

Reciprocity and Willingness to Pay Taxes: Evidence from a Survey Experiment in Latin America

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Abstract

We provide the first experimental attempt at measuring reciprocity in tax collection in developing countries, where enforcement institutions are weaker and tax observance is lower. In a household survey conducted in 17 Latin American cities, we randomly provide respondents with positive or negative information on the local government's administration. IV estimates that exploit the change in perceptions produced by the randomly assigned information suggest that people's perception on the quality of the local government can have sizable effects on their willingness to pay taxes.

Resumen

El documento analiza la reciprocidad en el pago de impuestos en América Latina. La evidencia indica que, frente a mejoras en la calidad del gobierno, los individuos reaccionan a través de una mayor predisposición a pagar impuestos. Se brinda evidencia basada en preguntas condicionales, análisis econométrico y métodos experimentales basados en la asignación aleatoria de

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información factual sobre el funcionamiento del gobierno. Esto sugiere que los gobiernos interesados en reducir la evasión no deben concentrarse sólo en métodos punitivos, sino también en mejorar la calidad de su gestión.

Introduction

Why do people pay taxes? One obvious answer is that there are enforcement mechanism (fines and penalties) established by the State. This deterrence approach to tax compliance has been formally analyzed in the seminal paper by Allingham and Sandmo (1972) where they apply the canonical rational choice model (expected utility maximization) to study this issue obtaining that tax evasion is negatively associated with the probability of detection and the severity of punishment.

However this view has been criticized by various authors (Graetz and Wilde, 1985; Alm et al., 1992; Frey and Feld, 2002) on the account that deterrence only cannot explain the level of tax compliance actually observed in many countries. In other words, as Andreoni et al. (1998) have indicated, the level of detection probabilities and fines are too low to explain the rather low levels of tax evasion observed in developed economies. This has given rise to a growing literature that analyzes the importance of behavioral and cultural aspects in explaining taxpayer behavior (Scholz and Witte, 1989; Alm et al., 1992; Alm et al., 1993; 1999; Pommerehne et al., 1994; Frey 1997, 2003; Frey and Torgler, 2002). These other non deterrence arguments have been grouped under the broad concept of “tax morale”. This concept encompasses moral rules and sentiments of citizens which make them fulfill with their tax obligations, social norms that makes cheating on taxes an undesirable action when the rest of the population is complying, and a sort of reciprocity response of the individual in its relation to the State in the sense that citizens will comply with

their tax obligation when they see that the government also performs well its commitments in terms of delivering services and other public goods.

Though Torgler (2003) and other authors have provided evidence that some of these different determinants associated with tax morale affect positively tax compliance, the empirical relevance of these non-economic reasons have also been disputed. In particular, Fellner et al. (2011) using a field experiment in Austria find that “neither appealing to morals nor imparting information about others’ behavior enhances compliance on aggregate.” Similarly, Kleven et al. (2011) find that, in Denmark, proxies of social and cultural factors (i.e., gender, age, marital status, church membership and place of residence) have a very modest effect on tax behavior; and Slemrod et al. (2001) find that normative appeals to social norms and equity have no effect on tax compliance in Minnesota.

The purpose of this paper is to provide new evidence on the relationship between tax morale and tax compliance. Within the various channels affecting tax morale we emphasize that related to the interaction between the individual and the State/Government. In particular, we analyze the potential reciprocal relationship that could develop between good government performance (in terms of provision of social services and public goods) and citizens’ willingness to pay taxes. We analyze the importance of reciprocity in Latin American countries, a region where tax evasion is significantly larger compared to the US or Western Europe. This fact, already signaling a poor government performance, could make the empirical investigation of the reciprocity hypothesis more interesting compared to countries whether taxation and governmental institutions work reasonably well as is the case of developed economies.

We use microdata coming from the CAF survey (CAF 2011) covering 17 cities in Latin America. Our empirical methods include the analysis of conditional questions where the connection between

government performance and willingness to pay taxes is made explicit, simple OLS regressions between perceptions about service delivery and attitude toward taxation and finally, and more important, experimental-type exercises where we correlated randomized assignment of information about how the government is doing with individuals' intention to pay taxes. This variation in the empirical methods allow us to gauge the robustness of the results and, when we use the experimental data, to evaluate a causal relationship going from changes in perceptions about government performance to willingness to pay taxes.

