

# Corruption, Government Efficiency and Tax Compliance: Evidence from an Experimental Survey Using Facebook in Chile

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# Corruption, Government Efficiency and Tax Compliance: Evidence from an Experimental Survey Using Facebook in Chile

Gastón Pierri \* Maria José Jarquín<sup>†</sup> Roberto de Michele<sup>‡</sup> Nicolás Dassen<sup>§</sup>

August, 2022

## Abstract

In recent years, Latin American countries have suffered from acts of corruption that have affected citizen perception of government effectiveness. Using randomized experiments formulated from behavioral economics, this study evaluates the effect of information distribution through Facebook on Chilean citizens perception of corruption, government effectiveness, and tax compliance. Preliminary results show that when favorable data on corruption and government efficiency are shown graphically in Chile, the perception of corruption and inefficiency is reduced by 10.5 and 3.8 percentage points, respectively. Additionally, this perception has a significant effect of up to 99 **percent** confidence level on the willingness to pay taxes<sup>1</sup>.

**JEL Codes:** H21, H26, H30, D73

**Keywords:** social networks, tax behavior, perception of corruption, corruption, perception of government effectiveness, transparency, tax evasion.

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# 1 Introduction

Corruption represents one of the main challenges for developing countries in their quest to improve the provision of public goods and services in order to ensure the best quality of life for their citizens. Corruption not only has an impact on state responsibilities towards citizens, but also on the public administration's relationship with its citizens. High levels of perception of corruption affect citizen participation in political affairs, discredit the work of the state, and generate dissatisfaction with the democratic system (Pastrana, 2019). This situation is reflected in different aspects such as the willingness to pay taxes, which is affected by the perception that revenues are not being managed well. Taxation power is fundamental to the state's ability to generate revenue to provide goods and services and support a market economy. In this sense, political development goes hand in hand with economic development, as citizens in participatory political systems demand sound management of growing public resources. Therefore, the power to tax is at the core of state development (Besley and Persson, 2014). (Besley & Persson, 2014).

This paper provides evidence from a collaborative study carried out by the IDB and the government of Chile. The purpose of this study is to strengthen and consolidate the legal and institutional frameworks for the prevention and control of corruption and the promotion of fiscal transparency.<sup>2</sup>

Previous studies<sup>3</sup> were taken into consideration while creating the survey used in this study in order to better understand corruption and fiscal transparency in emerging economies and to guide study design. The results of this survey will, in turn, allow future research on the effect that the perception of corruption has on efficiency reforms and tax behavior.

Section 2 of this document presents an analysis of the literature used to prepare the survey. Section 3 presents the empirical methodology, survey design, and survey circulation method. Section 4 shows the main results of the survey for each of the treatments. Finally, section 5 reviews preliminary conclusions and future research opportunities.

## 2 Literature Review

### 2.1 Corruption and Tax Evasion

Previous studies in the literature have examined both the impact of corruption on various socioeconomic indicators, and the variables that influence citizens' perception of corruption in their communities. For example, a study in Argentina leveraged indicators from *Latino-barómetro* and the *Victimization Survey*, to evaluate the effects of citizens' trust in the police force and perception of corruption on their perception of safety. [Dammert and Malone \(2002\)](#) find that both variables are significant. When trust in the police increases by one unit, the feeling of safety increases by 5 percent, and when the perception of corruption increases by one unit, the perception of crime increases by 16.5 percent. In South Africa, an experiment was conducted among 201 fishermen who were randomly assigned to four groups.

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<sup>2</sup>The purpose of this document is to present a preliminary analysis of the first survey implemented within the joint research project "Support for the Strengthening of Chile's Integrity and Transparency Systems" as carried out by Chile's Internal Revenue Service (IRS) and the Inter-American Development Bank (IDB).

<sup>3</sup>See [Antinyan and Asatryan \(2019\)](#), [Cheeseman and Peiffer \(2020\)](#), [Gangl, Kirchler, Lorenz, and Torgler \(2015\)](#), [López-Luzuriaga and Scartascini \(2019\)](#), [Peiffer \(2018\)](#).

The intervention presented participants with statistics on inspectors' willingness to accept corruption, and on the propensity of other fishermen to break the rules. The results showed that when participants perceived higher levels of inspector corruption, they were more likely to state their intention to break the rules (Sundström, 2019).

In Colombia, Carreras and Vera (2018) evaluated the impact of citizens' perception of the corruption of a political candidate on the likelihood of that candidate being elected. To this end, they conducted an experiment using cartoons in a survey with 1563 responses. Each cartoon depicted the candidate's performance in a previous administration, as well as varying degrees of prior corruption. The initial hypothesis was that strong performance in previous administrations would make previous cases of corruption insignificant. However, the results demonstrated that voters rejected candidates with corruption cases to a greater extent, regardless of prior performance.

