

Who's Calling?

The Effect of Phone Calls and Personal Interaction on Tax Compliance

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Abstract¹

Most tax agencies use letters as the method of communicating with taxpayers. Still, other technologies exist that could be more effective. This paper reports the results of a field experiment conducted by the National Tax Agency of Colombia (DIAN), using phone calls to reduce tax delinquencies. DIAN randomly assigned 34,000 tax debtors to a phone call operation using a fixed script to discuss existing debts and invite taxpayers to a meeting at the local tax agency office. Phone calls were very effective in increasing collection of unpaid taxes. Conditional on the phone call being made, the effect on the treatment is about 25 percentage points higher than the control group (about a five-fold increase). We also find suggestive evidence that the personal interaction seems to be an important channel for explaining taxpayers' behavior. Faced with a tax agent, taxpayers tend to commit to attending the meeting and paying the tax owed. However, many taxpayers who commit do not make payment effective. The findings complement a nascent literature that shows that there are plenty of gains from innovating in communication strategy. They also indicate that personal interactions are important, but they have to be paired with easy-to-follow and immediate actions. Paying taxes is easier said than done.

JEL classifications: C93, H42, H23, D62

Keywords: Tax compliance, Methods of communication, Evasion, Property tax, Phone calls, Reminders, Plan making, Randomized control trial, Behavioral economics

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1 Introduction

Tax delinquencies are a major problem for most tax administrations in the world. According to an estimate by the United States Treasury Department, Americans failed to pay about \$110 billion, or around 25 percent of the estimate of the total amount underpaid in 2006 (Perez-Truglia and Troiano, 2018). In Colombia, the National Accountant Office estimated the total outstanding debt to the National Tax Agency DIAN at \$2.5 billion, which represents around 20 percent of total tax evasion in 2014. Finding ways to reduce delinquencies is paramount for both fiscal and equity considerations. Moreover, high tax delinquencies erode the agency’s reputation and its ability to carry out its mission effectively.

Most field experiments in increasing tax compliance and reducing delinquencies have focused on the content of the messages sent to taxpayers (Slemrod, 2018). Messages that increase the salience of penalties and audits are effective for increasing tax payments with results that are in line with the predictions from the standard deterrence model of tax evasion (Slemrod, Blumenthal and Christian, 2001; Kleven et al., 2011; Chirico et al., 2015; Hallsworth et al., 2017; Meiselman, 2018; Chirico et al., 2019). Messages appealing to moral considerations such as shaming, fairness, and social norms have mixed results (Blumenthal et al., 2001; Fellner, Sausgruber and Traxler, 2013; Del Carpio, 2013; Hallsworth, 2014; Castro and Scartascini, 2015; Perez-Truglia and Troiano, 2018). While interventions evaluating the effect of different messages have become very common, differences arising from the selection of the communication channel remains an understudied mechanism. The communication technology used in an intervention may affect individual compliance decisions because it may provide additional information about the enforcement capacity of the State. It may also trigger behavioral responses according to the level and type of interaction (personal, impersonal) (Green and Gerber, 2008; Kessler and Zhang, 2014). Finally, some technologies may be better than others for reaching the targeted people and delivering a salient message. This is not of minor consequence, given that in many instances null results of an intervention may not be the consequence of badly designed messages but of a delivery mechanism (usually a letter) that is low powered (Ortega and Scartascini, 2020).

This article adds additional evidence regarding the importance of delivery methods for reducing tax delinquencies. Ortega and Scartascini (2020) evaluate the role of varying the delivery technology (letter, email, and personal visit) while keeping the content of the message fixed. In this article, we analyze the results of a field experiment in which the tax authority used a personalized phone call as the mechanism to contact taxpayers with outstanding tax liabilities.¹ In order to stress the personalized nature of the call, the tax authority not only reminded the taxpayer of the existing debt and the consequences of not paying but also invited the taxpayer to attend a private meeting at the tax agency to address any questions or seek any consultation they thought necessary. This iterative process, which was aimed

¹As far as we know, this is the first field experiment using phone calls to motivate tax payments.

at increasing the impact of the intervention, provides additional insights into the role of reminders and plan-making interventions (Rogers et al., 2015).

In 2014, the agency randomized the phone calls intervention in a campaign to increase tax collection from outstanding liabilities. Around 34,000 entities (firms or individuals) with debt on already self-declared but unpaid taxes were assigned randomly either to a phone call treatment or a control group. The content of the message is constant for everybody in the treatment group. During the phone call, an agent delivered a scripted message that contained personalized information about the taxpayer, including the amount and origin of the debt. The agent offered the taxpayer the possibility of setting an appointment at the local office of the tax agency. The objective of the invitation was to increase personal connections and trust in the tax agency (by showing that it was open to discussing any discrepancies and addressing any concerns the taxpayer might have). As a result of the call, it was expected that the taxpayer would provide a verbal payment agreement or make an appointment to visit the local office. If the taxpayer attended the meeting, the agent asked the taxpayer for a payment agreement. Because of the way the intervention was designed, we can evaluate well the overall effect of the phone calls (and subsequent meetings for those who attended) on payment behavior. Because invitations to the meetings were not randomized, we can only present suggestive evidence on the role of the subsequent steps and the personalized nature of the interaction.

The results show that calling delinquent taxpayers is an effective technology for increasing payment. Being assigned to the treatment group increased the probability of making a payment by almost 6 percentage points (doubling the probability in the control group or “doing nothing”). In terms of economic results, on average, the agency recovered about USD\$722 ppp per person from the treatment group versus USD\$450 ppp from the control group during the campaign. Because there was substantive one-sided non-compliance with the treatment -many people in the treatment were not contacted- the effect of an effective phone call is 26 percentage points higher than the control group (a five-fold increase). It is important to notice that this coefficient falls in between the estimates for the impersonal methods (letter, email) and the personal method (personal visits) in Ortega and Scartascini (2020), as would have been expected. Interestingly, we also find that the payment probability declines with the size of debt (as in Perez-Truglia and Troiano (2018), and Gillitzer and Sinning (2018)) and differs according to the type of tax (as in Ortega and Scartascini (2020)); and there is a lower effect for firms compared to individuals. In this last regard, phone calls seem to behave more similarly to the impersonal methods (letter, email) than to personal visits (Ortega and Scartascini, 2020).

