. On the one hand, we introduce the gender dimension in the study by allowing the explaining factors to have a differentiated impact according to the gender of the respondent. On the other hand, we introduce a cultural dimension of fraud: we let the individual's attitude towards fraud depend on the general attitude towards fraud in the surrounding society. On the third place, we introduce the knowledge of the fiscal norms as a possible determinant of the degree of tolerance of fraud, distinguishing between the declared or subjective knowledge of the individual (what she thinks or declares about her knowledge of the norms) and her actual knowledge (what she really knows). We use the *Survey of the Fiscal Observatory* of the University of Murcia (2007) in order to estimate discrete choice

models that identify the factors that are behind the probability of defrauding. Since the *Fiscal Observatory* of the University of Murcia raises some different questions than those studied by the CIS or the Institute of Fiscal Studies, these data can help to enrich the analysis.

#### 4. Empirical analysis. Data, Econometric Approach and Results

##### 4.1 Data

The Survey of the Fiscal Observatory survey has been carried out in order to discover the values comprising the fiscal awareness of Spaniards and the attitudes of the taxpayers towards the current tax system in Spain, in terms of both tax revenues and public spending.

It gathers information on the following aspects<sup>4</sup>:

1. The perception of the fiscal fairness of the Spanish Tax system
2. The fiscal awareness of Spanish tax payers
  - 2.1. The knowledge about the Spanish fiscal system
  - 2.2. The knowledge of distribution of competences and degree of satisfaction with the services provided
  - 2.3. The attitude towards fiscal fraud
3. Other aspects such solidarity, values, etc.

##### 4.1 Econometric approach: Binary response model

Our analysis is based on the use of discrete choice models which help to identify the main determinants of the individual's attitude towards fiscal fraud. We use a discrete choice binomial model, also called binary response model. The dependent variable Y takes two possible values, reflecting two possible outcomes for the individual:

$$Y_i = \begin{cases} 0 & \text{if individual } i \text{ considers fiscal fraud as acceptable} \\ 1 & \text{if individual } i \text{ rejects fiscal fraud} \end{cases}$$

In our study  $Y_i$  takes its values according to the answer of individual  $i$  to a specific question of the October 2007 Survey of the Fiscal Observatory of the University of Murcia (question P15)<sup>5</sup>.  $Y$  is given value 1 if respondent  $i$  declares that fraud is never acceptable (answer 5 of P15) whereas it is given value 0 if he or she chooses any other answer (answers 1 to 4). So the model aims at

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<sup>4</sup> Detailed information about the survey can be obtained from the authors on simple request.

<sup>5</sup> Question P15 states as follows: "in your opinion, tax fraud is justified because: 1) too much is paid to the State, 2) those who pay more do not pay what they should, 3) the control of fraud is not efficient, 4) it does not prejudice anyone, 5) fraud is never justified.

determining the probability that individual  $i$  will declare that he or she is against fiscal fraud. We use a logit specification, according to which the model has the following mathematical specification:

$$P(Y_i = 1) = \frac{e^{X_i\beta}}{1 + e^{X_i\beta}}$$

The vector  $X_i$  contains for each individual  $i$  the values of the explanatory variables. This vector contains three types of variables: individual-specific factors, a variable which is common to all the individuals of a same Autonomous Community to measure the degree of rejection of fraud in the surrounding region, and interaction variables to gasper the possible gender dimension of fraud. The first groups of variables are rather standard, except those concerning the knowledge of norms, which is a novel aspect; the last two groups are also a novelty of this paper.

The data for the individual-specific independent variables come from several questions of the survey and cover the following aspects of the individual: the sex of the respondent (G), the age in years (AGE), the perception of the fairness of the fiscal system (FAIRSYS), the declared degree of knowledge of the fiscal norms (I\_KNOW\_NORM)<sup>6</sup>, the actual knowledge of the fiscal norms (NORMCONTROL)<sup>7</sup>, the level of education (EDUC); the labour situation (LABORSIT), the level of monthly household income (HOUSEINC), whether the economic support of the household is shared by a working woman with another person or not (SHAREDRESP). Table 2 describes the variables and their coding, together with information about the corresponding question in the survey.

