

Testing the Optimal Frequency of Tax Amnesty Reminders in Guatemala

Project report

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Executive Summary

The Behavioural Insights Team (BIT) and the Guatemala Tax Authority, (SAT), have been collaborating since 2014 when we collaborated on two trials. In 2017, the partnership was renewed to build SAT's capacity to apply behavioural insights and rigorous evaluation to tax administration in Guatemala. This report summarizes the findings of our first trial with SAT as part of this partnership, funded by the Global Innovation Fund (GIF).

Policy objective

Guatemala has the lowest rate of tax collection in Latin America, foregoing funds that could contribute to poverty reduction and social welfare. The aim of this project was to increase the declaration and payment of overdue taxes during a tax amnesty launched in May 2017.

To encourage taxpayers to pay overdue value-added-tax (VAT) tax debts, SAT approved a tax amnesty that lasted from 20th May to 19th September 2017. The amnesty offered an opportunity for SAT to gather further evidence on the impact of their communications sent to late taxpayers.

Intervention

BIT and SAT tested the effectiveness of sending eligible taxpayers one, two or three letters with information on tax relief during the tax amnesty. All letters had similar content and format, while the dates, interest percentages, and fines were personalised. The letters were designed to incorporate behavioural components, such as simplified instructions and a clear call to action.

Trial Design

Our sample consisted of 15,107 taxpayers (firms and self-employed individuals) that had not declared all of their VAT obligations by 3rd July 2017. Taxpayers in this sample were randomly assigned to receive: (i) one letter (control), (ii) two letters or (iii) three letters.

Results

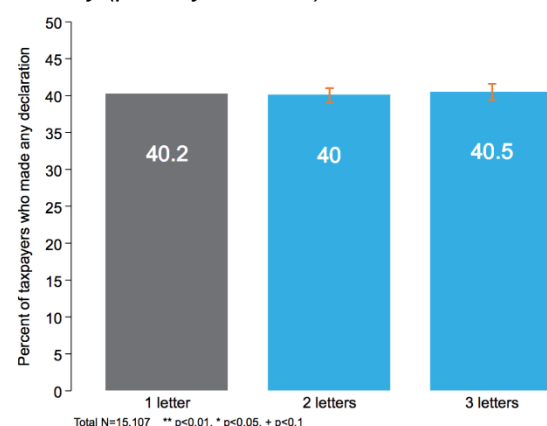
The results show that sending two or three reminder letters did not increase the *proportion of taxpayers* that declared or paid overdue declarations compared to those who received only one letter.

Multiple letters, however, increased the *proportion of overdue declarations* made by taxpayers. Sending two letters increased the proportion of declarations made by 0.7 percentage points, from 14.1% to 14.8%. Sending three letters increased the proportion of declarations made by 1.5 percentage points, to 15.6%.

Recommendations

- Further testing of letter frequency in a more common setting, where small increases in declaration are a high priority for SAT, if possible targeting taxpayers with multiple tax debts.
- Further testing of frequency of communication, using cheaper or free alternatives, such as SMS and email.
- Testing optimal reminder frequency with larger sample sizes, in order to detect smaller differences in the amount paid by taxpayers with statistical significance.

Figure 1: Impact of treatment on whether a taxpayer makes any declaration during the amnesty (primary outcome)



01 / Introduction

In 2014, Guatemala's Tax Authority - Superintendencia de Administración Tributaria (SAT), the Behavioural Insights Team (BIT) and the World Bank conducted two randomised controlled trials (RCTs) to test interventions to increase tax compliance. The first trial found that behavioural letters were an effective method for SAT to increase income tax declaration and payment by late filers. Letters sent to late filers for income tax in the 2014 tax year tripled tax receipts for this group, and generated a 36-times return on investment.ⁱ The second trial found no impact on compliance of honesty priming messages presented to taxpayers as part of a CAPTCHAⁱⁱ pop-up window immediately before they filed a tax return online.ⁱⁱⁱ

In the two years following these trials, SAT had significantly scaled up the use of behavioural letters found to be effective in the original trial, including as reminders for other tax types. SAT was also testing further letter variants, however in a non-rigorous manner.^{iv}

In February 2017, BIT and SAT partnered again, this time supported by the Global Innovation Fund (GIF). The aim of the collaboration is to not only increase tax compliance and tax revenues, but also train SAT staff to independently apply behavioural approaches and rigorous impact evaluation to tax administration through 'learning-by-doing'.