Beyond a purely academic interest, the topic is informative for policymakers. Finding that taxpayers behave in a reciprocal manner suggests that governments interested in increasing tax revenues should not only focus on escalating the coercive power of the state (i.e., more audits and fines) but also on providing better services to society.

The paper is organized as follows: The next section offers a short conceptual discussion of the determinants of tax morale and how the concept is related to the reciprocity hypothesis. In section three we describe the data and test for the presence of reciprocity using conditional questions wherein respondents express their willingness to pay more (or less) taxes if the government improves its performance. We explore whether Latin Americans are more likely to respond in a reciprocal manner to improvements in institutional aspects (such as more transparency and less corruption) or in the provision of services (such as health and education). Section four presents OLS estimates of the relation between an overall measure of government performance and four different measures of willingness to pay taxes (or pass over easy opportunities of tax evasion). The fifth section exploits an exogenous change in perception of government performance and computes instrumental variable estimates of the effect of changes in these perceptions on willingness to pay taxes; finally, section six concludes.

Tax morale and reciprocity

“Tax morale” usually means the self reported citizen’s perception that paying taxes is the right thing to do. In this section we distinguish two concepts that are usually bundled under the broad concept of tax morale: reciprocity towards the government and conditional cooperation.

People’s perception that paying taxes is the right thing to do is related with the idea that the State has some social value, so it is a citizen’s obligation to contribute to its financing. In the case of a tyrannical State that exploits its citizens without providing any services whatsoever the notion of tax morale would lose its ethical and political meaning. When seen from this point of view, the concept of tax morale is then closely related to the idea of reciprocal behavior from the individual towards the State. That is, according to the “reciprocity towards the government” hypothesis, people are more likely to pay taxes when they perceive the government is doing a better job. Notice that reciprocity implies a deviation from purely self-interested behavior: it “means that in response to friendly actions, people are frequently much nicer and much more cooperative than predicted by the self-interested model” (Fehr and Gächter, 2000). In the case of taxes one could say that the individual would be willing to pay more taxes to the extent that the use of these resources by the State is beneficial for him and for society as a whole. The departure from self-interested behavior is clear, since the individual’s contribution to the government’s budget is negligible and thus cannot expect to make a difference in the amount of goods and services received. Thus, reciprocal behavior is altruistic, but conditional on receiving satisfactory goods and services from the State.

Having argued that tax morale is very closely related to the concept of reciprocity towards the government, it is also worth mentioning that reciprocity has also been related to the notion of social norms or “societal institutions” (Bird et al., 2004) whereby the individual’s willingness to

evade/pay taxes in part also depends on whether he perceives other society members comply with their tax obligations or not (Frey and Torgler, 2007). This may also be interpreted as reciprocal behavior towards “the fellow citizen” instead of towards the government. Another way to see this other dimension of tax morale is as a coordination problem, where even though people realize that their individual contribution to the State makes no difference in terms of overall government income and service delivery, if most people don’t comply with taxes, government performance will be negatively affected, and if everyone complies, performance will improve. In this interpretation a high level of tax morale implicitly means a decision of most individuals to cooperate in the tax/expenditure game of financing the State. Given this other possible interpretation of tax morale, which is complementary to reciprocity towards the government, in the estimations we present below we include a social norm variable as a control in all regressions.²

Finally, there may be other reasons beyond reciprocity and conditional cooperation that explain why people think paying taxes is the right thing to do. This may be related to deep moral judgment or values that are induced by religious beliefs or educational background, and that are unconditional on the behavior of other people or institutions. Given that it could be difficult to capture all these other dimensions, in the OLS and experimental exercises we are going to include directly the usual measure of tax morale: whether people think tax evasion is morally never justifiable.

Evidence based on conditional questions

² In equation 1 of section 4 we use the individual perception of overall evasion in the country/city as the social norm variable.