On the other hand, as stressed for instance by Crane (1991) and as empirically tested by Tennyson (1997) in a study on individuals' attitudes towards insurance fraud, traditional social explanations of attitude formation suggest that neighbourhood or peer group influences are important in determining an individual's ethics or morality. According to this, the individuals learn their attitudes from others, so that an individual evolving in a climate where fraud is acceptable is more likely to consider fraud as acceptable. If this is true, then the empirical analysis requires a proxy variable that measures the fiscal ethics in the environment or the environmental attitude towards fraud. In our study, we construct this proxy on the basis of the answers of the respondents to Question P16, which states: "Which in your opinion is the more reproachable of the following

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<sup>6</sup> This is inferred from Question P8 of the survey which asks the respondent to declare how well he or she knows the fiscal norms.

<sup>7</sup> This is inferred from two questions of the survey (P9 and P11) which provide objective information about the actual knowledge of the fiscal norms by the respondent (by asking precise questions about the type of administration that levies a specific tax or the general VAT rate, for instance)

behaviours: somebody does not pay 6,000 € to the Inland Revenue or you have 100 € stolen from you: 1) the first option 2) the second option.” In each Autonomous Community, we compute the proportion of respondents who select the first option. So, our proxy measures the degree of social rejection of fiscal fraud. However, some Autonomous Communities are small in population. As a result, they are represented in the survey by a small number of respondents and our proxy could then incur into a “small area problem”. We have mitigated the problem by complementing the information of the October 2007 survey with information based on the same question posed in a similar survey carried out in the Spanish territory in March of 2006<sup>8</sup>. The resulting variable is called NEARBYNOFRAUD (see Table 2).

Finally, since women seem to behave differently in many aspects and for different reasons from men, it is interesting to intend to gasper a possible gender-differentiated behaviour towards fraud and tax morale. For that purpose, all the explanatory variables described so far - except G and SHAREDRESP for obvious reasons - are multiplied by the gender variable G to create interaction effects. The coefficients of these interaction effects, if significant, provide information about a different sensibility of women concerning fiscal awareness or ethics.

The results of the estimation and testing of the binary model presented here have been obtained from Eviews<sup>9</sup>. We have followed a top-down modelling strategy: we started from a general model that includes all the above mentioned explanatory variables, to reduce the risk of omitting possible relevant explaining factors and therefore to reduce the risk of invalid testing on the coefficients. After checking that this model passed two specification tests (Andrews tests and Hosmer-Lemeshow test), we pursued the analysis simplifying down the model in order to identify the main determinants of the probability to reject fiscal fraud and their impact. After progressive elimination of the less relevant (non significant) variables<sup>10</sup>, we obtained the final model, reproduced in Table 3.

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<sup>8</sup> This survey was carried out with exactly the same criteria and includes exactly the same question P16. Additionally, given the geographical and demographical dimension of Ceuta and Melilla (so that the survey contains only two respondents of each), their environmental variable has been given the value of Andalusia, on the basis of their geographical location

<sup>9</sup> Very similar results were obtained with the DCM package of OX (see [www.doornik.com](http://www.doornik.com))

<sup>10</sup> The initial and intermediate results are available from the authors on simple request.

