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Tax Evasion and Community Effects in Italy

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Abstract

I propose an analysis of tax evasion in Italy using the data collected by the website evasori.info. This site collects reports by random internet users of the transactions in which they were involved that, lacking any legal receipt, were hidden from the tax authority. I interpret this experiment as a test of the attitude towards tax evasion by the community in which the tax offender operates: less reported episodes are an indication of a more lenient attitude. Since a more lenient attitude of the community is a lower cost of evading taxes, a smaller number of reports must be associated to less tax evasion. I show that the data confirm this claim. I also show that the presence of younger, less educated individuals and the size of the irregular labor force are associated to a more lenient attitude towards tax evasion.

JEL Classification: H2610, K34

Keywords: Tax Morale, Tax Evasion Reports

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1 Introduction

Tax evasion involves our everyday life. From the morning coffee to the late night drink, some of transactions that are part of our daily routine are, either deliberately or accidentally, concealed from the tax authority. In Italy, estimates from the Ministry of Finance indicate that roughly 20% of the income earned within the national border is not reported, resulting in a loss of more than 300 millions euros every year in forgone tax revenue. But who evades taxes more? Is it the owner of the small sandwich shop or the big corporation that manages a luxury restaurant? Is it the family doctor or the plumber? Furthermore where is tax evasion located? Is it more concentrated in big cities or small towns?

These are the kinds of questions that an anonymous Italian decided to address exploiting the capabilities of the Internet. His simple idea was to build a website that allows everybody to report anonymously some detail of the transactions in which they were involved and that, lacking any receipt or proof, were not officially recorded. The details include the monetary amount, the location and the economic activity of the individual that did not issue the receipt. By any means, this (ongoing) experiment has been a success: more than 70000 reports in 4 years, from the 0.2 euros of a coffee shop in Rome to the 10000 euros of a manufacturing company in Como, with reports that span almost all Italian provinces¹.

An alternative way to look at this large scale experiment is as a measurement of the “*Tax Morale*”, or the attitude towards tax payments and tax evasion. In fact only the individuals that perceive the failure to issue a receipt, with the consequent lack of tax payment, negatively, will report the episode. Therefore a high number of reports per capita, say in a given city, is an indicator of a negative social attitude towards tax evasion. But the negative social attitude is arguably a cost of evading taxes, which is evaluated by the potentials offenders as much as law enforcing and expected fines. Thus a bigger number of reports per capita should be associated to less tax evasion.

¹Provinces are the areas in which Italian regions are divided and are typically identified by a geographical area around a big city called “Capoluogo”.

I propose an empirical test of this prediction. I find that a bigger number of reported transactions is significantly negatively associated to lower evaded sums. This is what I call a “Community Effect” on tax evasion: a lenient attitude in the community where the potential evaders operate, by lowering the social and moral costs of evading taxes, fosters tax evasion. What really identifies the community here is the transaction itself or, in broader terms, the existence of business relationships. It is, for instance, the attitude of the customers of a given restaurant or the clients of a lawyer that determines the incentives to issue bills and parcels.

A closely related question is how to explain the community effect itself. Consistently with previous studies, I find that the presence of less educated and younger individuals and a bigger size of the informal labor force are associated to a lower number of reports of tax evasion, and thus to a “stronger” tax morale. Conversely, the fraction of individuals aged 30-44 is significantly associated to a bigger number of reports, while the presence of more educated individuals does not have any predictive power. Interestingly, the fraction of self employed individuals that, because of their activities, are more prone to tax evasion, does not predict the number of reports.

The rest of the paper is organized as follows: section 2 provides some theoretical background. Section 3 describes the dataset. Section 4 and 5 summarizes the empirical results. Section 6 concludes.

2 Background

The concept of tax morale was introduced in the economic literature to rationalize why people pay taxes². The main reason is that, as Feld and Frey (2002) point out, traditional models of tax evasion a la Allingham and Sandmo (1972)³, based only on auditing probabilities and expected penalties, typically underestimate the tax compliance rate. Thus

²Slemrod (2007) proposes a comprehensive treatment of this point

³The two reviews by Andreoni, Erard and Feienstein (1998) and Sandmo (2005) offer a comprehensive summary of the literature

taxes are paid either because of honesty, as in Erard and Feienstein (1994), or because of civic virtue, which is the intrinsic motivation in Frey (1997). Another possibility is a social norm against tax evasion, strengthened by the perception of fairness of the tax system, as in Falkinger (1995).

