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RECIPROCITY AND WILLINGNESS TO PAY TAXES: EVIDENCE FROM A SURVEY EXPERIMENT IN LATIN AMERICA

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RECIPROCIDAD Y VOLUNTAD DE PAGAR IMPUESTOS: EVIDENCIA DE UN
EXPERIMENTO DE ENCUESTAS EN AMERICA LATINA

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RESUMEN

Este artículo ofrece el primer intento experimental de medir la reciprocidad en la recolección de impuestos en los países en vías de desarrollo, donde las instituciones de recaudación son débiles, y donde las tasas de impuesto y en general el cumplimiento de las obligaciones tributarias es bajo. En una encuesta de hogares llevada a cabo en 17 ciudades de América Latina, se le entregó aleatoriamente a los encuestados información positiva o negativa sobre las administraciones de los gobiernos locales; esta información alteró significativamente las percepciones sobre la calidad del gobierno local en dos ciudades, y se encuentra que en Rio de Janeiro – donde un grado relativamente alto de autonomía permite a los ciudadanos establecer una clara conexión entre los impuestos y la provisión de servicios públicos- la percepción de los ciudadanos sobre la calidad del gobierno local puede tener efectos importantes sobre su disposición a pagar impuestos.

Palabras clave: evasión, reciprocidad, moral tributaria, América Latina

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 weak, and where tax rates and in general tax observance is lower. In a household survey carried out in 17 Latin American cities, we randomly provide respondents with positively or negatively information on the local Government's administration; this information significantly altered perceptions on the quality of the local government in two cities, and we find that in Rio de Janeiro -where a relative high degree of tax autonomy allows citizens to make a clear link between taxes and the provision of public services- people's perception on the quality of the local government can have sizable effects on their willingness to pay taxes.

Keywords: Evasion, Reciprocity, Tax Morale, Latin America

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Reciprocity and Willingness to Pay Taxes:
Evidence from a Survey Experiment in Latin America¹

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Abstract

We provide the first experimental attempt at measuring reciprocity in tax collection in developing countries, where enforcement institutions are weak, and where tax rates and in general tax observance is lower. In a household survey carried out in 17 Latin American cities, we randomly provide respondents with positively or negatively information on the local Government's administration; this information significantly altered perceptions on the quality of the local government in two cities, and we find that in Rio de Janeiro -where a relative high degree of tax autonomy allows citizens to make a clear link between taxes and the provision of public services- people's perception on the quality of the local government can have sizable effects on their willingness to pay taxes.

Keywords: Evasion, Reciprocity, Tax Morale, Latin America

JEL Codes:

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1 – Introduction

Why do people pay taxes? One obvious answer is that there are enforcement mechanisms (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, Erard and Feinstein (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, Sausgruber and Traxler (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

Blumenthal, Christian and Slemrod (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 where 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 the 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.

2. 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.

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

3 – Evidence based on conditional questions

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. In the Appendix, Table A1 shows descriptive statistics on the sampled population in each city. With some differences between cities, the surveyed population is on average 41.7 years old, has 2.2 children and lives in a household with 4.4 persons, over 65% are married or live with their partner, one third lean to the right ideologically, and overall are not very satisfied with democracy (5.7 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 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 (56 percent) reports that they are willing to pay the same amount of tax regardless of improvements in government performance.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, but there is large heterogeneity across cities and measures of government performance, as is shown in table 1. Taking the region as a whole, there is a statistically significant net share of the population that is

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 an average across cities and measures of government performance.

willing to pay more taxes in all of the six subjects analyzed (less tax evasion is one aspect where there is some disagreement within several cities).⁵ The magnitude of the coefficients is often small, ranging between 9 and 12 percent of the population on average, but some coefficients are large, such as the net share willing to increase tax payments in the event of an improvement in health and education in Lima, La Paz, Bogota and Salto which ranges from 30 to 40%. 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 particularly health and education – columns 4 through 6) as when there are improvements in procedural or institutional aspects such as transparency, corruption and tax collection effectiveness (columns 1 through 3), although in Sao Pablo and specially in Rio de Janeiro households seem to be willing to contribute more in the case of improvements in institutions while in the other cities we usually find the opposite. The average across measures of performance is positive in 13 out of the 17 cities. Interestingly, although the average is negative in Medellin, Guayaquil and Maracaibo, it is positive in Bogotá, Quito and Caracas suggesting heterogeneity within countries.⁶