Because we have information on the occasions when agents and taxpayers interacted, we can examine in detail the role of personal interactions. Basically, personal interactions seems to affect decision-making through “promises” of compliance more than actual compliance. That is, more than 90% of those who received the phone call made an appointment to attend

the meeting, but less than 70% of them actually showed up. Of those who showed up, about 50% promised to make a payment, but only 53% of them actually paid. Therefore, while personal interactions seems to have a large motivational effect for promising to act, actual compliance falls quite substantially when there is a delay between the promise and the time taxpayers actually have to comply. This may show social desirability bias in terms of the responses to calls or personal interaction, or it may show procrastination and forgetfulness. We cannot distinguish between these possibilities with the data we have available. Still, these results provide valuable insights for policymakers. Even with the gap between promises and payments, the effect of the intervention is quite large and much larger than the effect found when using less personalized methods. Even though promises and plan-making are not foolproof, the suggestive evidence indicates that the impact for tax compliance could be substantial (and even larger than in other areas).²

This paper adds to the literature on tax compliance by showing that phone calls can be a very effective method for increasing tax compliance. Phone calls have been rarely used by tax agencies, but they have been extensively studied in the context of political canvassing. Phone calls made from commercial call centers or robotic calls are not effective at mobilizing voters, while volunteers-made phone calls and interactive scripts are more likely to draw attention from the voter (Arceneaux, 2007; Gerber and Green, 2001; Imai, 2005; Nickerson, 2006; Shaw et al., 2012; Ha and Karlan, 2009; Ramirez, 2005; Nickerson, 2007). Similarly, Mann and Klofstad (2015) show that political-specialized phone banks are more effective than commercial phone banks at mobilizing voters. In line with this literature, our study shows that high-quality and personalized phone calls can deliver strong results, but in this case in terms of tax compliance.

The study complements a nascent literature that shows that personalized methods of communication and interaction seem to be more effective than impersonal methods. In the voter mobilization literature, Green and Gerber (2008) report significantly different effects between visits, letters, emails and text messages. Personal canvassing is the most effective tool for getting people to vote. In the charity fund-raising literature, DellaVigna, List and Malmendier (2012) show that variations in the campaign methods underscore the role of social pressure as a motivation behind charity donations. In one of the extremes of personal interaction, Castillo, Petrie and Wardell (2015) found that friends are very effective for generating larger donations. In loan repayment for microcredit, Karlan, Morten and Zinman (2012) found that SMS are effective if they include reminders about personal relationships with the local bank officer. In the tax compliance literature, results are lining up in the same direction. Ortega and Scartascini (2020) found significant differences across communication methods (letter, email, and personal visit) and Doerrenberg and Schmitz (2015) found differences between visits and letters sent to small firms. In every case, more personal

²For example, plan-making seems to have a 28% affect on vaccination, increase voting by 4 percentage points, and increase the probability of having a colonoscopy by 1 percentage point (Rogers et al., 2015).

methods were more effective. Our study adds to the existing evidence by exploiting a highly personalized interaction and showing that it affects both what people commit to do (which takes place at the moment of the interaction) and actual behavior (which takes place later and is separated from the interaction).

The fact that verbal commitments are substantially higher than actual actions provides insights for several strands of literature. First, it casts further doubt on studies that use survey methods to assess the potential effect of deterrence and tax morale interventions. In this intervention, promises to pay are about two times higher than actual payment. Second, it also adds evidence to the literature on deadlines, reminders, plan-making, and procrastination (Nickerson and Rogers, 2010; Milkman et al., 2011, 2012; Vervloet et al., 2012; Rogers et al., 2015; Karlan et al., 2016). In this intervention, taxpayers declared how much they had to pay, they were reminded they had not paid, and they promised they would do so by a certain date (plan-making). Evidence is mostly suggestive given the way the intervention was carried out, but the results seem to be very promising. As such, reminders, commitments, and plan-making may help to increase tax payments.

The study also provides policy recommendations regarding the value of the interaction, the potential role of phone calls as part of the communication methods portfolio, and the potential effect of reducing the gap between the timing of verbal commitments and actual behavior. The evidence should spark policy discussions regarding the number of actions to take and what processes may work better if automatized and made impersonal, and which ones should not.

This paper is organized as follows. Section 2 describes the experiment. Section 3 presents the results, and Section 4 concludes.

2 The Experiment

With the objective of increasing tax collection and evaluating the effectiveness of phone calls and personalized interactions with taxpayers, the National Tax Agency of Colombia (DIAN) agreed in March 2014 to randomly assign the method used to contact a sample of 34,783 taxpayers with due liabilities (self-declared but unpaid taxes) on the income tax, wealth tax, and value added (VAT) tax, the penalties and interests of those liabilities, and other minor taxes for the period 2009-2014. The amount owed by these taxpayers was equivalent to about 2.5% of total tax collection from these sources in 2014 fiscal year.³

The agency randomized taxpayers into a treatment and a control group. The randomization was made within blocks according to debt size terciles. The treatment group was assigned to receive a phone call, while the control group did not receive any notification.

³DIAN Division of Operational Analysis: in 2014, DIAN collected COL 72,1 billion in Income, VAT and Wealth taxes sources. The total debt in our sample is COL 1.7 billion in 2014.

Phone calls were made by a professional phone call bank. The individual making the call had to follow a detailed script, which is structured as follows. First, the caller makes contact with the legal representative of the firm or with the individual. Second, she proceeds to remind the taxpayer of outstanding debts to DIAN, though the specific amount was not mentioned. The caller further mentions possible legal and financial sanctions. Third, the caller attempts to schedule the taxpayer to an appointment at the DIAN office, where the taxpayer is offered the opportunity to clarify current account delinquencies, resolve any disputes, and arrange a payment. Alternatively, the taxpayer compromises to pay by a certain date. At the end of the call, the agent thanks the taxpayer for her time and mentions the campaign slogan “Colombia, a commitment we can’t evade.”⁴ The contents of the script attempt to affect the deterrence and moral suasion channels of compliance. Importantly, the script proceeds as a conversation rather than a rigid text, with multiple interactions between the agent and the taxpayer in order to foster personal interaction. Moreover, the invitation to attend a meeting at the tax agency further emphasizes personal interactions. The call produces two main outcomes: an appointment at the local agency office or a verbal payment commitment. The payment commitment should increase the probability that the taxpayer actually pays -reminder plus plan-making- (Nickerson and Rogers, 2010; Milkman et al., 2011, 2012; Vervloet et al., 2012; Rogers et al., 2015; Karlan et al., 2016). In the data set, we can track whether people attended the meeting, the promises they made, and their actual payment behavior.

Phone calls were made between April 24 and May 10, 2014. The initial distribution comprised 24,870 subjects in the treatment group and 9,913 in the control group, as shown in Table 1. However, the tax agency decided to stop the intervention once 12,853 calls had been made (a little bit over half of the total originally planned.)⁵ Out of the universe of taxpayers called, 5,267 were contacted (21% of the total and about 40% of the total made.) We have information about the results of each call. The contact rate (share of effective contacts over the number of calls made) is similar to contact rates from specialized phone banks in recent GOVT interventions (Mann and Klofstad, 2015). After being reached by phone, 4,957 made an appointment at the local office, and 3,427 attended this meeting (see Figure 2).

We present summary statistics in column 1 of Table 1 for the control group. Tax delinquents in our sample have an average tax liability of COL\$34 million (USD\$10k). Most of these debtors owe only one payment that has been due for three years. Firms represent 62% of delinquents, and the most common sources are debts from the Income and Value Added taxes.