However, the first idea of a relationship between individual tax compliance and the tax compliance of the community, dates back at least to the work by Gordon (1989). He stressed that the “psychic cost” of evading taxes is negatively related to the fraction of people that evades taxes, which allows evaders and honest taxpayers to coexist in equilibrium. My empirical analysis follows exactly this line of research.

In a closely related study, Cannari and D’Alessio (2007) analyze the opinions on tax evasions and the propensity to evade by looking at the specific questions of the Survey on Household Income and Wealth (SHIW) administered by the Bank of Italy. They find that self employed, younger and less educated individuals are more prone to evade taxes and that this propensity is positively associated to the crime rate and to the unemployment rate. They also find a generally low aversion to tax evasion, which is part of the reason why evasion is so high in Italy.

3 The Sample

I use all the information published by the website evasori.info. The idea of the creator of the webpage was to quantify the amount of tax evasion in Italy by relying on reports by the individuals that were part of the transactions hidden from the tax authority. In slightly more than 4 years of operation, the site collected more than 70000 reports in 102 of the 106 Italian provinces⁴. The reports include the amount of the transaction, the type of economic activity and the location of the transaction, the latter published in the form of latitude-longitude couples. The website also automatically assigns a progressive number to the report that indicates the exact time at which it was made. This information allows the

⁴There are no reports for Aosta, Olbia, Carbonia and Ogliastra. the Province of Monza, established in 2007, is not covered separately in the website.

administrators to produce two outputs: on the one hand a set of spreadsheets, organized either by economic activity or province, that summarize the total amount of tax evasion; on the other, a set of maps that give an idea of the geographical areas in which tax evasion takes place.

I purged the data from all the consecutive reports that, being exactly equal in all dimensions, clearly concerned the same transaction. This left 5030 usable reports made prior to March 2010, when I started downloading the data. The bulk of the observations refer to 2008, 2009 and 2010, while only less than 3% of them to earlier dates. Since it is difficult to interpret the time variability of the data, I collapsed the time dimension as if all reports were actually made at the same time.

There is a total of 50 economic activities in which the transactions can be categorized. Some of them collect as much as 1000 reports (coffee shops), while others only a few. To make the sample more homogeneous, I aggregated similar activities together, resulting into 22 activities, 2 of which are residuals. Table (1) lists the groups in descending order according to the number of observations and provides summary statistics. The sample includes both activities with small typical transactions, as coffee shops and food shops (with median transactions of, respectively, 5 and 8 euros), and activities with big typical transactions, as lawyers and tax professionals (with median transaction of 1200 euros). Looking at the kind of activities and the respective frequencies of observations, it is clear that the reports are mostly about the everyday transactions and about the economic relationships in which we are more frequently involved. Importantly, since this particular form of tax evasion involves a big number of socio-economic interactions, it should also be very sensitive to the community effect and thus an ideal ground to test the theory. All categories are also characterized by a significantly high standard deviation and by means much bigger than the median, both of which stress the presence of big outlier observations.

Looking at the whole sample, the smallest reported amount is 0.2 euros while the biggest is 10000 euros. Just 80 reported transactions are above 5000 euros, while 490 observations, or 10% of the sample, are above 1000. The upper left panel of Figure (1)

shows the empirical distribution of the evaded sums, estimated with an Epanechnikov Kernel. Clearly there is a big concentration around reports of small amounts and a very small probability mass on big amounts. Another characteristic of the distribution is the presence of peaks corresponding to round numbers, especially above 100 euros. Both of these empirical regularities are also evident in the upper right panel of figure (1), which entails the distribution of the evaded sums conditional on the evasion being less than 1000 euros (4454 observations). This graph excludes both the activities with high transactions values, observed with less frequency, and some of the outlier observations for activities with low transaction value. The lower panels of figure (1) are details of the portion of the distribution with the highest probability density, that also stress the two main properties of the sample. The left panel is the distribution conditional on evasion being less than 100 euros (3022 observations), while the right on being between 1 and 20 euros (included, 1812 observations).