<<Table 1>>

A potential criticism to this evidence is that using conditional questions could generate a social desirability bias.⁷ 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. The magnitude of the above coefficients suggests this bias may not be very

⁵ This question merits two comments: First, a large fraction of the respondents presumably evade taxes since the sample is representative of the population and tax compliance is low in Latin America. It is not surprising that tax evaders would not be willing to pay more tax if the government reduces evasion. Second, for those who comply with their tax obligations it is unclear whether they interpret the reduction in evasion as an improvement in government performance or as more cooperation from their fellow citizens. In the next section we distinguish the “reciprocity towards the government” hypothesis from the “conditional cooperation” hypothesis.

⁶ 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).

⁷ See Demaio (1984) for a review of social desirability bias.

important, but it is impossible to rule it out. We therefore move to other methods to test for the presence of reciprocity.

4 – 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:

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

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 12 percent of the sample is willing to pay a small increase in housing taxes (ranging from 35 percent in Maracaibo to 4 percent in Sao Pablo) and 8 percent is willing to pay a small increase in automobile taxes (ranging from 23 percent in Maracaibo to 1 percent in Córdoba). 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, ranging from 23 percent in Bogotá to 61 percent in La Paz.

We create a measure of *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 5.3 with almost half of the sample choosing a value of 5 or 6, but a non-negligible share took extreme positions (i.e., 9.6 percent expressed a total disagreement and 7.5 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.⁸ 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 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, McClelland and Schulze, 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).⁹

⁸ In Appendix Table A2 we present OLS estimates of the effects of subject specific measures of government performance on willingness to pay taxes. We analyze four areas: Satisfaction with the garbage collection service, with electricity services, with water services and with public transportation. We find that 6 out of the 16 coefficients (i.e., four measures of performance and four measures of willingness to pay taxes) have the expected sign and are statistically significant; the other 10 coefficients are not significant.

⁹ 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).

Finally in **X** we include a set of controls (i.e., age, sex, educational attainment, employment status, nationality, ideology, and wealth of the individual).¹⁰

Table 2 presents the results for several measures of willingness to pay taxes. The first column uses the whole sample and the remaining columns restrict the sample by city. In panel A the dependent variable is willingness to pay more *Housing tax*, in panel B it is willingness to pay more *Vehicle tax*, in panel C it is whether the individual thinks that *Local taxes are too high*, and in panel D it is *Tax evasion*. All models include the full set of controls and column 1 also includes city fixed effects and weights by the city's population. We only report the marginal effects for the three variables used to test reciprocity, conditional cooperation and tax morale. Panel C uses an ordered probit model and the rest of the panels a probit model.

<<Table 2>>

Using the whole sample, there is a positive and statistically significant correlation between government performance and willingness to pay taxes in panels A and B and a correlation of the expected sign in panels C and D (column 1). 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, and a 0.4 percentage point increase in the willingness to pay more vehicle taxes. Tax morale and perception of evasion are significantly correlated with willingness to pay taxes in one panel (panels D and C respectively).¹¹

The city level coefficients are more imprecise due to lower statistical power (because of missing values in some of the analyzed variables, the number of observations per city ranges between 490 in Buenos Aires to 587 in Quito). Out of the 68 city-level coefficients estimated for each explanatory variable, we find support (that is, a statistically significant coefficient with the expected sign) for the reciprocity hypothesis in 24 cases, for tax morale in 25 cases, and for the conditional cooperation hypothesis in only 14 cases. There is, as in table 1, a large heterogeneity across cities.

¹⁰ 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.