Table 1 Panel B column 1 shows the payment behavior of the sample of tax delinquents

⁴We provide in Appendix A.2 the script in Spanish

⁵The Agency decided to stop and evaluate the results of the intervention before committing additional resources to the intervention.

participating in this intervention. In the absence of any campaign, only 5.4% of the individuals with tax delinquencies at the beginning of the year would have made any payment at the end of the year. This is equivalent to recovering 3.2% of the total outstanding debt.

This intervention follows a stratified randomized design (terciles of initial debt.) Columns 2, 3 and 4 of Table 2 present randomization test for observable covariates. The groups are balanced in the amount of tax owed since this was the variable used to construct the randomization strata. Groups are also balanced according to the type of taxpayer (firm or individual). There are some imbalances on debt age, type of tax, and the number of debts. Differences are rather small. Moreover, these imbalances (taxpayers in the treatment group have on average debts that are 3.22 years old, while those in the control group are 3.02, and higher number of missed payments -1.37 versus 1.32) work against finding any results. As has been shown in the literature, these groups tend to be less affected by any treatment. We include all the variables in Table 2 as controls in the empirical analysis, but this does not affect the results.

2.1 Empirical Specification

We estimate the following equation:

$$Y_i = \alpha + T_i\beta_1 + X_i\lambda + D_i\theta + B\gamma + \epsilon_i \quad (1)$$

where T is a dummy to indicate the assignment to treatment, X is a vector of control variables, B the blocks or strata, and D are the district fixed effects. The district variable indicates the geographic jurisdiction in which the taxpayer is registered. The set of covariates include all the pre-intervention observable characteristics: *Liabilities* denotes the total outstanding debt, *Number of debts* denotes the number of tax obligations per taxpayer; *Debt origin* is a set of dummy variables that indicate the source of the tax liabilities for wealth, income, VAT, and other liabilities; *Taxpayer type* denotes whether the taxpayer is a firm or an individual. Finally, we also control for DIAN district-level fixed effects. These district level dummies should control for differences in local economic conditions, socioeconomic structure, and Tax Agency local offices.

We use several dependent variables to measure compliance. *Paid* is a dummy that takes value one if the taxpayer made any payment canceling liabilities after the experiment, *Full payment* is a dummy that takes value one if the taxpayer canceled the liabilities reported in the message in full. *Total payment* is the amount (in logs) paid by the taxpayer after the experiment. *Payment share* is the share of liabilities canceled by the taxpayer.

3 Results

3.1 Effectiveness of the Phone Calls Campaign

We first note that the mere presence of the phone calls campaign delivered important collection outcomes to the agency, according to the raw results presented in Panel B of Table 1. In the absence of any campaign, only about 5.4% of individuals with tax delinquencies at the beginning of the year would have made any payment at the end of the year. Compared to this base scenario, about 11 percent of the taxpayers assigned to the intervention made any payment, payments were 50 percent higher, and the agency recovered 6% of the total debt on average. When there is actual contact with the taxpayer, these results are even higher: for the 5,267 individuals that were effectively contacted, 33% of them made payment of about three times the average payment in the control group, and the agency recovered close to 18% of the outstanding debt.

In Table 3, columns 1 and 2, we present the ITT estimates of the effect of the phone calls on the tax payment outcomes (each cell corresponds to an independent regression; each row indicates the dependent variable used.) The first column shows the results when no controls are added, while column 2 shows the results including the full set of controls. For those assigned to the intervention, the probability of making any payment increases by 5.8 percentage points with respect to the control group (column 2). The probability of making a full payment increases by 1.7 percentage points. The share of the outstanding debt that is paid increases by 3 percentage points. The amount paid increases by more than 70%. Results vary little across columns (specifications with and without controls). This first set of results shows that the probability of a payment doubles with the phone calls compared to the status quo.

Those results provide an incomplete view of the implications of the program for the tax agency because the number of taxpayers actually treated was much lower than the share assigned to being treated. There are two sources of one-sided non-compliance: the sudden stop in the operation and the low contact rate of those who are called. Therefore, to evaluate the effectiveness of the program for the tax agency it is relevant to restrict the analysis to the calls actually made and the calls actually received. As such, we run the regressions using 2SLS with assignment to a phone call as instrument. LATE results are presented in Table 3. In columns 3 and 4 the instrumented variable is the attempted call. The impact of the phone call campaign on this set of individuals is now higher (as expected). The probability of making any payment is now about 11 percentage points, which is more than twice the effect of having done nothing. The average amount collected is about one and a half times higher. This is the effectiveness of the phone call campaign for the tax agency taking into account that there are going to be taxpayers who do not answer the phone.

However, it is also relevant to know what the effectiveness is once a taxpayer can be

reached to evaluate the actual effect of the call, and to evaluate whether it would be worth it to spend resources to update the taxpayer database. Because only 40% of those called were actually reached, the effect on the group who had the opportunity to talk to the agent should be larger. The effect of the intervention on the effectively treated is included in columns 5 and 6. The probability of payment is now almost 27 percentage points higher than in the control group. These results show that phone calls can be an effective way to get taxpayers to pay what they owe. These results are in line with those in Ortega and Scartascini (2020), who use a very similar setting. The effect of the phone calls effect lie in between more impersonal methods, such as a letter or an email, and more personalized and targeted methods, such as a personal visit.

3.2 Heterogeneous Effects

We look at heterogeneous effects across several observable characteristics of the taxpayers. In each case, we run regressions that include an interaction term between the treatment variable and the covariate of interest. Figure 1 shows the results (point estimates and the 95 confidence interval) for the OLS regressions, and they are reported in Table A.3 and Table A.4 along with the IV results. Results are basically the same for the OLS and 2SLS regressions. First, the probability of payment is higher the lower the level of debt is. Second, phone calls seem to be less effective for firms than for individuals. Third, VAT and income tax debtors seem to react more readily than debtors of the wealth tax. Finally, there is some evidence of negative effects of the phone calls for so-called chronic debtors, i.e., individuals with an outstanding debt of more than seven years. All of these results are in line with the literature and the results in Ortega and Scartascini (2020). Basically, accumulating higher debts is not random. These people may have more financial difficulties than those who have not. Therefore, they respond less. It is important to note once more that we are working with a sample of tax delinquents, that is, people who have declared their tax but have not paid it. Additionally, it is natural that it would be more difficult to reach and generate payment from a firm rather than from an individual, given that it is easier to reach the person making the payment decisions in the latter case. Finally, lower compliance with the wealth tax compared to the income tax and the VAT is expected. The first one taxes an asset, in many case illiquid, while the other two tax a flow of revenues.⁶

The results indicate that the tax authority should be very vigilant in contacting taxpayers while the debt is low and recent and avoid letting debts persist and grow over time. Additionally, phone calls may not be that effective for reaching firms' decision-makers. Finally, because the bases of taxation are different across taxes, the tax agency may want to think

⁶This is particularly salient for developing countries with very small mortgage markets and rather illiquid assets. In developed countries, mortgage markets allow for a closer relationship between assets and income flows.

about how different campaigns should be structured. For example, payment plans may well be needed to increase compliance with the wealth tax for people with cash flow restrictions.