Aggregating the data geographically, it is evident that the provinces with bigger populations are also the ones with the biggest number of reports, with a correlation equal to 0.61. Thus, at least along this dimension, the sample can be considered as representative. One problem is that it is difficult to know if the provinces with small populations and few reports provide information about the transactions that are more frequent in that area. In other words, it is hard to assess if the sample is truly representative of the population of transaction in which taxes are evaded. However, since the correlation between the number of reports per resident in the province and the number of residents is very small, there is some non trivial variability that can identify the empirical relationship. At a regional level, the statistics of the distributions of the evaded sums are very similar, highlighting a substantial homogeneity of the sample. All the regional distributions are also highly volatile and positively skewed as the national distribution.

4 The Community Effect on Tax Evasion

The attitude towards tax evasion of the community in which a business operates is part of the cost of evading taxes: a more lenient attitude fosters tax evasion by making it less costly. One way to look at the experiment of the website *evasori.info* is of a test of this attitude, or, more generically, of “Tax Morale⁵”. A bigger number of reports per capita is indeed an indication of a negative perception of tax evasion, or a “stronger” tax morale, which should be associated to lower tax evasion.

My empirical test of this proposition entails a regression of the log of the evaded sums on tax morale, the latter defined as the log of the number of reports per 100 thousand residents in the province where the transaction was completed. The empirical specification is the following:

$$y_{i k} = \beta_0 + \beta_1 r_i + \gamma X_i + \sum_{k=1}^{\bar{k}} \eta_k D_k + \varepsilon_{i k}$$

where y is the amount of the transaction, r is the number of reports per resident in province i , X are control variables specific to the province i (from the ISTAT database freely available online) and D_k are dummies for the $\bar{k} = 22$ economic activities in which the data are aggregated. This specification is indeed equivalent to a pseudo panel with fixed economic activity effects. Table (2) summarizes the results for different control variables.

In the baseline specification without controls, a 10% higher number of signals per residents is significantly associated to 0.8% smaller evaded sums. At the median value of r , this result implies that 12 more reports per 10 thousands residents predict roughly 1.6% lower evaded sums. The coefficient does not change when controlling for the region GDP, for the province income per capita and for the average monthly family expenditure per capita, which are included to soak up the variability in the monetary value of the transactions that depends on the general volume of all transactions. Similarly, it does not change when controlling for the fraction of self employed individuals, that are in general

⁵Tax morale is, more general, the attitude towards the payment of taxes more than the attitude towards not paying them. I use the term to refer to the latter without ambiguity.

more prone to tax evasion (Pissarides and Weber (1989) and Slemrod (2007)) and thus should have a more lenient attitude towards evasion; or when controlling for the regional fraction of irregular employment, which should also be associated to a more lenient attitude. Even considering the number of reports per resident aged 65 or less, to account for the potential use of the internet, delivers very similar coefficients. Purging the sample from the reports above 1000 euros and above 400 euros provides a similar picture, with coefficients that are, on average, bigger. Even if it is difficult to interpret the time variability in the data, I also tried including year dummies (2010, 2009, 2008 and 2007) in the regression, obtaining almost identical results.

Overall, the data highlight the existence of what I call a “Community Effect” on tax evasion: the cost of evading taxes is lower if the attitude of the individuals with which the tax offender typically does business is more lenient, determining more tax evasion. This effect is indeed specific to the business community, which is geographically identified with the place where the transactions are completed, or the same place where the tax offender is located. Importantly, this effect is different from a community effect specific to the place where the tax offender and the individual that report evasion live. For instance, what matters for a restaurant is the attitude of its customers, which, can report an evaded transaction in the place where the restaurant is located.