The aims of this first trial under GIF funding were to increase the declaration and payment of overdue VAT tax debts during a tax amnesty, and rebuild our partnership with SAT. This report summarises the findings of this project.

02 / Background

Low tax compliance exacerbates poverty in Guatemala

Tax revenue represents the primary means for most governments to provide public goods and services. Guatemala has the lowest rate of tax collection in Latin America, taking just 12.6% of GDP in tax revenue.^v This means foregoing funds that could contribute to poverty reduction and improve social welfare in Guatemala. Our work with SAT seeks to foster tax compliance, thereby increasing tax revenue, which can be used to support social expenditure for poverty reduction.

The tax amnesty

On 5th May 2017, the Guatemalan Government approved a tax amnesty, which meant that taxpayers would pay only up to 10% of the regular fines for non-compliance or interest on overdue fiscal obligations. The amnesty was initially set to last until 19th August 2017, but was later extended until 19th September 2017.

The tax relief that taxpayers (individuals and firms) could receive decreased over time as follows. If the taxpayer declared between:

- 20th May and 19th June, 100% of fines and interest were waived;
- 20th June and 19th July, 95% of fines and interest were waived; or
- 19th July and 19th September, 90% of fines and interest were waived.

The tax amnesty announced in May 2017 offered a good opportunity for SAT to gather further evidence on the impact of the communications sent to late taxpayers. Given the evidence on the impact of letters to late filers in the 2014 trial (which tripled tax receipts), BIT and SAT determined that they wanted to send letters to all taxpayers and that there would be no 'pure' control group. We were, however, interested in finding out whether sending multiple letters to each taxpayer would have an additional impact.

03 / Intervention

Relevant literature and evidence

There are two main theories related to tax compliance: deterrence and non-deterrence. The more traditional deterrence model suggests that people are economically rational in their decision of whether to pay taxes. It assumes we weigh up the monetary costs, the probability of detection and the severity of punishment for not paying.^{vi vii} The policy tools that the deterrence approach recommends are (1) surveillance (to increase the risk of being caught) and (2) penalties (to increase the cost of the punishment for not paying). These are the two mechanisms traditionally favoured by revenue departments.^{viii ix x}

In contrast, the non-deterrence model argues that people are influenced by factors beyond financial costs and punishment, such as social norms, fairness, tax morale and the provision of services.^{xi} We are predisposed to cooperate with the tax system,^{xii} since we see tax compliance as an ethical activity resulting in the provision of important public goods. Supporters of the non-deterrence model argue that processes should just be made easy for taxpayers, with a competent service available to aid compliance.

The most commonly held position is that a balance of deterrence and encouragement is

the most effective way to maximise tax receipts.^{xiii} On top of this, behavioural approaches, such as reminders and the framing of information on deterrents and moral benefits, can further increase tax revenue. However, there is currently limited evidence on the optimal frequency of such reminders.

The intervention

We therefore aimed to test the impact of the *frequency* of reminders on compliance. The trial tested the effectiveness of sending eligible taxpayers one, two or three behavioural letters during the tax amnesty.

The behavioural letters informed eligible taxpayers of the conditions of the tax amnesty and prompted them to profit from the exoneration by declaring and paying their overdue taxes. Taxpayers in the sample were randomly assigned to one of the three conditions in the table below (and see Annex A for a diagram of the trial design). All letters, including Letter 1, were similar in terms of content and format. Only the dates and the (personalised) fines and interest to be paid, based on the ongoing amnesty tranche, were updated between letters.

Two variants were developed for Letter 1: (i) one sent to the whole sample, except taxpayers with an ongoing court case with SAT and (ii) another sent to taxpayers who had an ongoing court case with SAT (See Annex B for English translations of the letters).