¹¹ The unweighted estimates are statistically significant and with the expected sign in all panels for government performance, in panel C for perception of tax compliance, and in panel B and D for tax morale.

5 – 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).¹² 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>>

Because the letters refer to the performance of the local administration, we proceed to compute instrumental variable estimates at the city level using the letter as the instrument. Table 4 presents the results of the first-stage regressions for each city and for all cities pooled together. 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 in four cities: Cordoba (Argentina), Rio de Janeiro (Brazil), Bogota (Colombia) and Salto (Uruguay). However, only in Cordoba and Rio de Janeiro the relationship is sufficiently strong (i.e., F-statistic above 10 in the first stage) in order to be a valid instrument. In these two cities

¹² Except in Guayaquil where no empty envelopes were included.

the difference between the positive and negative letters produced a change in perceptions of 0.49 and 0.68 on the 10-point scale respectively. Therefore, we compute IV estimates only for these two jurisdictions.

<<Table 4>>

Table 5 presents the coefficients from probit and ordered probit models including the same covariates as in table 2. In Cordoba, a city where the level of reciprocity is below the regional average according to the analysis based on conditional questions (table 1) and where none of the OLS estimates are significant (table 2), we do not find support for reciprocal behavior in any of the four measures of willingness to pay taxes. In Rio de Janeiro, where reciprocity appears to be above the regional average and some of the OLS coefficients are significant, we find support in two cases: tax evasion and vehicle taxes. The size of the effect is substantial, as the implied elasticities reported in the table show: if perceived government performance increases by 10 percent, the fraction of people willing to pass over an easy opportunity for tax evasion decreases by 12.6 percent, and the fraction of people willing to pay a slightly higher vehicle tax increases by 19.7 percent as well. That is, an increase in the average perception of government quality from its average of 5.3 to 6.3, would reduce average tax evasion from 0.41 to 0.31 and increase willingness to pay a small increase in vehicle taxes from 0.02 to 0.03 of the population.

<<Table 5>>

Out of the 16 cities where the survey experiment was effectively implemented, we were able to generate a change in perceptions about the local government that was sufficiently large, as indicated by the value of the F-Statistic, in only two (Cordoba and Rio de Janeiro), and of those two, only in Rio de Janeiro does there seem to be significant levels of reciprocity in tax evasion and vehicle taxes. Why might we expect a different level of reciprocity towards the local government between these two cities? One can argue that only when governments have enough tax and expenditure autonomy can the citizens make a link between tax and expenditure decisions. In the cases of Argentina and Brazil, though both countries have a high degree of fiscal decentralization, only in Brazil states and local governments have a high degree of tax autonomy. Thus for Brazilian

cities we expect more chances to find evidence of this connection between local government performance and citizens' willingness to pay taxes.

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% 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.

6 – 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, and in Latin America in particular, 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 are plagued by endogeneity and omitted variables bias and can therefore be misleading.

Our simple survey experiment, by reading a brief piece of factual information to respondents that could reflect positively or negatively on the local government was able to generate significant changes in perceptions in only two (Cordoba and Rio de Janeiro) of the sixteen cities where it was implemented. In Rio de Janeiro, but not in Cordoba, we do find evidence 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, and that reciprocity in Rio is above the regional average and in Cordoba is below. Given the statistically significant (albeit small) effect of the intervention on perceptions in Bogota and Salto, we expect that these channels can be investigated using similar but more powerful methods in other cities.

Our findings suggest that reciprocity towards local governments can be a significant source of improvement in tax collection in developing countries, where often tax rates and compliance are low. However, reciprocity through public finance requires a visible relation between the provision of public services and tax collection; if this relationship is not clear, taxpayers are less likely to view taxes as a means of reciprocating to the government. We interpret the difference in the results between Cordoba and Rio de Janeiro as a reflection of this fact.

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.