Since the sample of evaded sums is severely dispersed, it is legitimate to ask if the community effect is uniform, in its predicted power, across all the transaction sizes. To answer the question, I considered quantile regression as follows:

$$Q_{y_{ik}}(u | r_i X_i D_k) = \beta_0 + \beta_1 r_i + \gamma X_i + \sum_{k=1}^{\bar{k}} \eta_k D_k + \varepsilon_{ik}$$

where u is the quantile of the distribution conditional on covariates. The results are summarized in figure 2, which plots the coefficient on the community effect over the quantile (from the 5th to the 95th), together with a high order polynomial fit. In each regression I included only the control variables X and the dummies D that were statistically significant at the 10% level (details available upon request). Overall, the effect appears to be bigger

for very big and very small transactions sizes, but roughly stable in between. In particular, the coefficient is equal to -1.5 around the 10th percentile, which corresponds to 3 euros, and between -0.9 and 1 above the 90th percentile, which corresponds to 1000 euros.

5 Explaining Tax Morale

A lenient attitude towards tax evasion is associated to lower evaded sums. But what fosters this attitude? I address this question by running regressions of the following form:

$$r_i = \alpha_0 + \alpha_1 z_i^1 + \dots + \alpha_n z_i^n + \epsilon_i$$

where r_i is the number of signals per resident in province i , the community effect, and the z are covariates from the ISTAT database freely available online. The results are summarized in Table (3).

Since the reports of tax evasion are collected on a website, I check if their number is correlated with the diffusion of the internet and the proficiency in its use. The first result is that a bigger percentage of regular internet users in the region where the province is located is significantly associated to more reports. Also the proficiency in the use of internet matters, with medium and high proficiency predicting a higher number of reports over and above the diffusion of internet.

Consistently with the study by Cannari and D'Alessio (2007), I find that a bigger fraction of young population in the province is associated to a lower tax morale. A 1% bigger fraction of individual aged 20-24 or 25-29 is associated to 1.2 more reports per capita. But the coefficients drop significantly once I control for the diffusion of the internet, with the one on the age group 25-29 becoming not significant. I also find that a bigger fraction of individuals aged 30-34, 35-39 and 40-44 is robustly associated to more signals per capita, with or without controlling for the diffusion of the internet. The age groups 35-39 and 40-44 have also a significantly big predictive power, with the R^2 of the univariate regressions being, respectively, 0.19 and 0.16. Higher age groups (45-49 and 50-54) are not significantly

associated to the number of reports once I control for the diffusion of the internet.

Geographically, there is a significantly bigger tax morale in the Center and a significantly smaller tax morale in the South (including the islands), even if this latter effect is not significant once I control for the diffusion of the internet. Provinces located in the Center have, on average, 2.5 more reports per capita than central and northern regions but, controlling for the diffusion of internet, the effect drops to 1.4.

Self employed individuals are, in general, more prone to tax evasion, if anything because the income they earn is more easily hidden. Previous studies by Pissarides and Weber (1989) and Slemrod (2007) also show that, in the US and in the UK, they actually evade taxes more. However, in my sample, self employment in the province does not predict significantly the number of reports per capita.

Contrary to the findings of Cannari and D'Alessio (2007), there is no relationship between the number of reports and the unemployment rate. Individuals with irregular or “Black Market” jobs, earning income under the table, should also foster a more lenient attitude towards evasion. In fact a bigger fraction of irregular labor in the region is significantly associated to a lower number of reports, even if the coefficient in the regression is very small and its predictive power limited. Looking at a breakdown of the irregularity rate by economic activity, it looks like irregularity in the service sector and in the industrial sector matter more than agriculture and construction.

Education also matters. A higher fraction of less educated individuals, whose higher educational achievement is the Italian equivalent of a middle school (8 years), predicts a lower number of reports, even when controlling for the use of the internet (which is strongly negatively correlated with it). However the fraction of highly educated individuals, with the equivalent of a college degree (17-18 years) does not have any predictive power.