Table 1. Treatment conditions

Condition	Description
One letter (Control)	<ul style="list-style-type: none"> Letter 1: sent on 31st May 2017 (before beginning of amnesty)
Two letters	<ul style="list-style-type: none"> Letter 1: sent on 31st May 2017 (before beginning of the amnesty) Letter 2: sent on 30th June, before 19th July deadline, asking taxpayer to take advantage of 95% fine relief
Three letters	<ul style="list-style-type: none"> Letter 1: sent before the beginning of the amnesty on 31st May 2017 Letter 2: sent on 30th June, before 19th July deadline, asking taxpayer to take advantage of 95% fine relief Letter 3: sent on 1st August, before the original end of the amnesty (19th August), asking taxpayer to take advantage of the 90% fine relief

The content and wording of the letters built on the most impactful letters found in the trials that BIT implemented with SAT in 2014.^{xiv}

They incorporated the following behavioural components:

- **Simplified instructions** - short and clear instructions that avoid complex, technical language to highlight the required actions;
- **Clear call to action** – highlighting the key actions that taxpayers have to take; and
- **Deadlines** - prompts for when to declare by, emphasising the end of the opportunity.

In keeping with SAT's existing procedures, copies of the letters were also sent by email to all taxpayers for whom SAT had a registered email address.

Ahead of the trial we hypothesised that the additional letters would have a positive impact, but not necessarily be cost-effective.

04 / Trial design and implementation

We conducted a three-arm, individually-randomised RCT to evaluate the optimal frequency for tax reminders. Taxpayers with overdue tax declarations were either sent one, two, or three reminders.

Sample

Our sample consisted of the universe of taxpayers in Guatemala that had not declared all of their value-added-tax (VAT) obligations by July 3rd 2017. The sample consisted of 15,107 taxpayers.

Outcome measures

Our primary outcomes of interest for this trial were whether taxpayers: (i) made any declaration of overdue VAT and, (ii) amount of overdue tax paid by the end of the amnesty period.

Additionally, we were interested in the following secondary outcomes:

- The proportion of missed declarations declared by the end of the amnesty, out of the total number of missed declarations;
- The amount paid by the end of the amnesty (a continuous variable capturing total payment during the amnesty); and
- The amount saved by the end of the amnesty (a continuous variable representing funds an individual saved by taking advantage of the tax amnesty).^{xv}

Because there was no 'pure' (i.e. no-letter) control group, we are only able to evaluate the impact of additional letters over and above the first letter rather than their total impact.

Randomisation

We stratified randomisation based on: (i) whether a taxpayer had a registered email address with the SAT, (ii) whether a taxpayer had been targeted by SAT with other communications that could influence compliance, (iii) the department (administrative entity) a taxpayer was registered in, and (iv) number of declarations missed by a taxpayer for any tax, for any period (divided into quintiles). Randomisation was conducted prior to the sending of the second letter.

Implementation

The dates in which the letters were sent and the data was extracted are presented in the trial design in Annex A.

The most significant implementation challenge was collecting accurate outcome data because declarations were not dated, but only marked as either amnesty eligible or with the month they were received in. We therefore had to use all *amnesty-eligible declarations and payments* made from the beginning of the amnesty up until it concluded (including those made prior to randomisation). As a robustness check we also used all declarations made in July and August, i.e. from randomisation until ten days after the initial end of the amnesty. Results were robust to the use of both outcome measures.

05 / Main findings

A. Making a declaration or payment: Additional letters had no significant impact

We found no significant impact on the primary outcome measures - i.e. the likelihood of making any declaration or payment - from sending additional letters during the amnesty. In all three groups, around 40 % of taxpayers made a declaration and 20 % made a payment (see Figures 2 and 3).