**Table 2:** Definitions of variables in Discrete Choice Model

Variable in model	Interpretation and meaning	Value
Y (dependent variable)	Individual attitude towards fraud	1 against fraud, 0 not against fraud
G	Sex of the respondent	0 male, 1 female
AGE	Age of the respondent	Age in years (=>not categorical)
FAIRSYS	Fairness of the fiscal system	0 unfair, 1 fair
I_KNOW_NORM	declared knowledge of main fiscal norms	0 bad knowledge, 1 good knowledge
NORMCONTROL	actual knowledge of main fiscal norms	0 actually bad knowledge, 1 actually good knowledge
EDUC	Level of education of the respondent	2 not more than primary school 3 secondary school 4 college education
LABORSIT	Labour situation of the respondent	
LABORSIT1	self-employed or firm-owner	1 if self employed or firm-owner, 0 otherwise
LABORSIT2	civil servant or private sector employee	1 if civil servant or private sector employee, 0 otherwise
LABORSIT3	retired	1 if retired, 0 otherwise
LABORSIT4	homemaker	1 if homemaker, 0 otherwise
LABORSIT5	student or unemployed	1 if student or unemployed, 0 otherwise
HOUSINC	Level of monthly household income	1 below 1240€ 2 between 1240€ and 2300€

**Table 2** (cont.) Definitions of variables in Discrete Choice Model

		3 between 2300 and 3340€ 4 above 3340€
CIVILSTATUS	Civil status	0 if single , widow, separated or divorced, 1 if married
SHAREDRESP	Economic support of household shared between working woman and other person	1 if working (or retired) and married woman, 0 otherwise
NEARBYNOFRAUD	Degree of rejection towards fraud in surrounding society	Proportion of respondents in the Autonomous Community who choose Answer 1 to P16 (=> non categorical variable)
AGE_G	Age of respondent if woman	AGE if woman, 0 otherwise
FAIRSYS_G	Fairness of fiscal system if woman	FAIRSYS if woman, 0 otherwise
KNOWNORM_G	Declared knowledge of fiscal norms if woman	I_KNOW_NORM if woman, 0 otherwise
NORMCONTROL_G	Actual knowledge of fiscal norms if woman	NORMCONTROL if woman, 0 otherwise
EDUC_G	Level of education of respondent if woman	EDUC if woman, 0 otherwise
LABORSIT <sub>i</sub> _G (i=1 to 5)	Labour situation of the respondent if woman	LABORSIT <sub>i</sub> if woman, 0 otherwise (i=1 to 5)
HOUSINC_G	Level of monthly household income if woman	HOUSINC if woman, 0 otherwise
CIVILSTATUS_G	civil status if woman	CIVILSTATUS if woman, 0 otherwise
NEARBYNOFRAUD_G	Degree of rejection of fraud in society surrounding woman	NEARBYNOFRAUD if woman, 0 otherwise

**Table 3: Results of logit binary model – final estimation**

Dependent Variable: P15 (binary variable)				
Method: ML - Binary Logit (Quadratic hill climbing)				
Included observations: 1329				
Convergence achieved after 4 iterations				
QML (Huber/White) standard errors & covariance				
Variable	Coefficient	Std. Error	z-Statistic	Prob.
C	-1.810905	0.459905	-3.937564	0.0001
I_KNOW_NORM	-0.321798	0.123234	-2.611273	0.0090
NORMCONTROL	0.455296	0.115310	3.948451	0.0001
EDUC	0.273591	0.073111	3.742133	0.0002
LABORSIT1	-0.427789	0.182366	-2.345767	0.0190
HOUSINC_G	0.335803	0.100114	3.354194	0.0008
NEARBYNOFRAUD	2.452124	0.891520	2.750498	0.0060
NEARBYNOFRAUD_G	-1.237317	0.434774	-2.845888	0.0044
Obs with Dep=0	597	Total obs		1329
Obs with Dep=1	732			
H-L Statistic	9.0272		Prob. Chi-Sq(8)	
Andrews Statistic	9.2774		Prob. Chi-Sq(10)	

This final model yields interesting results. First of all, it is interesting to note that NEARBYNOFRAUD, the variable representing the societal rejection of fraud is statistically highly significant, and that there exists a gender dimension in its impact. More concretely, an increase in the societal rejection of fraud provokes a significant increase in the probability of a man to reject fiscal fraud (estimated coefficient of NEARBYNOFRAUD equal to 2.452124). If the individual is a woman, the increase also takes place but it is reduced by half (estimated effect: 2.452124-

1.2373=1.214807) . It is as if women were less permeable to what happens in their surrounding society. One possible explanation could be that a large proportion of the Spanish female population, especially in the higher age quartiles, are homemakers. Their activity is limited to the domestic space, so that they do not intervene in nor receive influences from the public domain<sup>11</sup>. These first two results on their own suggest that educational campaigns against fraud can be very effective and that part of them should be specifically oriented towards the female population.