The data used in this paper comes from a household survey of 17 cities in Latin America that samples 600 households per city (making it representative at the city level), totaling 10,200 observations (CAF, 2011).³ Survey respondents are individuals between 25 and 65 years of age regardless of their occupational status. The survey has been undertaken yearly since 2008 and in 2011 included a module on taxes and perceptions about government quality. Table A1 in the Appendix shows descriptive statistics. The surveyed population is on average 42 years old, has 2.1 children and lives in a household with 4.1 persons, 65 percent are married or live with their partner, 42 percent did not complete high school, one third lean to the right ideologically, and overall are not very satisfied with democracy (5.4 out of a possible score of 10).

We begin analyzing the relationship between government performance and willingness to pay taxes using conditional questions. We ask people whether they are willing to pay less, the same or more taxes if the government improves its performance among several dimensions. We explore six different measures of performance: Government corruption, transparency, tax collection, quality of public health and education services, crime and social assistance (the exact wording is, for example, “If the government were to improve *health and education services*, would you be willing to pay more, the same or less taxes than you do presently?”). A plausible measure of reciprocity in this setting is the share of the population that is willing to pay more minus the share that is willing to pay less tax as a reaction to an improvement in government performance.

The majority of the population (54 percent) reports that they are willing to pay the same amount of tax regardless of improvements in government performance, as shown in Table 1.⁴ The rest of the population is generally more likely to report a willingness to pay more taxes under hypothetical situations of improved government quality. There is a statistically significant net

³ The surveyed cities are Buenos Aires, Córdoba, La Paz, Santa Cruz, Sao Paulo, Rio de Janeiro, Bogotá, Medellín, Quito, Guayaquil, Lima, Arequipa, Caracas, Maracaibo, Montevideo, Salto and Panama City.

⁴ This percentage is a simple average across measures of government performance.

share of the population that is willing to pay more taxes in all of the six subjects analyzed. The magnitude of the coefficients is often small, ranging between 9 and 12 percent of the population. On average, Latin Americans declare themselves just as likely to reciprocate when the government improves the quality of services (i.e., social assistance, protection against crime, and health and education) as when there are improvements in procedural or institutional aspects such as transparency, corruption and tax collection effectiveness.⁵

Table 1

A potential criticism to this evidence is that using conditional questions could generate a social desirability bias.⁶ People –who have a tendency to want to be accepted by others- could think that responding “pay more taxes” is the socially desirable answer to an improvement in government performance, leading to an overestimation of reciprocity. Therefore, we explore other methods to test for the presence of reciprocity.

Econometric evidence

According to the reciprocity hypothesis, people are willing to pay more taxes (or pass over easy opportunities of tax evasion) if they think that the government would use the money to improve the welfare of the population. We test for the presence of reciprocity conditional on tax morale and perceptions of tax evasion using the following model:

$$Y_i = \beta \text{Govt. performance}_i + \pi \text{Perception of tax compliance}_i + \theta \text{Tax morale}_i + X_i \delta + e_i \quad (1)$$

⁵ The coefficients are larger for male and for younger cohorts, although differences are small. People who have a left-leaning ideology (defined as those who consider that the priority of the government is to reduce poverty, inequality and provide free and universal access to health and education) are more likely to have reciprocity in all aspects except in exchange for reductions on crime. (Results are not shown in the text, available upon request).

⁶ See Demaio (1984) for a review of social desirability bias.

Where Y_i is a measure of the willingness to pay taxes of individual i . We use four alternative measures of willingness to pay taxes. First, we ask people whether they are willing to pay a small increase in two local taxes: housing and vehicle; and create two indicators (*Housing tax* and *Vehicle tax*) which take a value equal to 1 if the individual answers positively and 0 if negatively. Only 9 percent of the sample is willing to pay a small increase in housing taxes and 6 percent is willing to pay a small increase in automobile taxes. Third, we ask whether they consider that the amount they pay for local services (i.e., water, electricity, street lighting and garbage collection) is too low or too high using an ordinal scale from 1 to 5 (*Local taxes too high*). Finally, we present a hypothetical situation and ask what they would do if the owner of a shop offers them a 10 percent discount in exchange for not providing a receipt. We then create the variable *Tax evasion* which is an indicator that takes a value equal to 1 if the individual responds that he would accept the deal and 0 otherwise. Almost 40 percent of the sample said that they would accept the deal.