Figure 2. Impact of treatment on whether the taxpayer makes any declaration (Primary outcome)

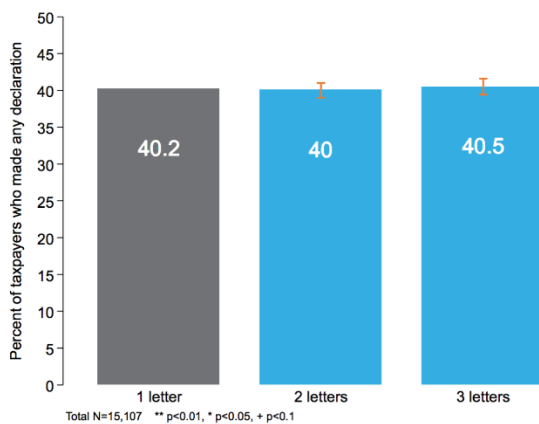
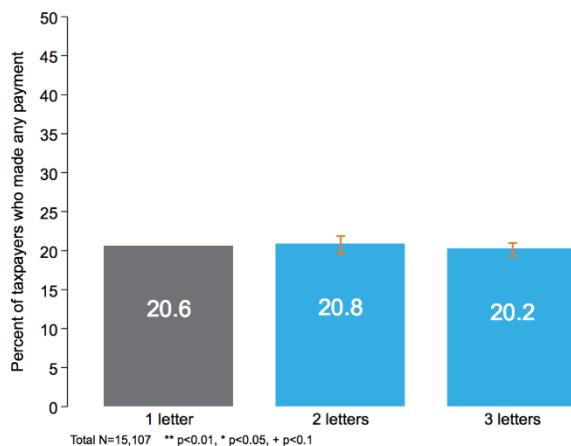


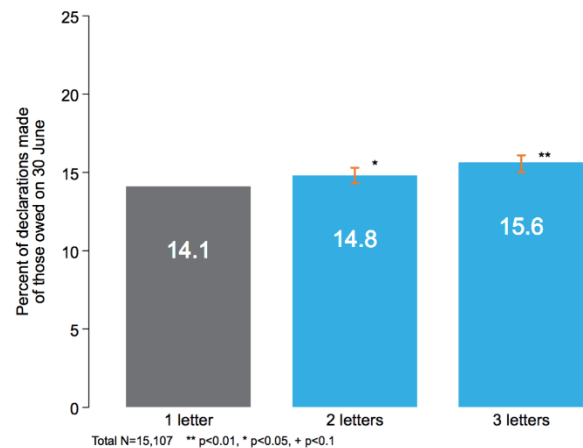
Figure 3. Impact of treatment on whether the taxpayer makes any payment (Primary outcome)



B. Proportion of declarations made: Additional letters had a significant impact

We found that sending two letters increased the proportion of declarations (out of all declarations missed) by 0.7 percentage points from 14.1 % in the control group, and sending three letters increased the proportion of declarations by 1.5 percentage points.

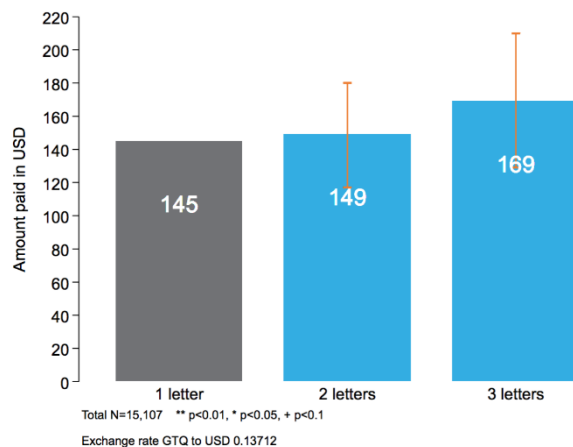
Figure 4. Impact of treatment on proportion of declarations made (Secondary outcome)



C. Amount paid: Additional letters had no significant impact

We found no evidence that either treatment had an effect on the amount of tax paid. Our results show that those who receive 3 letters pay USD 24^{xvi} more on average than taxpayers who receive one letter, but this result is not statistically significant. The lack of a significant effect size could be due to a lack of statistical power caused by the high variation in the amount paid by taxpayers. This means that there might be an impact of the letter on the amount paid, but that we cannot distinguish it from variation driven by chance.

Figure 5. Impact of treatment on amount paid (Secondary outcome)



Discussion

Overall we found that SAT sending two or three letters, rather than one, had no impact on the number of people declaring or paying overdue VAT during the amnesty (our primary outcomes). We cannot evaluate the impact of one letter compared to no letter due to the fact that all taxpayers in the sample received at least one letter.