The second important result of our analysis refers to the importance of the knowledge of norms. This aspect is addressed through two variables: I\_KNOW\_NORM and NORMCONTROL. For the interpretation of the coefficients it is important to remember that the first variable refers to the declared knowledge of norms, whereas the second one refers to the actual knowledge of norms. It is worth noting that we have observed that many respondents think (or declare) that they have a good knowledge of fiscal norms when it is in fact not true: the correlation between correct answers to precise questions about fiscal norms and declared good knowledge of norms is surprisingly low (around 10%). This indicates the very subjective characteristic of the variable I\_KNOW\_NORMS, as opposed to the objective character of NORMCONTROL. In Table 3, the coefficient of I\_KNOW\_NORM is highly significant and negative. According to this, a respondent with more declared knowledge of fiscal norms is more prone to accept fiscal fraud. At first sight this might seem counter-intuitive, unless we take into account the subjective character of this variable and the positive sign and larger value of the coefficient of the objective variable NORMCONTROL. So, somebody who actually knows norms tends to reject fiscal fraud, whereas somebody who thinks or declares that he or she knows fiscal norms even if it is not true is not so reluctant to fraud. Altogether, this reinforces the idea that tolerance to fraud goes together with (unconscious?) ignorance or lack of interest for fiscal norms. Once again, the results point towards the need of a higher fiscal education of the population.

As is well known, although the sign of the coefficients in a discrete choice model are informative about the direction of the effects of the explanatory variables, their size cannot be interpreted directly in terms of “marginal effects”. In other words, the coefficient, as such, of an explanatory variable does not indicate by how much the probability of rejecting fraud would increase (or decrease if negative) if that explanatory variable would increase by one unit. To obtain this type of

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<sup>11</sup> AMORÓS, Celia (1994): "Espacio público, espacio privado y definiciones ideológicas de 'lo masculino' y 'lo femenino'", in AMORÓS, Celia, (ed.) *Feminismo, igualdad y diferencia*, México, UNAM, PUEG, pp. 23-52.

information, additional manipulations of the model are necessary. Moreover, in this type of model the quantitative impact of a given change in an explanatory variable is not constant: it depends on the values reached by the other variables. It is therefore important to know for which values of the variables we compute these “marginal effects”; additionally, it is often interesting to know these effects for distinct values of the variables. Therefore, in the present paper, we use a graphical representation to present information on the marginal effects of the explaining factors analyzed so far. This offers the advantage of visually capturing the effects of the different factors for a broad range of possible values of the variables.<sup>12</sup>

Graph 1 presents how the probability of rejecting fraud (y-axis) evolves as a function of the rejection of fraud in the community (NEARBYNOFRAUD on the x-axis), for individuals that differ according to their declared and actual knowledge of fiscal norms (I\_KNOW\_NORM and NORMCONTROL, respectively), with an additional differentiation between women and men. The two red lines correspond to individuals who declare that they know norms (I\_KNOW\_NORM=1) but in fact do not know them (NORMCONTROL=0). The thin line refers to a man and the thick line to a woman. The orange lines correspond to individuals who do not know norms (NORMCONTROL=0) and recognize it (I\_KNOW\_NORM=0), with the same distinction concerning men and women. The green lines refer to individuals who declare that they know norms (I\_KNOW\_NORM=1) and actually do (NORMCONTROL=1). In this graph the marginal effects are provided by the vertical distance between two different curves<sup>13</sup>. For instance, for a level of rejection of fraud in the community of 40%, the distance between the thin red line and the thin orange line is .8 (approximately .48-.40). The interpretation is as follows: for a level of societal fraud rejection for 40%, the effect of recognizing ignorance about fiscal norms is on average an increase in 8 percentage point of a man’s probability to reject fraud