3.3 Effects of Meeting in Local Tax Office after Phone Call

So far we have shown the overall effects of the phone call campaign. However, as we mentioned before, there are two additional factors that can be exploited. First, during the phone call the taxpayer was offered the option of making an appointment at the local office to settle any disputes, address any questions, and reach a payment commitment. We have information on the taxpayers who scheduled the appointment and actually attended the meeting. The idea behind this was that offering the meeting would increase personal connections and motivate higher payments. Of course, offering the meeting was risky. Because attending the meeting has costs for the taxpayer, and taxpayers may form biased expectations about their ability to convince the tax authority to forgive what they owe, it could increase resentment for those who are told to pay. Hence, it may lower incentives to pay. If taxpayer resentment rises, and given that the agency is incurring additional costs by hosting the meetings, the tax authority may risk lowering the efficiency of the campaign. Second, during the several interactions between the agents and taxpayers, taxpayers were not only reminded of their debt but also asked to commit to a payment (plan-making). We have records of those commitments as well as actual behavior.

A cursory examination of the data in Figure 2 provides a first look at the effect of the appointments. Basically, most people agreed to the meeting (94%), but only 69% attended the meeting. Of those who attended the meeting, almost half committed to pay, but only about half of this group actually did so. Among those who did not agree to attend the meeting, about half of them committed to pay. Still, only 39% actually paid.

Figure 2 illustrates two points. First, personal interactions matter. In every case, a large share of the taxpayers agreed with the proposal presented by the agent to attend the meeting or pay what they owe (97%). Also, about 50% of those who attended also agreed to pay. About 40 to 50% of those who committed to pay actually did so. Second, while taxpayers initially committed to pay when asked by the agent, their actual compliance was lower but still much higher than in most interventions.

Two important lessons can be drawn from these results. One of them is “paying taxes is easier said than done.” The other is that commitments and plan-making strategies seem to work, and perhaps more so in tax compliance than in other policy areas where it has been used so far.

Table 4 shows regression results that look at whether attending the meeting had any effect on payment behavior. The idea is to try to isolate the effect of this last stage of personal interaction from the role of the phone call itself. In this analysis, we use three different samples: those who received the call (column 3), those who received the call and

agreed to the meeting (column 5), and a sample that includes those plus a subgroup for which there was some type of contact even if the conversation could not take place (column 1). These are the taxpayers who faced an actual choice (answering the phone, agreeing to the meeting, attending the meeting).

OLS regressions show that attending the meeting has an effect on payment between 13 and 16 percentage points higher than not attending the meeting. The cursory view and the OLS regressions do not take into account that there could be some selection into attending the meeting. It is not clear, however, what the selection bias would be. On the one hand, we could be overestimating the impact of the meeting if those who were planning to pay were also more likely to attend the meeting. That case could be plausible if those who attend the meeting were those with more positive opinions of the work of the tax agency. Still, if people were thinking of paying anyway, it would not make much sense to attend the meeting given the costs of time and travel involved. For example, about 25% of those who did not agree to the meeting paid, and 22% of those who agreed to attend the meeting but did not attend also paid. Therefore, there is a sizable share of taxpayers who understand that participating in the meeting may not be worth the effort if they have to pay anyway.

On the other hand, those who think they could avoid paying the tax because they believe the tax agency made a mistake are the ones with more incentive to attend the meeting. For example, we know that, among those who attended the meeting, 22% had some inconsistencies between what they were asked to pay and what they had to pay, about 5% planned to compensate their debt with other credits, and about 14% arranged a payment plan. In this case, attendance could be underestimating the potential effect that meetings have on motivating taxpayers to pay because many taxpayers who attended did not have to pay.

While dealing with endogeneity has plenty of complications because we do not have much information on taxpayers and their priors, we could use the distance from the home or the firm to the closest local tax office as an exogenous instrument for the decision to attend the meeting. Distance should be a good instrument in the context of this intervention, which deals with tax delinquencies instead of tax declarations or compliance. There is no reason to expect that a taxpayer would choose a location to live based on having declared a tax obligation but not paying it, but there are plenty of reasons why those who live farther away would not attend regardless of their decision to pay or not. Additionally, by including district fixed effects, we are controlling for possible urban and economic characteristics related to payment behavior and office location. Therefore, within districts, the location of the tax office is exogenous in principle to the location of the taxpayer, at least previous to decisions on tax compliance and meeting attendance. In some regressions we have also included other variables with or without the pure distance variable. For example, the relative distance (which weights the individual taxpayers distance to the DIAN office compared to the distance of all other taxpayers in the district), dummies for distances longer than certain thresholds, distance squared, and others. Results do not change.

In the analysis presented in Table 4, we examine the effect of attending the meeting, instrumented by distance, on actual payment. Table A.2, presents the results for the first stage, where distance has a statistically significant effect. Results show that the coefficients are positive and slightly smaller than in the OLS regression. However, they are not statistically significant (see Table 4.) Consequently, while there seems to be some indication that the meeting might have been successful, it is difficult to ascertain that from the data we have. In particular, we do not have highly relevant information that could be biasing the results, including: i) taxpayers' priors regarding what they could get out of the tax agency meeting and ii) errors in the tax declaration, prepayment of part of the debt, and/or inconsistencies for the overall population.

4 Conclusion

We find that phone call campaigns that stress personalized interactions are effective in increasing the collection of tax debt. Phone calls were made by a professional phone-call bank using a high-quality script, and agents were encouraged to make the call personal and invite taxpayers to a meeting. At the meeting, again, agents were encouraged to maximize personal interaction. Conditional on the call, the tax agency collected three and half times the amount it would had collected otherwise. This was highly cost effective for the tax agency, as each attempted call resulted in \$470 in recovered debt (and almost \$4,000 per contacted taxpayer).

Compared to previous estimates in the literature, the effect of phone calls on the probability of payment lies between the effect for impersonal methods (letter and email) and more personal-related methods like personal visits to the taxpayer. The government choice of which communication technology to use is not trivial. The method of communication conveys a signal to the taxpayer about the enforcement capacity of the State. Also, different communication technologies provide different levels of personal interaction with the authorities. Phone calls seem to be an effective way to increase both the perception of deterrence efforts and personalized interactions.

Phone call campaigns, like others, have some limitations. First, if databases are not up to date, the contact rate could be low. Second, chronic debtors may find ways to avoid being contacted as technology progresses. Third, phone calls may be less effective with certain populations, such as firms. Combining cost-effective interventions targeted to the majority of taxpayers, with limited phone calls for one group and personal visits with harsher prosecution for the small set of chronic debtors, might be the best strategy.