The last set of explanatory variables entails crime rates. In fact avoiding the legally prescribed obligation to pay taxes is behaviorally similar, to some extent, to breaking other laws. Thus tax morale should be lower if a greater portion of the population is engaged in other illegal behaviors. However there is no empirical support for this proposition,

since, after controlling for the diffusion of the internet, the number of thefts, robberies and frauds (in the province) are positively associated to the number of reports and the number of extortion, fencing and loansharking episodes are not significant determinants of the number of reports (details about the regression results available upon request).

6 Conclusion

Allowing the people to report the transactions concealed from the tax authority is a way to test their attitude towards tax evasion: only the ones that judge negatively the individuals that fail to issue the receipts will report them. Consequently, the number of reports per capita, in a given geographical area, is an indicator of the general perception of tax evasion. Since a negative perception of tax evasion is equivalent to a bigger cost of evading taxes, a lower number of reports should also be associated to more tax evasion. I showed that the data support this claim.

One possible conclusion and, admittedly a strong one, is that we all bear, as economic agents, some sort of responsibility for the tax evasion that we observe. The behavior of the tax offenders depends, over and above their cultural values and moral beliefs, from a consideration of the costs and benefits of evading taxes. Among other costs, the behavior of all their customers and clients shapes their trade-offs, sometimes in a fundamental way, and it is natural that a less severe attitude will result in a substantial ease of evasion, and thus in more tax evasion. This is the sense of the community, or network, effect: it is much easier to evade taxes if this behavior is not sanctioned by the community, as it is the case with any other law.

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Table 1: Summary Statistics by Economic Activity

Activity	Obs	Median	1 st Qrt	3 rd Qrt	Mean	Std
Coffee Shops	1035	5	2	10	11	26.4
Restaurants	808	47	22.2	109	94	132
Doctors and Dentists	570	140	80	480	593	1250
Food Shops	264	8.2	0.92	100	15.9	23.2
Auto Repair	263	300	35	6000	710	1239
Personal Services	261	20	13	50	51.8	98.9
Lawyers and Tax Professionals	228	1200	500	2725	1865	1887
Prepared Meals and Takeout Shops	213	9.5	5	18	16.5	24.3
Plumbers, Electricians and Contractors	207	41	15	200	232	668
Architects, Engineers and Professionals	204	450	150	1400	1227	1902
Real Estate	127	250	50	1000	1091	1872
Household Products and Computers	126	1000	500	3000	2114	2165
Sport, Leisure and Entertainment	96	72.5	4	1200	269	650
Housing	76	62.5	22	150	133	163
Vacation Rentals	71	500	90	2500	740	655
Nursing and Sanitary Services	64	400	80	3500	795	1195
Open Markets and Peddlers	64	54	30	115	93.1	101
Hotels	63	15	7.5	43	55.1	130
Construction	58	420	49	1500	521	508
Residual (low value)	40	2650	1000	5800	3788	3142
Residual (high value)	136	70	15	190	158	221
	56	56	1475	375	2600	2264

Notes: Summary statistics for the transactions reported on the website evasori.info by aggregated economic categories. All values are in euros. The residual categories are divided in two groups according to the size of the typical transaction.

Table 2: **Explaining Tax Evasion**

	(1)	(2)	(3)	(4)	(5)	(6)
signals	-0.087** (0.039)	-0.099*** (0.035)	-0.085** (0.036)	-0.082** (0.033)	-0.075** (0.034)	-0.084** (0.035)
gdp		0.031 (0.055)				
self emp			0.074 (0.508)			
expenditure				-0.069 (0.232)		
income					-0.148 (0.248)	
irregular						0.019 (0.089)
R^2	0.659	0.659	0.660	0.659	0.660	0.659
obs	5030	5030	5030	5030	5030	5030
activities	22	22	22	22	22	22

Notes: Dependent variable is the log of the amount of the transactions (in euro) on which taxes are evaded, as reported on the website evasori.info. Signals is log of the number of transaction reported in the province per 100 thousands residents. gdp is the log of the gdp of the region where the transaction was reported. Self empl is the log of the fraction of the labor force that is self employed in the province. expenditure is the log of the average monthly family expenditure in the region. Income is the log of the average annual family income in the region. Irregular is the log of the fraction of irregular labor force. All data, except the transactions are from the ISTAT database and freely available online. All regression include 22 dummies that correspond to the economic activities in which the transactions are categorized. Standard errors robust to eteroskedasticity are in brackets. *** significant at the 1% level. ** significant at the 5% level.