This lack of impact on our primary outcomes was potentially because all groups received the first letter. After this letter, a taxpayer already knows that they have to declare and are being monitored. Further letters provide no additional useful information and might therefore not be effective in encouraging a large number of additional taxpayers to file.

The lack of impact, however, could also be context specific. The tax amnesty included a large-scale general information campaign including radio and TV adverts with presidential endorsement. All taxpayers in the sample with an email address on file also received an email about the amnesty. Additional reminder letters may therefore have failed to prompt more taxpayers to file because of this high information context.

On the other hand, multiple letters may have increased the number of overdue declarations because they highlighted to taxpayers how closely they were being monitored by SAT, thus increasing the perceived probability of

being fined if they failed to comply with all of their outstanding obligations.

06 / Recommendations

While this trial did not show any significant impact on the primary outcomes and was conducted in a very specific, one-off setting of a tax amnesty, we recommend that SAT continues to test the impact of communication of tax compliance. Specifically, we encourage SAT to:

- **Test impact of letter frequency in other settings**, where small increases in declaration are a high priority for SAT, such as taxpayers with multiple/high-value tax debts;
- **Test the optimum frequency of other means of communication**, such as email and SMS. As these means are cheap or even free, even small improvements in the outcome of interest are meaningful. We therefore recommend running such tests with larger samples in order to be able to detect smaller differences in the outcome of interest.

Test further, and on high value outcomes

- Given that this trial was administered within a low-frequency, high-publicity event, we recommend further testing the impact of letter frequency in a more common setting, where small increases in declaration are a high priority for SAT.
- Given that additional letters had a significant impact on the proportion of declarations made, we specifically recommend that SAT considers further testing of multiple letters on taxpayers with multiple tax debts.

Test the optimum frequency of email and SMS

- We think that the frequency of tax communications is an area ripe for further research, even though the results in this trial only showed a marginal impact. We particularly recommend further testing with cheaper or free communication alternatives such as SMS and emails.
- If possible, SAT should test optimal reminder frequency with larger sample sizes, in order to detect smaller differences in the amount paid by taxpayers with statistical significance.

07 / Capacity building

The objectives of this project were twofold, to: i) test the impact of additional reminders of the amnesty on tax collection; and ii) build capacity in the application of behavioural insights and rigorous evaluation within SAT's Tax Collection Department.

We interviewed Juan Carlos Aguirre Aguera, a Tax Collection Advisor who had also worked with BIT in 2014, about his experience working with us in this trial.



Juan Carlos Aguirre Argueta, Tax Collection Advisor, Tax Collection Department.

"In 2014, when we carried out the first project, I found it really interesting the way in which we were able to vary our communications with taxpayers. [...] I didn't have any specific experience with behavioural science before. However, I was always interested in how we could modify the structure of our communications in a more personal manner."

Building on this foundation and exposure to rigorous experimental design, Juan Carlos has been working closely with BIT team members on trial design and implementation, conducting sample selection, data segmentation and randomisation.

"The process hasn't been without challenges, requiring coordination across various departments to gain access to the relevant data, as well as careful considerations in handling confidential data."

However, the use of data is now something that Juan Carlos believes will be a long-term adoption within SAT:

"We are handling more and more data now, enabling us to draw comparisons from previous years and inform our strategy for tax compliance."

Juan Carlos feels this project has not only helped develop his evaluation skills, but also deepened his understanding of the behavioural literature and evidence base on encouraging tax compliance.

He is confident that these skills will also be helpful when working on other SAT efforts, such as changing the perception of social norms on tax compliance.

"We have been applying these subjects since 2014 and we are looking forward to continue innovating".