This graph very clearly illustrates at least two facts. First of all the rejection of fraud in the environment has a very strong impact on the individual probability of rejection: the slopes are strongly upward sloping; even for women, for which the impact of the environment is less intense, it is still substantial. Secondly, the knowledge of fiscal norms has also a very strong influence on the probability of rejecting fraud, as indicated by the vertical distances between the different curves.

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<sup>12</sup> The obvious drawback is that it does not offer accurate numerical information about the size of the effects. These numerical effects are however available from the authors on request.

<sup>13</sup> Given that all the coefficients of the final model in Table 3 are significant or highly significant, the differences between the different curves in Graph 1 can also be considered as significant (and therefore not due to mere sampling errors: they do represent significant differences in behaviour concerning rejection of fraud)

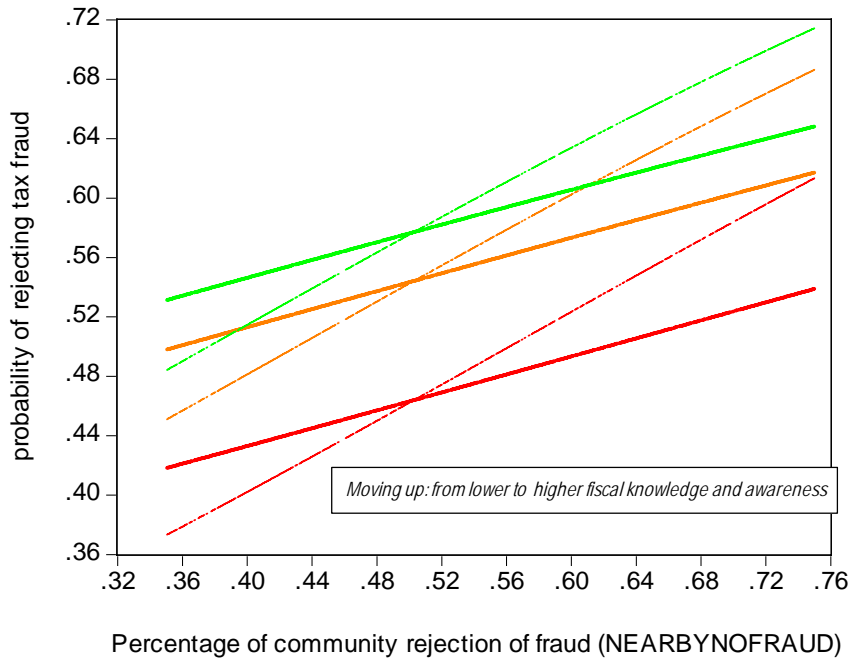
The distance between the red and the green curves are especially noticeable. As mentioned before this indicates that public campaigns in favour of a better knowledge of the fiscal system could strongly contribute to improve the individual behaviour towards fiscal compliance.

Apart from the impact of the societal rejection of fraud and the knowledge of norms, our results identify some additional relevant and interesting factors. An important one is the level of education (EDUC) with a positive effect on the probability of rejecting fraud but without any gender differentiation: the higher the level of education of an individual, the higher the probability to reject fiscal fraud. In terms of odds ratio, the estimated effect of education is equal to 1.31 ( $=\exp(0.273591)$ ). According to this, for an individual with a given level of education, the probability of rejecting fiscal fraud is 1.31 times as high as if he (she) had stopped his (her) education one step below.