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Table1 – Net share of the population that is willing to pay more tax if the government improves performance

	Less corruption	More transparency	Less tax evasion	Better social assistance	Better health & education	Less crime	Average
Buenos Aires	0.069**	0.077***	-0.006	0.065**	0.170***	0.120***	0.08
Cordoba	-0.031	-0.026	-0.082***	-0.013	0.263***	0.163***	0.05
La Paz	0.159***	0.162***	0.089***	0.206***	0.327***	0.309***	0.21
Santa Cruz	-0.040	0.074**	0.026	0.156***	0.319***	0.286***	0.14
Sao Paulo	0.186***	0.134***	0.177***	-0.070**	-0.147***	-0.108***	0.03
Rio de Janeiro	0.239***	0.297***	0.317***	0.178***	0.101***	0.202***	0.22
Bogota	0.131***	0.122***	0.078***	0.374***	0.437***	0.335***	0.25
Medellin	-0.103***	-0.122***	-0.123***	-0.075***	0.003	-0.055*	-0.08
Quito	-0.030	-0.082***	-0.060**	0.085***	0.182***	0.153***	0.04
Guayaquil	-0.171***	-0.222***	-0.210***	-0.168***	-0.183***	-0.162***	-0.19
Lima	0.126***	0.133***	0.041	0.207***	0.342***	0.288***	0.19
Arequipa	0.099***	0.063**	-0.028	0.060**	0.216***	0.107***	0.09
Montevideo	0.038	0.032	-0.079***	0.075***	0.255***	0.211***	0.09
Salto	0.006	-0.016	0.012	0.164***	0.426***	0.305***	0.15
Caracas	0.028	0.045	-0.015	0.185***	0.201***	0.218***	0.11
Maracaibo	-0.122***	-0.038	-0.135***	-0.074**	-0.048	-0.026	-0.07
Panama City	-0.103***	-0.166***	-0.176***	-0.093***	-0.139***	-0.081**	-0.13
Weighted average	0.121***	0.118***	0.102***	0.092***	0.112***	0.113***	0.110
Simple average	0.026***	0.028***	-0.007	0.076***	0.167***	0.135***	0.071

Note: Table reports the difference in the fraction that responds that they would be willing to increase their tax payments and the fraction that responds they would pay less. The weighted average uses the city's population as weights. Statistically significantly different than zero at 99% (***), 95% (**), 90% (*) levels of confidence.

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

	Whole Sample	Buenos Aires	Cordoba	La Paz	Santa Cruz	Sao Paulo	Rio	Bogota	Medellin
Panel A - Dependent variable = Willingness to pay small increase housing taxes									
Government performance	0.006*** (0.00)	-0.000 (0.01)	-0.001 (0.00)	0.012 (0.01)	0.015* (0.01)	0.006** (0.00)	0.003 (0.00)	0.004 (0.00)	-0.010 (0.01)
Tax morale	0.004 (0.01)	-0.022 (0.02)	0.042** (0.02)	-0.002 (0.04)	0.134*** (0.05)	-0.015 (0.02)	-0.010 (0.01)	-0.013 (0.02)	0.219*** (0.05)
Perception of compliance	0.002 (0.00)	-0.020*** (0.01)	0.007 (0.00)	0.002 (0.01)	0.003 (0.01)	0.004 (0.00)	0.002 (0.00)	0.006 (0.00)	0.024*** (0.01)
Panel B – Dependent variable = Willingness to pay small increase vehicle taxes									
Government performance	0.004** (0.00)	0.002 (0.00)	0.000 (0.00)	0.007 (0.01)	0.012 (0.01)	0.004* (0.00)	0.002** (0.00)	-0.002 (0.00)	-0.000 (0.00)
Tax morale	0.005 (0.01)	0.012 (0.01)	0.002 (0.00)	0.004 (0.04)	0.156*** (0.05)	-0.010 (0.01)	-0.007 (0.01)	-0.003 (0.02)	0.019 (0.02)
Perception of compliance	-0.000 (0.00)	-0.002 (0.00)	0.000 (0.00)	-0.001 (0.01)	-0.005 (0.01)	0.004 (0.00)	-0.000 (0.00)	0.008* (0.00)	-0.000 (0.00)
Panel C – Dependent variable = Local taxes are too high									
Government performance	-0.027 (0.02)	-0.029 (0.03)	-0.019 (0.02)	-0.047* (0.03)	0.040* (0.02)	-0.085*** (0.02)	0.071*** (0.02)	-0.040** (0.02)	-0.091*** (0.02)
Tax morale	0.031 (0.05)	0.050 (0.12)	-0.264** (0.11)	0.027 (0.12)	-0.239** (0.11)	-0.060 (0.11)	0.184 (0.12)	0.134 (0.11)	0.207 (0.14)
Perception of compliance	-0.032*** (0.01)	-0.027 (0.03)	-0.080*** (0.03)	-0.025 (0.03)	0.000 (0.03)	-0.011 (0.02)	-0.078** (0.03)	-0.011 (0.03)	-0.079*** (0.02)
Panel D – Dependent variable = Tax evasion									
Government performance	-0.006 (0.01)	-0.047*** (0.01)	-0.012 (0.01)	-0.036*** (0.01)	-0.025** (0.01)	0.013* (0.01)	-0.020* (0.01)	0.002 (0.01)	-0.005 (0.01)
Tax morale	-0.163*** (0.05)	-0.215*** (0.06)	-0.136** (0.05)	-0.205*** (0.05)	-0.004 (0.06)	-0.150*** (0.04)	-0.368*** (0.05)	-0.059 (0.05)	-0.121** (0.05)
Perception of compliance	-0.004 (0.01)	0.002 (0.01)	0.101*** (0.01)	0.004 (0.01)	0.015 (0.01)	-0.009 (0.01)	0.022 (0.02)	0.010 (0.01)	-0.039*** (0.01)