Table 3: Explaining Tax Morale

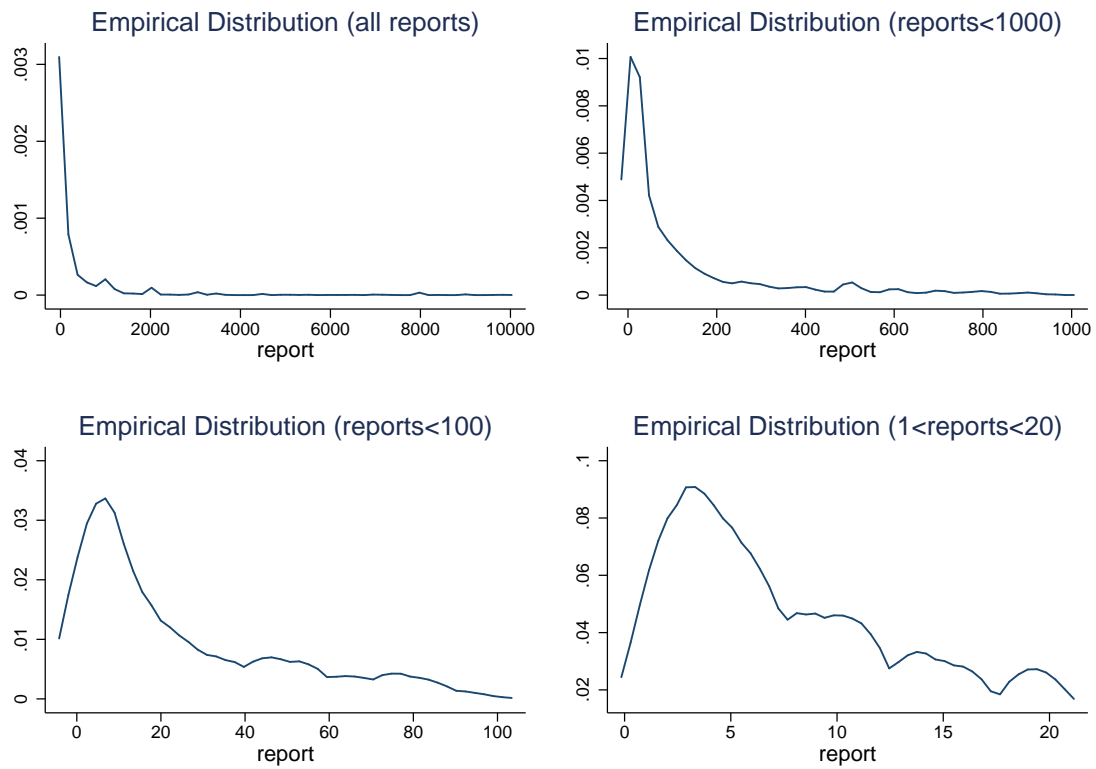
	INTERNET			EDUCATION				GEOGRAPHY						
	low	med	high	laurea	lic media		nord	centro		sud				
coeff	0.093 (0.112)	0.295** (0.137)	0.619** (0.264)	0.048 (0.108)	0.023 (0.103)	-0.292*** (0.060)	-0.235*** (0.083)	-0.148 (0.164)	-0.683 (0.872)	2.506*** (0.930)	1.379* (0.866)	-2.554*** (0.665)	-0.796 (0.801)	
internet	1.151*** (0.329)	1.091*** (0.352)	0.913*** (0.286)	0.826*** (0.282)	1.148*** (0.330)		0.443 (0.415)	1.189*** (0.348)		0.935*** (0.305)		0.983*** (0.402)		
R^2	0.134	0.138	0.160	0.164	0.001	0.134	0.202	0.214	0.004	0.14	0.083	0.154	0.078	0.138