Another important influence is reflected in LABORSIT1, without gender differentiation. This variable is equal to 1 if the individual is a self-employed or a firm-owner and 0 otherwise. It is worth noting that other labor situations were introduced in the initial model but they were revealed as non significant. This means that the only relevant factor concerning the labor situation is whether the individual is self-employed or not. Our results indicate a negative influence of this characteristic on the probability of rejecting fraud: a self-employed, whether male or female, is therefore more prone to accept fiscal fraud than any other individual. The odds ratio of being self-employed is 0.652 ( $=\exp(-0.427789)$ ); or equivalently, the odds ratio of not being a self-employed is approximately equal to 1.534. So the probability of rejecting fiscal fraud is 1.534 times as large for non self-employed citizens as for self-employed.

Finally, the last factor that revealed as relevant corresponds to HOUSINC\_G, which refers to the level of household income if the individual is a woman. Interestingly enough, the level of household income does not have any influence if the individual is a man. The effect of HOUSINC\_G is positive and therefore a higher level of income increases the probability of a woman to reject fraud.

Graph 1:  
Probability of rejecting tax fraud as a function of the community rejection of fraud,  
gender and the declared and actual knowledge of norms



- Man, knows that he doesn't know norms
- Woman, knows that she doesn't know norms
- Man, says he knows norms but he doesn't
- Woman, says she knows norms but she doesn't
- Man, says he knows norms and he does
- Woman, says she knows norms and she does

## 6. Summary and Conclusions

In this paper, we have applied microeconomic techniques on microdata extracted from a survey carried out in the Spanish Territory during October 2007, under the responsibility of the *Fiscal Observatory* of the University of Murcia. The objective is to identify the elements that might explain the fiscal awareness of the individuals, with a special focus on possible gender differences and on the importance of the cultural environment and of the knowledge of norms in the building of a fiscal awareness.

Our results do not detect a significant importance of the marital status or of the perception of the fairness of the fiscal system. So, our study does not give empirical support to the frequent argument that fiscal fraud and the lack of fiscal awareness are justified because the citizen perceives the fiscal system as unfair.

On the opposite, as suspected, our results do confirm the great importance of education: higher levels of general education substantially increase the propensity of individuals of both sexes to reject fraud. They also confirm the extended idea that self-employed and firm-owners are more prone to commit fiscal fraud than any other type of citizen.

But our study also identifies some new effects. The first one has to do with the impact of the knowledge of the fiscal system. We distinguish between actual or objective knowledge and declared or subjective knowledge, which need not coincide. Our results show a strong and positive impact of true knowledge but a negative (and smaller) impact of declared knowledge. These two effects together indicate that tolerance to fraud has very much to do with ignorance or lack of interest towards fiscal norms, so that public campaigns aimed at better explaining the fiscal system could constitute a good mean to reduce fiscal fraud.

Another new effect introduced in our study concerns fiscal ethics in the surrounding society. We detect a very strong and positive effect of the level of fiscal ethics in the society on the individual behaviour towards fraud. Once again, these results give support to the idea that public policies aimed at increasing fiscal education might contribute to reduce tax fraud and enhance fiscal awareness.

All together our results indicate that a cultural change is needed, is justified and can be a successful way towards more fiscal compliance and awareness.

Finally, the results also show that there are gender differences in fiscal awareness. To be of one sex or the other, by itself, does not make a difference. What differs is how some of the factors that determine whether an individual will reject or not fiscal fraud will differ between male and female. In particular, two determinants of fraud have an influence that must be differentiated by sex: the household income level and the rejection of fraud in the surrounding society. As far as income is concerned, our model does not detect any influence of it for male whereas the influence is positive and rather important for women. On the other hand, the impact of the environment is positive for citizens of both sexes, although it is much stronger for male than for female. It is as if women were less permeable to what happens in their surrounding society. One possible explanation could be that a large proportion of the Spanish female population, especially in the higher age quartiles, are homemakers. Their activity is limited to the domestic space, so that they do not intervene in nor receive influences from the public domain. This also suggests that not only educational campaigns should be specifically oriented towards the female population, but also that public policies aimed at incorporating women into the public space and empowering them would contribute to enhance fiscal awareness.

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