08 / Conclusion

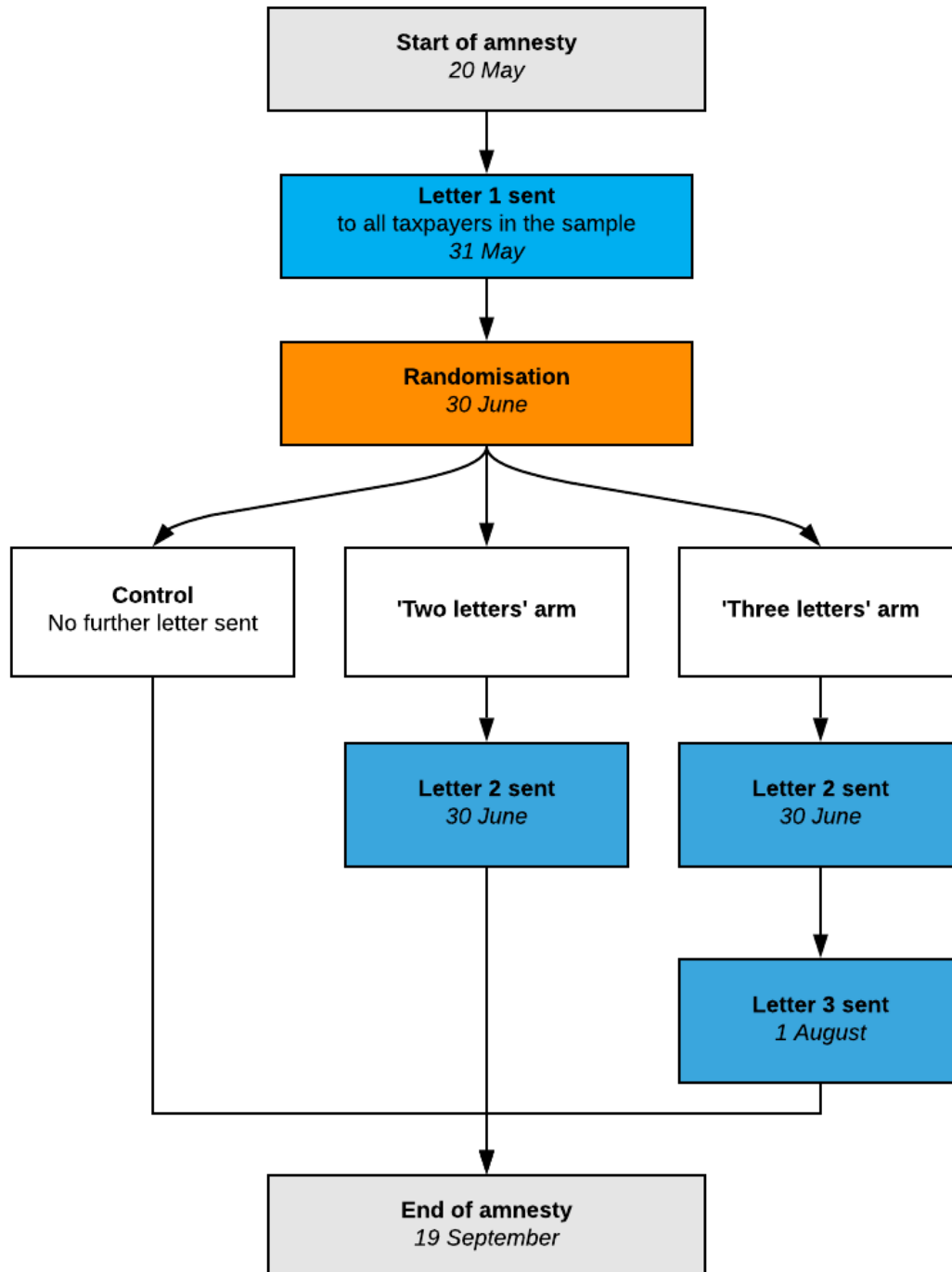
In this trial, sending two or three letters to taxpayers had no significant impact on the probability that a taxpayer declared or paid taxes owed during the amnesty over sending one letter.

Sending multiple letters, however, did have a significant impact on the proportion of overdue declarations made: two letters from SAT increased the proportion of declarations by 0.6 percentage points, and three letters increased the proportion of declarations by 1.4 percentage points.

The amnesty was well publicised by the Guatemalan Government, and all taxpayers with an email address on file also received an email, and so the results should be interpreted within a very high information context. The impact of multiple letters may be different in a scenario with less public information surrounding a request to taxpayers, for example an annual tax deadline.