We create a measure of local *Government performance* asking people to express their level of agreement with the following statement: “The taxes that are collected in your city are used to finance public policies aimed at improving the welfare of the population”. They could choose between a value of 1 (meaning that they totally disagree with the statement) and a value of 10 (meaning that they totally agree with the statement). The sample mean is 4.9 with almost half of the sample choosing a value between 4 and 6, but a non-negligible share took extreme positions (i.e., 12.8 percent expressed a total disagreement and 5.9 percent total agreement with the statement). Contrary to the evidence presented in the previous sections –where we use issue-specific measures of government performance – here we use an overall measure.⁷ According to

⁷ Table A2 in the appendix presents estimates of the effects of subject specific measures of government performance on willingness to pay taxes. We analyze three areas: Satisfaction with the garbage collection service, with electricity services and with water services. We find that 5 out of the 12 coefficients (i.e., three measures of performance and four measures of willingness to pay taxes) have the expected sign and are statistically significant; the other 7 coefficients are not significant

the reciprocity hypothesis, people are willing to pay more taxes (or pass over easy opportunities of tax evasion) if they think that the government uses the money to improve the welfare of the population.

An individual's willingness to pay taxes could also be influenced by her perception of the compliance of others (Frey and Torgler, 2007). That is, according to the conditional cooperation hypothesis, people who think that fewer of their fellow citizens evade taxes are more willing to pay or to pass over easy opportunities of evasion. To test this hypothesis we use a variable (*Perception of tax compliance*) that ranges between 1 and 10, adopting a value equal to 1 if the individual thinks that none of her fellow citizens fully comply with taxes and 10 if she thinks that all fully comply.

We also explore the importance of a narrow definition of tax morale which, contrary to the previous two hypotheses, is an unconditional concept. An individual has tax morale if she thinks it is right to pay taxes regardless of how the government uses the money and regardless of the tax behavior of others. Several studies argue that tax morale affects compliance (Alm, et al. 1992; Frey 2003; Lewis, 1982; Torgler, 2001), although the term has been used vaguely sometimes. We measure *Tax morale* as a binary variable based on the following question "Do you think it is morally justifiable to evade taxes?" (1 if totally unjustifiable, 0 otherwise).⁸ Finally, in X we include a set of controls (i.e., age, sex, educational attainment, employment status, nationality, ideology, and wealth of the individual).⁹

⁸ As it was discussed in section 2, Frey and Torgler (2007) analyze the determinants of tax morale, and find that it is positively and statistically significantly correlated with both government performance and perceptions of others' tax compliance. Based on this finding we may tend to conclude that tax morale should not be included as a separate regressor because it is actually caused by the other two factors. But those two variables explain very little of the variation in tax morale (pseudo R2 below 0.05 in Frey and Torgler (2007) and below 0.01 in our sample).

⁹ Wealth is an ordinal variable that can take five values based on whether the person owns his/her dwelling, the type of house (i.e., free standing, apartment, shack), and the building materials.

Panel A in Table 2 presents the results for the four measures of willingness to pay taxes. In columns 1, 4, 7 and 10 we only include our main explanatory variable (i.e., local *Government performance*) and city fixed effects. In columns 2, 5, 8 and 11 we add *Tax morale* and *Perception of tax compliance*; and in columns 3, 6, 9 and 12 we include the full set of controls. We only report the marginal effects for the three variables used to test reciprocity, conditional cooperation and tax morale. Columns 1 to 9 use a probit model and the rest of the columns an ordered probit model.

Table 2

There is a positive and statistically significant correlation between government performance and all measures of willingness to pay taxes. An increase from 5 to 6 in the perception of government performance is correlated with a 0.6 percentage point increase in the willingness to pay a small increase in property taxes, a 0.4 percentage point increase in the willingness to pay more vehicle taxes, and a 0.6 percentage point reduction in tax evasion.¹⁰ This evidence supports the reciprocity hypothesis. People in Latin America appear to be more willing to pay more taxes when they think that the government uses the money to improve the welfare of the population.