In addition to the call, the tax agency also offered taxpayers the opportunity to schedule a meeting to discuss their situation, which increased the personalized nature of the intervention. Because this offer was not randomized, we can only make limited inferences. Still, the responses from the taxpayers to the interaction with the agency present suggestive evidence

of the personalized channel. Taxpayers tend to react very positively to the requests made by the agency. A large share of them scheduled the meeting, and a large percentage also committed to pay what they owed. Not all of those commitments were fulfilled, however. *Tax compliance is easier said than done*, which may confirm the existence of social desirability biases in the agent-taxpayer interaction and procrastination in the payment of taxes. This evidence indicates that tax agencies should make it very simple for taxpayers to follow through with their promises immediately, in order to take full advantage of the role of personal interactions. The evidence further suggests that reminders and explicit commitments work even if they are not foolproof.

This study provides support to the relevance of phone calls as a method of communication, the role of personal interaction, and the role of reminders and commitments for increasing tax compliance. The evidence should spark a discussion about what processes can be automatized and made impersonal, and which ones should not as technology progresses. Still, there is plenty that this study does not address explicitly that should be the focus of future interventions. In particular, it would be important to separate the effect of the phone call, the meeting, reminders, and the plan-making exercise to understand the value added by each one.

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5 Tables

Table 1: Descriptive Statistics: Implementation of Phone Call Campaign.

| | Control | Treatment | | |
|--|------------------|-------------------------|-----------------------|-----------------------|
| | (1) | Assigned to Call (2) | Attempted Call (3) | Effective Call (4) |
| <i>Panel A: Treatment Implementation</i> | | | | |
| Observations | 9,913 | 24,870 | 12,853 | 5,267 |
| Share assigned to treatment | 0 | 100.0 | 51.68 | 21.18 |
| <i>Panel B: Raw Results (means and std dev.)</i> | | | | |
| Made any payment | 0.054 [0.227] | 0.108 [0.310] | 0.168 [0.374] | 0.330 [0.470] |
| Average payment (in millions pesos) | 0.549 [6.183] | 0.855 [16.117] | 1.110 [21.228] | 1.871 [28.968] |
| Share of debt recovered (per person) | 0.032 [0.170] | 0.059 [0.226] | 0.092 [0.281] | 0.178 [0.366] |

Notes: N= 34,783. Panel A shows observations assigned to control and treatment (separating assigned, attempted and effective treatments.) Panel B shows the means and standard deviations (in squared brackets) of the outcome variable for each group. “Attempted Call” refers to the total calls that were made during the campaign. “Effective call” refers to an effective contact during phone call with the taxpayer or its representative.

Table 2: Descriptive Statistics and Randomization Balance Test

| | Control (1) | Treatment (2) | Difference (3) | p-value (4) |
|---------------------------|----------------------|-----------------------|---------------------|----------------|
| Liabilities (in millions) | 34.137 [534.239] | 55.089 [1875.201] | 19.356 (13.013) | 0.137 |
| Liabilities (in logs) | 15.443 [1.358] | 15.456 [1.417] | 0.009 (0.009) | 0.282 |
| Number of debts | 1.323 [0.555] | 1.374 [0.585] | 0.052 (0.007) | 0.000 |
| Debt age(years) | 3.016 [1.382] | 3.223 [1.453] | 0.204 (0.016) | 0.000 |
| Taxpayer type (firms) | 0.623 [0.485] | 0.616 [0.486] | -0.005 (0.006) | 0.382 |
| Debt origin (Wealth tax) | 0.069 [0.253] | 0.065 [0.246] | -0.004 (0.003) | 0.164 |
| Debt origin (Income tax) | 0.453 [0.498] | 0.507 [0.500] | 0.055 (0.006) | 0.000 |
| Debt origin (VAT) | 0.608 [0.488] | 0.573 [0.495] | -0.033 (0.006) | 0.000 |
| Debt origin (Sanctions) | 0.059 [0.235] | 0.070 [0.256] | 0.010 (0.003) | 0.000 |
| Debt origin (Withholding) | 0.121 [0.326] | 0.143 [0.350] | 0.024 (0.004) | 0.000 |
| Debt origin (Others) | 0.013 [0.114] | 0.015 [0.123] | 0.002 (0.001) | 0.126 |

Notes: N= 34,783. Column (1) and (2) present means and standard deviation (in square brackets) for the covariates by treatment group. Column (3) shows the differences in means computed by OLS regression that includes stratification and district dummies. Standard errors are robust (in parentheses). Column (5) displays the p-value of the t-test that the differences in means between the treatment groups and control group are zero.

Table 3: Tax Payment Outcomes: Impact of the Phone Calls Campaign

| | ITT | | LATE | | | |
|-------------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| | (1) | (2) | Attempted Call | | Effective Call | |
| | (1) | (2) | (3) | (4) | (5) | (6) |
| Paid | 0.053 *** (0.003) | 0.058 *** (0.003) | 0.103 *** (0.006) | 0.112 *** (0.006) | 0.251 *** (0.014) | 0.268 *** (0.013) |
| Full payment | 0.015 *** (0.002) | 0.017 *** (0.002) | 0.029 *** (0.003) | 0.033 *** (0.003) | 0.072 *** (0.008) | 0.078 *** (0.008) |
| Payment share | 0.027 *** (0.002) | 0.030 *** (0.002) | 0.052 *** (0.004) | 0.058 *** (0.004) | 0.128 *** (0.010) | 0.139 *** (0.010) |
| Total payment (Logs) | 0.705 *** (0.044) | 0.775 *** (0.043) | 1.365 *** (0.084) | 1.508 *** (0.084) | 3.331 *** (0.201) | 3.607 *** (0.196) |
| Controls | N | Y | N | Y | N | Y |

Notes: N= 34,783. Column 1 shows the estimated coefficient from a OLS regression using random assignment as independent variable, controlling for stratification strata. Column 2 includes all covariates as in Table 2. Columns 3 and 5 show the estimated coefficient from the second stage of a 2SLS regression using random assignment as the instrument for attempted calls or effective calls. Columns 4 and 6 include controls for all covariates. Controls included: Initial Liabilities (in logs), Debt age (years), Number of debts, Taxpayer type (Firm), Debt origin dummies, District dummies. Robust standard errors in parenthesis. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