The trial allowed BIT and SAT to form a new partnership with the aim of building SAT's capacity to run their own trials, with this project itself being one of the first concrete steps in this journey.

Annex A: Trial Implementation Timeline



Annex B: English translations of letters

Letter 1a: Sent to the whole sample before the Amnesty in May 2017. Variant sent to taxpayers without an ongoing court case with SAT



AVISO No. SAT AG82-2017-771236

[Name]
[Unique fiscal identification number (NIT)]
[Address]
[City, Country]

[Date]

Comply now and take advantage of the current exoneration

Dear Taxpayer:

www.....

Declare now and, in accordance with Governmental Agreement Number 82-2017, enjoy the following exemptions from fines, arrears and interest for the taxation periods prior to January 1, 2017:

- **100%:** If you do it between 20th May and 19th June.
- **95%:** If you do it between 20th June and 19th July.
- **90%:** If you do it between 20th July and 19th August, of the current year in all cases.

Within the same time frames and the same percentages, exemptions from fines and interest will be applied in your favor if you pay taxes corresponding to records that are in any phase of administrative or judicial proceedings. The same applies if you decide to do so through payment facilities. Visit your nearest Tax Office to do so.

Hurry, you have until 19th June to pay the taxes you owe and enjoy 100% exemption from fines, interest or surcharges.

If you have any doubts, call 1550. We will be glad to assist you.

Sincerely,

Letter 1b: Sent to the whole sample before the Amnesty in May 2017. Variant sent to taxpayers with an ongoing court case with SAT



AVISO No. SAT AG82-2017-771236

[Date]

Pay now and take advantage of the current exoneration

[Name]
[Unique fiscal identification number (NIT)]
[Address]
[City, Country]

Dear Taxpayer:

We have reviewed our records and found that you can enjoy the benefits offered by **Governmental Agreement Number 82-2017**, according to which taxpayers can legalize their situation before the Treasury and enjoy exemption from fines, arrears, interest or surcharges in the following way:

- **100%:** If you do it between 20th May and 19th June.
- **95%:** If you do it between 20th June and 19th July.
- **90%:** If you do it between 20th July and 19th August, of the current year in all cases.

This is applicable in the case of any defaulted tax obligation, but also, for cases in which records are in any judicial phase. In your case, we suggest you especially consider the following records for that purpose: 20030220440002028

Hurry, you have until 19th June to pay the tax that you owe and enjoy 100% exemption from fines, interest or surcharges.

To do this, visit the Legal Affairs Office located on the 6th floor of the Edificio Torre SAT, 7th. Avenida 3-73, zone 9 of the capital city, where you will gladly be guided on how you can legalize your situation, including, when appropriate, access to payment facilities. In your case, you can also go to the Legal Affairs Division of our Regional Management, based in the departmental capitals of Escuintla; Zacapa and Quetzaltenango. Likewise, you can visit our different tax offices.

If you have any questions, contact us by calling 23297070, extensions 1610 and 1641, corresponding to said Intendance

Sincerely,

Letter 2: Sent on June 20th to taxpayers assigned to receive 2 or 3 letters



AVISO No. SAT AG82-2017-771236

[Date]

[Name]
[Unique fiscal identification number (NIT)]
[Address]
[City, Country]

Compy now and take advantage of the current exoneration

Dear Taxpayer:

We have reviewed our records and found that you failed to file tax returns. See the details at the following address:

<http://portal.sat.gob.gt/sitio/index.php/esat/autoconsultas-impuestos/consulta-omiso-o-moroso.html>

Declare now and, in the case of taxation periods prior to January 1, 2017, enjoy exemption from fines, arrears and interest established by Governmental Agreement Number 82-2017, as follows:

- **95%:** If you do it “before” 20th July.
- **90%:** If you do it between 20th July and 10th August, the current year in both cases.

Within equal time frames and the same percentages, exemption from fines and interest will be applied to your favour if you pay tax corresponding to records that are in any phase of administrative or judicial proceedings. The same applies if you decide to do it through payment facilities. To do so, visit your nearest Tax Office.

Hurry, you have until 19th July to pay the tax you owe and enjoy 95% exemption from fines, interest or surcharges.