Note: Table reports marginal effects and the robust standard errors (in parentheses). A probit model is used in all panels except in panel C where an ordered probit model is used. The marginal effects in Panel C are computed for the highest value of the dependent variable. Statistically significantly different than zero at 99% (***), 95% (**), 90% (*) confidence

Table 2 (Continued). Government performance, tax morale and perceptions of compliance on individual's willingness to pay taxes

	Quito	Guayaquil	Lima	Arequipa	Montevideo	Salto	Caracas	Maracaibo	Panama City
Panel A - Dependent variable = Willingness to pay small increase housing taxes									
Government performance	0.009 (0.01)	-0.006 (0.01)	0.006 (0.01)	0.012*** (0.00)	0.010*** (0.00)	0.008 (0.01)	0.032*** (0.01)	-0.014* (0.01)	-0.019*** (0.01)
Tax morale	0.001 (0.03)	-0.019 (0.02)	0.046 (0.04)	0.001 (0.02)	0.059*** (0.02)	-0.047 (0.04)	-0.107** (0.05)	0.177*** (0.04)	0.024 (0.04)
Perception of compliance	0.001 (0.01)	0.008 (0.01)	-0.001 (0.01)	0.003 (0.00)	0.001 (0.00)	0.009 (0.01)	-0.046*** (0.01)	0.007 (0.01)	0.036*** (0.01)
Panel B – Dependent variable = Willingness to pay small increase vehicle taxes									
Government performance	0.006 (0.01)	0.002 (0.00)	-0.004 (0.01)	0.012*** (0.00)	0.011*** (0.00)	0.003 (0.00)	0.037*** (0.01)	-0.001 (0.00)	0.004 (0.01)
Tax morale	0.108*** (0.03)	0.008 (0.01)	0.052 (0.03)	0.001 (0.02)	0.029** (0.01)	0.025 (0.03)	-0.075* (0.05)	0.021 (0.01)	0.125*** (0.05)
Perception of compliance	0.007 (0.01)	-0.001 (0.00)	-0.017** (0.01)	0.006 (0.00)	-0.007* (0.00)	0.005 (0.01)	-0.056*** (0.01)	-0.001 (0.00)	0.010** (0.01)
Panel C – Dependent variable = Local taxes are too high									
Government performance	0.036* (0.02)	-0.008 (0.03)	-0.030 (0.03)	0.002 (0.02)	-0.069*** (0.02)	-0.025 (0.02)	0.035 (0.03)	-0.081*** (0.02)	0.000 (0.03)
Tax morale	-0.111 (0.12)	-0.334*** (0.11)	0.290** (0.13)	0.124 (0.12)	-0.038 (0.11)	-0.353*** (0.12)	-0.162 (0.13)	-0.149 (0.12)	-0.251 (0.19)
Perception of compliance	0.024 (0.03)	0.073** (0.03)	-0.051 (0.04)	-0.046 (0.03)	0.021 (0.03)	-0.092*** (0.03)	-0.013 (0.03)	-0.067** (0.03)	0.006 (0.04)
Panel D – Dependent variable = Tax evasion									
Government performance	0.027*** (0.01)	-0.020 (0.01)	-0.021** (0.01)	-0.016 (0.01)	-0.012 (0.01)	-0.008 (0.01)	0.001 (0.01)	-0.015 (0.01)	-0.042*** (0.01)
Tax morale	-0.188*** (0.06)	-0.391*** (0.05)	0.029 (0.05)	-0.200*** (0.05)	-0.101** (0.05)	-0.067 (0.06)	0.061 (0.06)	-0.185*** (0.04)	0.032 (0.06)
Perception of compliance	-0.003 (0.01)	0.006 (0.02)	-0.048*** (0.02)	-0.025 (0.02)	0.019 (0.01)	-0.018 (0.01)	-0.026** (0.01)	-0.012 (0.01)	-0.003 (0.01)