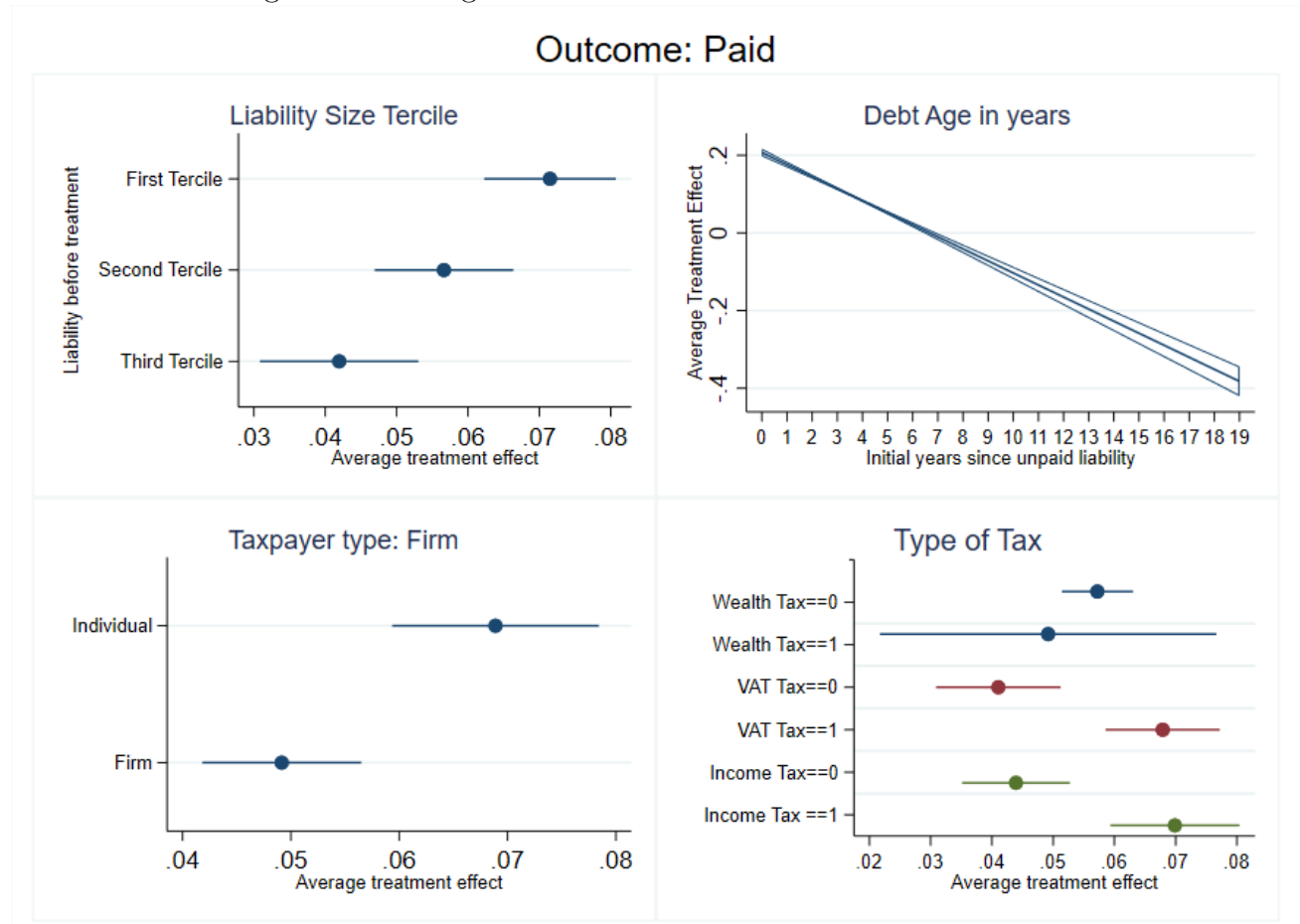
Table 4: Tax Payment According to Attendance to Meeting

| | Outcome variable: probability of payment | | | | | |
|----------------|--|------------------|-------------------------------|------------------|-------------------------------|------------------|
| | Sample “Contact Started” | | Sample “Effective Contact” | | Sample “Agreed to Meeting” | |
| | OLS (1) | 2SLS (2) | OLS (3) | 2SLS (4) | OLS (5) | 2SLS (6) |
| Attend Meeting | 0.166 *** (0.011) | 0.101 (0.155) | 0.129 *** (0.013) | 0.108 (0.193) | 0.127 *** (0.014) | 0.110 (0.436) |
| N | 6414 | 6413 | 5267 | 5267 | 4957 | 4957 |
| F-Stat | | 33.84 | | 21.61 | | 4.69 |

Notes: For 2SLS the instrument is Distance in km to the Tax administration office where the taxpayer is registered. Columns 1, 3 and 5 present results from an OLS estimation, with payment as outcome variable and attending the meeting as independent variables controlling for all variables in Table 2. Columns 2, 4, 6 present results from 2SLS estimation using distance in km as instrument for attending the meeting. Sample “*Contact Started*” refers to the individuals with effective contact+ phone calls with partial contact results like “call again” and “meeting not scheduled”. Sample “*Effective Contact*” refers to phone calls where the script is completed and the result includes either “schedule a meeting”, “report intentions to pay” or present other results. Sample “*Agreed to Meeting*” refers to individuals that decide to schedule a meeting in the local tax office during phone call. Controls include: Liabilities in tercil, Debt age (years), Number of debts, Taxpayer type (Firm), Debt origin dummies, and district fixed effects. Robust standard errors in parenthesis. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