In you have any doubts, call 1550. We will be glad to assist you.

Sincerely,

Letter 3: Sent on August 1st taxpayers assigned to receive 3 letters



AVISO No. SAT AG82-2017-771236

[Date]

[Name]
[Unique fiscal identification number (NIT)]
[Address]
[City, Country]

Comply now and take advantage of the available tax relief

Dear Taxpayer:

We have reviewed our records and found that you failed to file tax returns. See the detail at the following address:

<http://portal.sat.gob.gt/sitio/index.php/esat/autoconsultas-impuestos/consulta-omiso-o-moroso.html>

Declare now and in the case of periods of taxation prior to January 1, 2017, enjoy the exemption of fines, arrears and interest established by Governmental Agreement Number 82-2017, as follows:

- **90%:** If you do it “before” 19th August.

Within equal periods and with the same percentages, the exemption of fines and interest will be applied to your favour if you pay the tax corresponding to files that are in any phase of the administrative or judicial procedure. Also, if you decide to do it through payment facilities. To do so, visit the nearest Tax Office.

Hurry, you have until 19th June to pay the tax at your expense and enjoy 90% exemption from fines, interest or surcharges.

In case of doubt, call 1550. It will be a pleasure to assist you.

Sincerely,

Notes

- ⁱ Kettle, S., Hernandez, M., Ruda, S., & Sanders, M. (2016). Behavioral interventions in tax compliance: evidence from Guatemala. The World Bank.
- ⁱⁱ CAPTCHA: a computer program or system intended to distinguish human from machine input, typically as a way of thwarting spam and automated extraction of data from websites.
- ⁱⁱⁱ Kettle, S., Hernandez, M., Sanders, M., Hauser, O., & Ruda, S. (2017). Failure to CAPTCHA attention: Null results from an honesty priming experiment in Guatemala. *Behavioral Sciences*, 7(2), 28.
- ^{iv} For example, SAT compared outcomes of sending one type of letter to a group with one characteristic, and another letter type to a group with different characteristics.
- ^v OECD/IDB/ECLAC (2018), Revenue Statistics in Latin America 2018, OECD Publishing, Paris. DOI: https://doi.org/10.1787/rev_lat_car-2018-en-fr
- ^{vi} Allingham, M.G., & Sandmo, A. (1972). Income Tax Evasion: A theoretical analysis. *Journal of Public Economics*, 323-338.
- ^{vii} Ortega, D., & Sanguinetti, P. (2013). *Deterrence and reciprocity effects on tax compliance: experimental evidence from Venezuela*.
- ^{viii} Feld, L. P. & Larsen, C. 2012. Self-Perceptions, Government Policies and Tax Compliance in Germany. *International Tax and Public Finance*, 19, 78-103.
- ^{ix} Hessing, D. J., Elffers, H., Robben, H. S., & Webley, P. (1992). Does deterrence deter? Measuring the effect of deterrence on tax compliance in field studies and experimental studies. *Why people pay taxes: Tax compliance and enforcement*, 291-305.
- ^x Brehm, S. S., & Brehm, J. W. (1981). *Psychological reactance: A theory of freedom and control*, Academic Press. New York.
- ^{xi} Andreoni, J., Erard, B. & Feinstein, J. 1998. Tax Compliance. *Journal of Economic Literature*, 36, 818-860.
- ^{xii} Ariel, B. (2012). Deterrence and moral persuasion effects on corporate tax compliance: findings from a randomised control trial. *Criminology*, 50(1), 27-69.
- ^{xiii} Smith, K. W. 1992. Reciprocity and Fairness: Positive Incentives for Tax Compliance. In: Slemrod, J. (ed.) *Why People Pay Taxes: Tax Compliance and Enforcement* Ann Arbor: University of Michigan Press.
- ^{xiv} See Kettle et al., (2016) for further details
- ^{xv} Due to data collection challenges, we were not able to capture the data necessary to assess this secondary outcome.
- ^{xvi} Conversion from Guatemalan Quetzal (GTQ) to US Dollar (USD) made on the 19th of September, the final day of the tax amnesty. 1 GTQ = 0.13712 USD