We find, on the other hand, weaker support for the conditional cooperation and tax morale hypotheses. The variables *Tax morale* and *Perception of compliance* are significantly correlated with only one of the four measures of willingness to pay taxes (i.e., people with more tax morale are less likely to evade taxes, and people who consider that their fellow citizens tend to comply are less likely to report paying too much taxes).

¹⁰ When the sample is restricted to the population that owns a house (vehicle), the correlation between government performance and willingness to pay a small increase in housing (vehicle) taxes is positive, statistically significant and larger compared to the coefficients in Table 2. Results are available upon request.

Experimental evidence

We asked respondents to choose one out of three identical envelopes. One of the envelopes included real positive achievements of the local government, another included negative facts, and the third envelope was empty (see Appendix B for the positive note used in Rio de Janeiro and the negative note used in Bogotá).¹¹ After the respondent read the letter, we asked for her opinion about the performance of the local government and her willingness to pay taxes. The objective of this randomized experiment is to produce some exogenous variation in people's perception about government performance, and then exploit it to estimate its effect on willingness to pay taxes.

Table 3 presents the characteristics of individuals in the three groups.

There are no significant differences in any of the traits (i.e., age, sex, nationality, education, wealth, ideology). The only significant difference is that individuals who received an envelope with negative facts about the performance of the government subsequently report a worse opinion about the government, as intended. The difference is small (0.24 points in a ten-scale index) but statistically significant at the 0.001 level. The positive letter, however, did not have the intended effect of improving people's perception about government performance.

Table 3

Panel B in Table 2 presents the results of the first-stage regressions. We find that the instrument (which takes a value equal to 1 if the individual received positive news, -1 if negative news, and 0 if an empty envelope) is statistically positively related to the public's perception of the government, and the result is robust to inclusion of city fixed effects, measures of tax morale, perceptions of compliance, and the full set of individual socioeconomic characteristics.

¹¹ Except in Guayaquil where no empty envelopes were included.

Panel C in Table 2 presents estimates of a causal effect of government performance on willingness to pay taxes exploiting the change in perceptions produced by the randomly assigned letters. We find that an improvement in individuals' perception about the performance of the government leads to less tax evasion. The size of the effect is substantial: the marginal effect is -0.08 and the implied elasticity is -1.5, implying that if perceived government performance increases by 10 percent, the fraction of people willing to pass over an easy opportunity for tax evasion increases by 15 percent. That is, an increase in the perception of government quality from its average of 5 to 6 would reduce average tax evasion from 0.34 to 0.24.

Evidence based on real cases also suggests reciprocity is relevant in Latin America, and that crucially depends on the amount of the contribution. Antanas Mockus, a university professor elected and reelected as Mayor of Bogota in the late 1990's and early 2000's, called for a voluntary contribution of 10 percent of each person's local tax dues pleading support for his policies of social inclusion and progress. In 2002 these voluntary contributions amounted to 0.51 percent of total receipts, which, while not of game-changing magnitudes, suggests a willingness to contribute to a well regarded local administration.

Conclusion

To our knowledge, this paper is the first to investigate issues of reciprocity in an experimental setting in developing economies. Previous studies, by focusing on countries such as Denmark, Austria or the United States, have been carried out in contexts of very high tax compliance and where there is little room for increasing tax observance through moral suasion or other channels such as an improved perception of the quality of government. In developing countries enforcement institutions are weak and compliance is generally low, so there may be more

opportunities for increasing tax collection through channels that are complementary to traditional enforcement mechanisms. Experimental research in this area is important because cross-country correlations could have endogeneity and omitted variables bias and can therefore be misleading.

Our simple survey experiment conducted in Latin America, by reading a brief piece of factual information to respondents that could reflect positively or negatively on the local government was able to generate a small but statistically significant change in perceptions. The IV estimates suggest the presence of reciprocity and of a fairly sizable magnitude. These results are consistent with the evidence based on conditional questions and OLS regressions, which suggest that about 10 percent of Latin Americans are willing to pay more taxes in exchange for improvements in government performance.