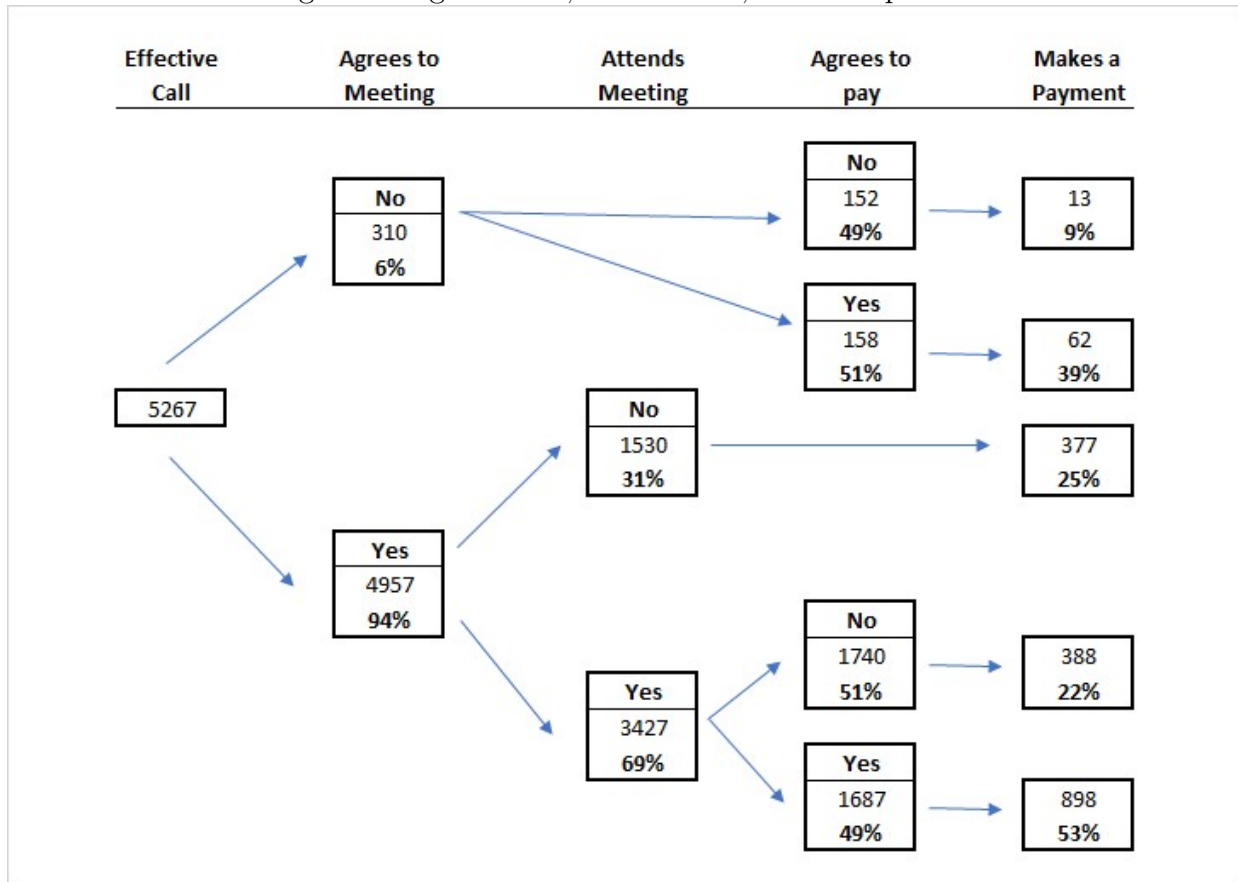
6 Figures

Figure 1: Heterogeneous Effect of Phone Call Intervention



Notes: N= 34,783. Each figure shows the coefficients corresponding to an OLS regression using random assignment to phone calls interacted with all covariates in Table 2: Initial Liabilities (in logs), Taxpayer type (Firm), Debt size, Debt Age, Number of Debts, Type of tax dummies. All regressions include stratification controls and district controls. 95% confidence intervals.

Figure 2: Agreements, Attendance, and Compliance



Notes: This figure shows the behavior of those who received the phone calls. The second column looks at the share that agreed to the meeting. The third column shows the share that attended the meeting. The fourth column shows the share of people who agreed to pay. The last column shows the payment behavior of taxpayers that followed each one of the paths. % refers to that stage of the process.

A Appendix

A.1 Additional Tables and Figures

Table A.1: First Stage Regression Table

| | Attempted Call | Effective Call |
|---------------------------|---------------------|---------------------|
| Instruments | (1) | (2) |
| Assignment to Phone Calls | 0.514*** (0.003) | 0.215*** (0.003) |
| Constant | 0.557*** (0.040) | 0.293*** (0.040) |
| Observations | 34,783 | 34,783 |
| Adjusted R-squared | 0.147 | 0.075 |

Notes: Columns show the coefficients corresponding to the first stage of a 2SLS regression. All columns include district controls and controls all variables in Table 2: Liabilities (in logs), Debt age (years), Number of debts, Taxpayer type (Firm), Debt origin dummies. Robust standard errors in parenthesis. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table A.2: Attendance to Meeting after Phone Calls: First Stage

| | Outcome: Attendance to meeting | | |
|-------------------------|--------------------------------|----------------------------|----------------------------|
| | Sample | Sample | Sample |
| | “Contact Started” (1) | “Effective Contact” (2) | “Agreed to Meeting” (3) |
| Distancekm | -0.0010 *** (0.000) | -0.0009 *** (0.000) | -0.0005 * (0.000) |
| Debt size Tercil 2 | -0.0010 (0.015) | 0.0152 (0.016) | 0.0225 (0.016) |
| Debt size Tercil 3 | -0.0552 *** (0.016) | -0.0485 ** (0.017) | -0.0417 * (0.017) |
| Number of debts | -0.1461 ** (0.053) | -0.1519 * (0.065) | -0.1493 * (0.068) |
| Debt age (years) | -0.0169 ** (0.005) | -0.0105 (0.006) | -0.0096 (0.006) |
| Taxpayer type (firms) | -0.0021 (0.014) | 0.0030 (0.014) | 0.0013 (0.014) |
| Debt origin (Wealth) | 0.1801 ** (0.055) | 0.1545 * (0.067) | 0.1557 * (0.069) |
| Debt origin (Income) | 0.1178 * (0.055) | 0.1190 (0.067) | 0.1163 (0.069) |
| Debt origin (VAT) | 0.1229 * (0.058) | 0.1531 * (0.070) | 0.1568 * (0.072) |
| Debt type (Sanctions) | 0.1042 (0.060) | 0.1159 (0.072) | 0.1158 (0.074) |
| Debt type (Withholding) | 0.0834 (0.057) | 0.0876 (0.069) | 0.0827 (0.071) |
| N | 6413 | 5267 | 4957 |
| F-Stat | 33.84 | 21.61 | 4.69 |
| District Dummies | Y | Y | Y |

Notes: Columns present results from the first stage of 2SLS estimation using distance in km as instrument for attendance to meeting. Sample “*Contact started*” refers to the individuals with effective contact+ phone calls with partial contact results like “call again” and “meeting not scheduled”. Sample “*Effective Contact*” refers to phone calls where the script is completed and either “schedule a meeting”, “reports intention to pay” or present other results. Sample “*Agree to meeting*” refers to individuals that decide to schedule a meeting in the local tax office during phone call. Controls include: Liabilities in tercil, Debt age (years), Number of debts, Taxpayer type (Firm), Debt origin dummies, and district fixed effects Distance refers to distance in km to the Tax administration office where the taxpayer is registered Robust standard errors in parenthesis. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table A.3: Heterogeneous Impact of Phone Calls.

| | Outcome: Paid | |
|--------------------------------------|-----------------------|-----------------------|
| | ITT (1) | LATE (2) |
| Phone Call | 0.088 *** (0.012) | 0.136 *** (0.022) |
| <i>Tercil of Liability</i> | | |
| Tercil 2 | 0.009 (0.005) | 0.008 (0.005) |
| Phone Call *Tercil 2 | -0.015 * (0.007) | -0.023 (0.013) |
| Tercil 3 | 0.037 *** (0.006) | 0.035 *** (0.006) |
| Phone Call *Tercil 3 | -0.030 *** (0.007) | -0.045 ** (0.015) |
| <i>Type of Taxpayer: Firm</i> | | |
| Firm | 0.011 * (0.005) | 0.008 (0.005) |
| Phone Call *Firm | -0.020 ** (0.006) | -0.026 * (0.012) |
| <i>Number of debts</i> | | |
| Number of Debts | -0.011 (0.005) | -0.009 (0.005) |
| Phone Call *NDebts | 0.009 (0.007) | 0.018 (0.015) |
| <i>Debt age in years</i> | | |
| DebtAge | -0.017 *** (0.002) | -0.019 *** (0.002) |
| Phone Call *DebtAge | -0.014 *** (0.002) | -0.022 *** (0.004) |

Notes: N= 34,783. Column 1 shows OLS estimates using random assignment to phone calls interacted with all covariables in Table 2. Column 2 shows 2SLS estimates using random assignment as instrument to attempted phone calls interacted with all covariables in Table 2. Variables include: Initial Liabilities (tercile), Taxpayer type (Firm), Debt size, Debt Age, Number of Debts, Debt origin dummies. All columns include stratification and district fix effects. Robust standard errors in parenthesis.