Note: Table reports marginal effects and the robust standard errors (in parentheses). A probit model is used in all panels except in panel C where an ordered probit model is used. The marginal effects in Panel C are computed for the highest value of the dependent variable. Statistically significantly different than zero at 99% (***), 95% (**), 90% (*) confidence

Table 3. Randomization checks

	Positive letter group (1)	No letter group (2)	Negative letter group (3)	Difference (2)-(1)	Difference std. error (2)-(1)	Difference (3)-(2)	Difference std. error (3)-(2)
Age	42.15	42.07	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	

Table 4. First-stage regressions. Effect of letters on perceptions about the government

	Whole Sample	Buenos Aires	Cordoba	La Paz	Santa Cruz	Sao Paulo	Rio de Janeiro	Bogota	Medellin
Letter	0.212*** (0.06)	0.062 (0.14)	0.494*** (0.16)	0.260 (0.17)	0.244 (0.15)	0.040 (0.15)	0.684*** (0.15)	0.447** (0.18)	-0.214 (0.15)
Constant	5.232*** (0.63)	5.766*** (1.07)	5.338*** (1.38)	3.242* (1.66)	7.269*** (1.68)	6.924*** (1.91)	-2.610 (2.24)	6.947*** (2.38)	5.362*** (1.52)
Observations	7,041	442	449	379	441	437	455	446	440
R-squared	0.117	0.179	0.163	0.231	0.166	0.223	0.278	0.169	0.189

	Quito	Lima	Arequipa	Montevideo	Salto	Caracas	Maracaibo	Panama City
Letter	0.081 (0.16)	0.117 (0.18)	0.103 (0.16)	-0.134 (0.17)	0.388** (0.17)	-0.199 (0.14)	-0.050 (0.13)	-0.117 (0.12)
Constant	5.327*** (1.31)	1.822 (2.19)	4.316*** (1.57)	4.270*** (1.45)	-0.139 (1.69)	6.694*** (1.03)	4.638*** (0.98)	2.437 (1.58)
Observations	472	424	453	421	405	445	457	475
R-squared	0.195	0.183	0.124	0.157	0.241	0.266	0.168	0.207

Note: Dependent variable is the individual's perception about the local Government's performance. 'Letter' is equal to 1 if the respondent received a note that reflected positively on the local government, -1 if it reflected negatively and 0 if the envelope was empty. All regressions include controls for tax morale, perceptions of other citizens' tax compliance, gender, age, education, wealth, ideology and whether the respondent is an immigrant or not. Statistically significantly different than zero at 99% (***), 95% (**), 90% (*) confidence.