Our findings suggest that reciprocity towards governments can be a significant source of improvement in tax collection in developing countries, where often tax rates and compliance are low. Other studies suggest that Latin American governments need to increase tax collection of the personal income tax. Increasing audits and fines, which are presumably the most effective tools to increase tax collection, are not politically attractive tools for democratic governments. This paper shows that improving government performance can be an effective (albeit limited) tool to raise revenues without alienating voters, although this research does not advocate for simple positive publicity campaigns as a strategy for increasing tax collection.

Table 1 – Willingness to pay taxes if the government improves performance

Government improvement	More taxes (1)	Same (2)	Less taxes (3)	Difference (1)-(3)
Less corruption	29.93	51.72	18.35	11.58***
More transparency	27.90	55.72	16.38	11.52***
Less tax evasion	25.22	59.55	15.23	9.99***
Better social assistance	27.45	54.34	18.21	9.24***
Better health & education	30.88	49.61	19.51	11.37***
Less crime	29.28	52.86	17.86	11.42***
Simple average	28.44	53.97	17.59	10.85

Note: Table reports the fraction of the population that is willing to pay more, the same, or less taxes in response to improvements in government performance. The last column is the net share of respondents willing to pay more minus the fraction that responds they would pay less. Statistically significantly different than zero at 99% (***) level of confidence

Table 2 - Effects of government performance, tax morale and perceptions of compliance on individual's willingness to pay taxes

	Tax Evasion			Willingness to pay small increase Housing tax			Willingness to pay small increase Vehicle tax			Local taxes are too high		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Panel A: OLS estimates												
Government performance	-0.004 (0.003)	-0.006 (0.004)	-0.006* (0.004)	0.006*** (0.002)	0.006*** (0.002)	0.006*** (0.002)	0.003*** (0.001)	0.004*** (0.001)	0.004*** (0.001)	-0.008*** (0.003)	-0.008*** (0.003)	- 0.008*** (0.003)
Tax morale	-	-0.167** (0.018)	-0.163** (0.018)	-	0.007 (0.009)	0.004 (0.009)	-	0.008 (0.007)	0.005 (0.007)	-	0.006 (0.014)	0.010 (0.014)
Perception of compliance	-	-0.004 (0.004)	-0.004 (0.004)	-	-0.002 (0.002)	-0.002 (0.002)	-	-0.001 (0.001)	-0.001 (0.001)	-	-0.010*** (0.003)	- 0.010*** (0.003)
Panel B: First stage. Dependent variable is Government performance												
Letter	0.201*** (0.060)	0.210*** (0.060)	0.207*** (0.060)	0.200*** (0.058)	0.204*** (0.058)	0.204*** (0.058)	0.206*** (0.059)	0.217*** (0.058)	0.216*** (0.059)	0.198*** (0.057)	0.207*** (0.057)	0.206*** (0.057)
F-statistic	11.18	12.21	11.88	12.03	12.58	12.43	12.30	13.81	13.63	11.96	13.05	12.89
Panel C: IV estimates												
Government performance	-0.083*** (0.022)	-0.080*** (0.025)	-0.080*** (0.026)	0.005 (0.027)	0.008 (0.028)	0.009 (0.028)	-0.008 (0.025)	0.001 (0.023)	0.001 (0.022)	-0.141 (0.109)	-0.089 (0.098)	-0.085 (0.098)
Controls	No	No	Yes	No	No	Yes	No	No	Yes	No	No	Yes
Observations	9.023	8.540	8.525	9.695	9.153	9.137	9.460	8.936	8.920	9.805	9.252	9.237

Note: Table reports marginal effects and the robust standard errors (in parentheses). A probit model is used in all columns except 10 to 12 where an ordered probit model is used. The marginal effects in columns 10 to 12 are computed for the highest value of the dependent variable. All models include city fixed effects. Statistically significantly different than zero at 99% (***) , 95% (**) , 90% (*) level of confidence.