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table A.4: Heterogeneous Impact of Phone Calls

| | Outcome: Paid | |
|-----------------------------------|----------------------|----------------------|
| | ITT | LATE |
| | (1) | (2) |
| Phone Call | 0.088 *** (0.012) | 0.136 *** (0.022) |
| <i>Debt origin: VAT</i> | | |
| Tax VAT | 0.042 *** (0.006) | 0.034 *** (0.006) |
| Phone Call*VAT | 0.027 *** (0.008) | 0.056 *** (0.015) |
| <i>Debt origin: Income</i> | | |
| Tax Income | 0.032 *** (0.006) | 0.030 *** (0.006) |
| Phone Call*Income | 0.026 ** (0.008) | 0.048 ** (0.015) |
| <i>Debt origin: Wealth</i> | | |
| Tax Wealth | 0.049 *** (0.011) | 0.043 *** (0.011) |
| Phone Call*Wealth | -0.008 (0.014) | -0.011 (0.026) |

Notes: N= 34,783. Column 1 shows OLS estimates using random assignment to phone calls interacted with all co-variables in Table 2. Column 2 shows 2SLS estimates using random assignment as instrument to attempted phone calls interacted with all covariables in Table 2. Variables include: Initial Liabilities (tercile), Taxpayer type (Firm), Debt size, Debt Age, and Number of Debts. All columns include stratification and district fix effects. Robust standard errors in parenthesis. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

A.2 DIAN Script for the Phone Calls Experiment.



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Fortalecimiento del cobro persuasivo

Agendamiento
Contac Center

1. GUIÓN PARA LA LLAMADA

ENCABEZADO PARA TODAS LAS LLAMADAS:

AGENTE DEL CENTRO DE CONTACTO: "Buenos días, mi nombre es _____, llamo de la Dirección de Impuestos y Aduanas Nacionales DIAN.

¿Me podría comunicar con el Representante Legal?

CLIENTE: Opción 1. De acuerdo. Se continúa con el mensaje
Opción 2. No se encuentra. No lo pueden comunicar. Se solicita que lo comuniquen con una persona facultada para recibir un mensaje de la DIAN.

AGENTE DEL CENTRO DE CONTACTO Sr. (a) Contribuyente, mi nombre es _____, de la Dirección de Impuestos y Aduanas Nacionales DIAN, el motivo de la llamada es para invitarlo(a) para que asista a la DIRECCION SECCIONAL DE IMPUESTOS y/o IMPUESTOS Y ADUANAS DE _____ toda vez que según los datos disponibles en el sistema, existen deudas a su cargo.

Ésta es una buena oportunidad para que sea aclarado su estado de cuenta ante la administración tributaria, y es posible que evite le decreten medidas cautelares, como embargo de bienes muebles, inmuebles y cuentas bancarias. De no comparecer continuaremos con el proceso de cobro coactivo.

Para tal efecto, se ha dispuesto que un funcionario de la Dirección Seccional lo atienda de manera personal:

| |
|--|
| Quien atendió la llamada: |
| Quién asistirá a la cita (debe ser el contribuyente y/o Representante Legal) |
| Lugar de atención: |
| Ciudad: |
| Fecha: |
| Hora: |
| Funcionario que lo atenderá: |
| ¿Confirмо su cita? |

Recuerde, si es persona natural puede comparecer personalmente o mediante apoderado legalmente autorizado, si es persona jurídica debe asistir el representante legal o el apoderado legalmente autorizado. (Es información reservada)

SITUACION 1. El contribuyente informa que se encuentra al día. Renuente a asistir.

CLIENTE: Me encuentro al día (manifiesta que no debe)

AGENTE DEL CENTRO DE CONTACTO: Muchas gracias por la información, sin embargo, es una buena oportunidad para que sea aclarado su estado de cuenta ante la administración tributaria, y es posible que evite le decreten medidas cautelares, como embargo de bienes muebles, inmuebles y cuentas bancarias. De no comparecer continuaremos con el proceso de cobro coactivo.

Formule su petición, queja, sugerencia o reclamo en Sistema PQSR de la DIAN:
<http://muisca.dian.gov.co/WebSolicitudesexternas/DefMenuSolicitudNS.faces>

Subdirección de Gestión de Recaudo y Cobranzas

Calle 75 N° 15-49 piso 7°
3198714

Para tal efecto, se ha dispuesto que un funcionario de la Dirección Seccional lo atienda de manera personal:

| |
|--|
| Quien atendió la llamada: |
| Quién asistirá a la cita (debe ser el contribuyente y/o Representante Legal) |
| Lugar de atención: |
| Ciudad: |
| Fecha: |
| Hora: |
| Funcionario que lo atenderá: |
| ¿Confirмо su cita? |

CLIENTE: si/no.

AGENTE DEL CENTRO DE CONTACTO: Señor(a), muchas gracias por su tiempo, recuerde que: **"Colombia, un compromiso que no podemos evadir"**

SITUACION 2. El contribuyente informa que realmente debe.

CLIENTE: no efectuó el pago o pagué parcialmente.

AGENTE DEL CENTRO DE CONTACTO: La DIAN lo invita a que se ponga al día en sus obligaciones en mora. Nos informa ¿la fecha en que efectuará el pago?

CLIENTE: Informa fecha de pago – No informa fecha de pago.

AGENTE DEL CENTRO DE CONTACTO: para prestarle un mejor servicio queremos que aproveche esta oportunidad y se acerque a la Dirección Seccional de Impuestos de _____ para que sea aclarado su estado de cuenta ante la administración tributaria, conozca alternativas de pago y de ser posible evite le decreten medidas cautelares, como embargo de bienes muebles, inmuebles y cuentas bancarias. De no comparecer continuaremos con el proceso de cobro coactivo.

Para tal efecto, se ha dispuesto que un funcionario de la Dirección Seccional lo atienda de manera personal:

| |
|--|
| Quien atendió la llamada: |
| Quién asistirá a la cita (debe ser el contribuyente y/o Representante Legal) |
| Lugar de atención: |
| Ciudad: |
| Fecha: |
| Hora: |
| Funcionario que lo atenderá: |

AGENTE DEL CENTRO DE CONTACTO: Señor(a), muchas gracias por su tiempo, recuerde que:

"Colombia, un compromiso que no podemos evadir"

RECOMENDACIONES

- Informar solo lo establecido en este protocolo
- Si el contribuyente pregunta cuánto debe, esa información se le suministrará el día de la cita.

Formule su petición, queja, sugerencia o reclamo en Sistema PQSR de la DIAN:
<http://muisca.dian.gov.co/WebSolicitudesexternas/DefMenuSolicitudNS.faces>

Subdirección de Gestión de Recaudo y Cobranzas

Calle 75 N° 15-49 piso 7°
3198714