Table 5. Instrumental Variable regressions: Positive perception on the government and willingness to pay taxes

Cordoba				
	Tax Evasion	Willingness to pay small increase property tax	Willingness to pay small increase vehicle tax	Local taxes are too high
Government performance	0.124 (0.13)	0.094 (0.18)	0.163 (0.25)	0.161* (0.09)
Observations	413	449	249	443
First stage F-test of excluded instruments (linear model): 20.35				
Rio de Janeiro				
	Tax Evasion	Willingness to pay small increase property tax	Willingness to pay small increase vehicle tax	Local taxes are too high
Government performance	-0.246*** (0.09)	-0.012 (0.18)	0.282** (0.13)	-0.042 (0.08)
Implied elasticity	-1.26	-	1.97	-
Observations	421	453	451	443
First stage F-test of excluded instruments (linear model): 28.67				

Note: For each city, the table reports probit coefficients (except for ‘pay too much taxes’, where the model is linear) of an increase in positive perception about the local government on willingness to pay taxes or pass up easy evasion opportunities. For the case of the statistically significant coefficients in Rio de Janeiro, implied elasticities are also reported. Robust standard errors are in parentheses. Statistically significantly different than zero at 99% (***), 95% (**), 90% (*) confidence.

Appendix Table A1. Descriptive statistics. CAF 2011 Survey

	Age	% Male	# of children	# persons per HH	Married or cohabitating	Right-leaning ideology	Satisf. w/ democracy
Buenos Aires	42.7	47%	2.3	4.1	69%	32%	7.4
Cordoba	44.8	48%	2.6	4.3	67%	21%	6.5
La Paz	40.9	49%	2.2	4.7	69%	38%	5.1
Santa Cruz	39.5	50%	2.8	5.3	72%	48%	4.6
Sao Paulo	41.8	47%	1.9	3.7	62%	19%	5.0
Rio de Janeiro	43.1	46%	1.8	3.4	62%	28%	5.6
Bogota	41.5	46%	1.9	4.3	62%	41%	4.7
Medellin	43.4	49%	1.9	4.2	56%	48%	5.0
Quito	39.4	47%	2.3	4.3	75%	37%	5.1
Guayaquil	39.8	48%	2.5	4.8	80%	41%	6.9
Lima	40.6	50%	2.1	4.7	71%	44%	4.9
Arequipa	40.8	50%	2.0	4.5	70%	36%	4.5
Montevideo	43.1	48%	2.0	3.6	63%	46%	7.4
Salto	42.8	49%	2.5	4.0	63%	40%	7.3
Caracas	41.8	48%	2.4	4.7	60%	66%	6.0
Maracaibo	41.9	48%	2.5	5.5	63%	54%	6.1
Panama City	41.5	49%	2.1	4.2	69%	49%	5.8
Whole Sample	41.8	48%	2.0	4.1	65%	33%	5.4

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

	Willingness to pay small increase housing taxes	Willingness to pay small increase vehicle taxes	Local taxes are too high	Tax Evasion
Satisfaction with electricity services	0.004** (0.002)	0.005*** (0.001)	-0.017*** (0.002)	0.004 (0.004)
Satisfaction with garbage collection	-0.002 (0.002)	0.003** (0.001)	-0.004** (0.002)	-0.001 (0.003)
Satisfaction with water services	0.007 (0.007)	-0.005 (0.004)	0.007 (0.011)	-0.022 (0.014)
Satisfaction with public transportation	0.001 (0.002)	0.001 (0.002)	-0.004* (0.002)	-0.002 (0.004)

Note: The table reports the 16 coefficients obtained by regressing each of the four measures of willingness to pay taxes on the four measures of satisfaction with public services (i.e., electricity, garbage collection, water and transportation). All regressions include the same set of controls as in column 1 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)