Table 3 – Randomization checks

	Positive letter group	No letter group	Negative letter group	Difference	Difference std. error	Difference	Difference std. error
	(1)	(2)	(3)	(1)-(2)	(1)-(2)	(3)-(2)	(3)-(2)
Age	42.15	42.08	41.54	0.07	(0.33)	-0.54	(0.33)
Male (%)	48.07	48.99	48.27	-0.92	(1.41)	-0.71	(1.39)
Native (%)	97.48	98.19	97.65	-0.71	(0.41)	-0.54	(0.40)
High school dropout (%)	42.63	42.84	40.60	-0.22	(1.40)	-2.24	(1.37)
Right ideology (%)	40.67	40.42	40.93	0.24	(1.39)	0.51	(1.37)
Owns good quality house (%)	38.89	39.41	39.29	-0.51	(1.38)	-0.12	(1.36)
Employed (%)	67.91	66.64	68.29	1.27	(1.32)	1.65	(1.30)
Government performance	5.429	5.382	5.138	0.047	(0.071)	-0.244***	(0.071)
Observations	2.823	2.266	2.983	5.089		5.249	

Note: Table reports the characteristics of the population that received a positive letter, no letter and negative letter. Statistically significantly different than zero at 99% (***) level of confidence

Appendix Table A1 – Descriptive statistics. CAF 2011 Survey

Variable	Obs.	Mean	Std. Dev.	Min.	Max.
Age	10,200	41.94	11.24	25	65
Sex (male=1)	10,200	0.47	0.50	0	1
Married or cohabitating	10,200	0.65	0.48	0	1
No. children	10,183	2.07	1.72	0	13
No. HH members	10,196	4.10	2.02	1	27
Immigrant (native=1)	10,200	0.98	0.13	0	1
High school dropout	10,181	0.42	0.49	0	1
Right-leaning ideology	10,200	0.34	0.47	0	1
Satisfaction with democracy	9,781	5.37	2.61	1	10

Note: Right-leaning ideology is equal to 1 if respondent states as the government's top responsibility one of the following four options: to 'preserve law and order', to 'promote private investment', to 'protect private property' or to 'protect freedom of speech'. Satisfaction with democracy is measured on a scale of 1 to 10.

Appendix Table A2 – Effects of Satisfaction with Public Services on Willingness to pay Taxes

	Tax Evasion	Willingness to pay small increase housing taxes	Willingness to pay small increase Vehicle tax	Local taxes are too high
Satisfaction with electricity services	0.002 (0.004)	0.003 (0.002)	0.003** (0.001)	-0.022*** (0.003)
Satisfaction with garbage collection	-0.007* (0.004)	-0.001 (0.002)	0.002 (0.001)	-0.003 (0.003)
Satisfaction with water services	0.003 (0.004)	0.005*** (0.002)	0.002 (0.002)	-0.017*** (0.003)

Note: Table reports the 12 coefficients obtained by regressing each of the four measures of willingness to pay taxes on three measures of satisfaction with public services (i.e., electricity, garbage collection and water). All regressions include the full set of controls as in table 2, except that the variable *Government performance* is replaced by a measure of satisfaction with public services. The satisfaction variables are in a 10 point scale based on questions such as: “Are you satisfied with the electric power service that you receive?” (1 not satisfied at all, and 10 completely satisfied).

Appendix B

The positive information note given in Rio de Janeiro

“Given the new National Policy on Solid Waste, approved in December of 2010, the Mayor Eduardo Paes launched the ‘Programa Ampliado de Coleta Seletiva’ with the goal of guaranteeing the implementation of a system of selective collection of domestic solid waste in Rio de Janeiro by 2013. The investment, of 50 Million Reais, will be used to construct six centers for the selection of solid waste in the center, north and west sides of the city. Also, the plan is to increase the number of serviced streets and the number of operational trucks, which will allow a reduced flow of waste to the dump yards. This program will turn Rio de Janeiro in the first Brazilian city capable of recycling domestic waste.” (Source: <http://www.rio.rj.gov.br/web/guest/exibeconteudo?article-id=1650152>)

The negative information note given in Bogotá

“According to local police authorities, every 24 hours there is a case of robbery against bank clients in Bogotá. Since 2009, 22 people have been killed as a consequence of this felony, the last one being a student of the faculty of medicine, who was withdrawing money from a bank in the south side of the city. In the years 2009 and 2010 the number of cases was over 370, and it will likely be even higher this year, where the number has already reached 85.” (Source: El Tiempo, March 12, 2011)

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