	AGE PROFILE													
	20-24		25-29		30-34		35-39		40-44		45-49		50-54	
coeff	-1.286*** (0.339)	-0.671* (0.357)	-1.224** (0.510)	-0.376 (0.531)	2.685*** (1.058)	2.316** (1.008)	3.864*** (0.991)	3.085*** (0.935)	4.032*** (1.011)	3.127*** (0.924)	3.468** (1.700)	2.350 (1.590)	-0.252 (1.321)	-0.011 (1.421)
internet	0.935*** (0.354)		1.082*** (0.364)		1.067*** (0.281)		0.737*** (0.237)		0.795*** (0.249)		1.073*** (0.289)		1.151*** (0.330)	
R^2	0.081	0.151	0.035	0.137	0.077	0.191	0.193	0.239	0.164	0.219	0.038	0.151	0.003	0.134

	LABOR MKT				IRREGULAR LABOR									
	occup ind		total		agriculture		industry		industry (strict)		construction		services	
coeff	0.036 (0.503)	0.012 (0.122)	-0.233*** (0.057)	-0.112* (0.069)	-0.077 (0.096)	-0.021 (0.092)	-0.131*** (0.032)	-0.061 (0.039)	-0.166*** (0.040)	-0.086** (0.044)	-0.104*** (0.028)	-0.045 (0.032)	-0.328*** (0.081)	-0.169* (0.095)
internet	1.151*** (0.327)		0.867** (0.390)		1.136*** (0.346)		0.934*** (0.376)		0.916*** (0.359)		0.956*** (0.371)		0.802*** (0.386)	
R^2	0.001	0.134	0.09	0.149	0.008	0.134	0.082	0.147	0.087	0.152	0.076	0.145	0.113	0.152

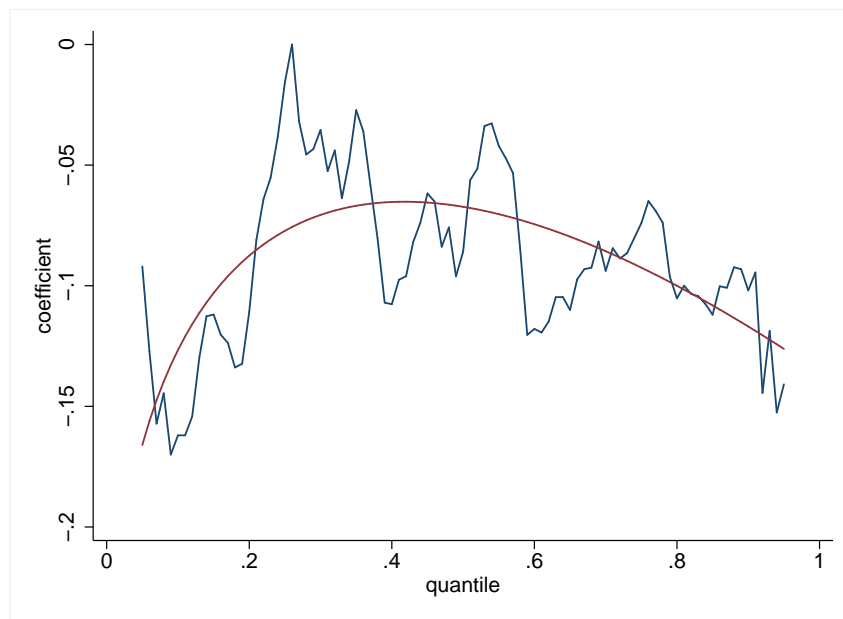
Notes: Coefficient of a regression of the number of reports per resident in the region and the variable indicated in the column. All data are from the ISTAT database (freely available) except the number of reports which is from evasori.info. Robust standard errors in brackets. 102 observations per regression. *** significant at the 1% level. ** significant at the 5% level. * significant at the 10% level.

Figure 1: Empirical Distribution of Reported Transactions



Notes: Empirical distributions of reported transactions from the website evasori.info estimated with an Epanechnikov Kernel. All data are in euros.

Figure 2: **Quantile Profile**



Notes: Coefficient of the quantile regression of the evaded sums on the community effect (and controls) plotted over the quantile (0.05-0.95) and polynomial best fit curve.