In Costa Rica, Corbacho, Gingerich, Oliveros, and Ruiz-Vega (2016) conducted a behavioral experiment to evaluate the effect of an individual's perception of corruption on their willingness to be corrupt themselves. For this purpose, they conducted a survey with 4200 participants who were randomly assigned to three groups. The first group was shown a flyer emphasizing the increase in the number of citizens who witnessed an act of corruption. The second group was shown a flyer that presented the inefficiency of the state through a text mentioning the lack of productivity of the legal system to punish the crime of assault with a deadly weapon. This second treatment was a placebo to assess whether an increase in participants' willingness to be corrupt is driven by their perception of corruption, or by the belief that state law enforcement is inadequate. The third group was not shown any flyer. Results showed that the first treatment intervention increased the likelihood that respondents would be willing to pay a bribe to a police officer from 0.04 to 0.08.

In Indonesia, Peiffer (2018) and Cheeseman and Peiffer (2020) find that the type of narrative on corruption issues has no effect on the perception of corruption, as even a positive tone in the anti-corruption message proved to have a negative impact. Peiffer (2018) tested four interventions through message screens in Indonesia. The first message focused on grand corruption with emphasis on scandals involving high-level officials. The second message focused on petty corruption mentioning the spread of bribery and collusion in local governments. The third message focused on government successes in the fight against corruption. Finally, the last message focused on opportunities for citizens to support this fight. Along these lines, a later study conducted in Nigeria, Cheeseman and Peiffer (2020) came to a similar conclusion: Anti-corruption messages are shown to do more harm than good.

Corruption and tax evasion are not new problems for today's economies. They are considered to be determining factors in the development of the state and the ability to provide public services.

Within the literature, there is a relative consensus on how the presence of high levels of corruption, understood as the perception of corruption, encourages tax evasion. At the same time, tax evasion creates spaces that may lead to the emergence of corrupt contexts. Both variables may be closely related and, under certain contexts, could reinforce each other.

Using World Bank data from different company surveys, one study finds that the presence of a fiscal employee soliciting bribes decreases the number of reported sales by 4 to 10 percentage points. In this way, corruption facilitates tax evasion by making it easier for taxpayers to hide their income. At the same time, tax evasion creates the conditions for corruption to expand by providing greater opportunities to give and receive bribes (Alm, Martinez-Vazquez, & McClell-

lan, 2016). Alternatively, the perception of corruption may reduce citizens' willingness to pay taxes by increasing their concern that funds will be misused (Baum, Gupta, Kimani, & Tapsoba, 2017).

In Indonesia, Rosid, Evans, and Tran-Nam (2019) tried to measure perceived levels of corruption and tax compliance at the individual level by asking a group of Indonesian taxpayers about the extent of observed corruption and the individuals under-declaration of income. Authors argue that high levels of perceived corruption appear to have an adverse impact on taxpayer attitudes and standards with regards to actual income reporting.<sup>4</sup> At the same time, they propose that certain forms of perceived corruption can have a negative impact on tax compliance through a variety of forces and relationships.

Furthermore, Jahnke and Weisser (2019) find that petty corruption erodes tax morale in 29 countries in Sub-Saharan Africa. Authors argue that the effect of corruption on tax morale depends on how pervasive corruption is in everyday life and how prevalent it is for individuals. In other words, tax morale depends on how citizens experience corruption. They also suggest that individual tax morale could be influenced by the perception of fairness of the tax system and the availability of public services.

In Brazil, Timmons and Garfias (2015) use a governmental random municipal audits program, under which some 1,400 municipalities are randomly selected and audited every year. With this data, the authors led a study showing that, in the short term, property taxes respond to revealed corruption, suggesting that part of what the state collects depends on how taxpayers perceive the behavior of the government in office.

Despite the literature discussed above, there is evidence to indicate that taxpayers knowledge of the tax system may be more important than corruption in meeting tax obligations. A study done in Pakistan (Gangl et al., 2015) by way of a survey of 847 taxpayers, including both tax filers and non-filers, argues that those who do not complete a tax return are less aware of their rights as taxpayers and less aware of how widespread corruption is in tax administration. In this particular case, marginal effects of taxpayer knowledge have up to three times greater impact than the perception of corruption. This is seen by the authors as a defense mechanism against corruption. It is in this sense that citizens aware of the need to ensure that tax revenues are used correctly drive the demand for government accountability and transparency (Besley & Persson, 2014).

## 2.2 Fiscal Transparency and Tax Behavior

The goal of transparency may be strengthening citizen trust in government and public institutions. Therefore, the recommendation of governmental bodies such as the Organisation for Economic Co-operation and Development (OCDE, 2017) emphasizes transparency as a mechanism for building trust.

Several studies have shown that confidence is explained by factors that may be equally or more important than making knowledge available (Grimmelikhuijsen, 2012). However, it has been shown that, in certain common circumstances, transparency may not have the desired effects (Bannister & Connolly, 2011). On the other hand, the analysis of taxpayer behavior has been

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<sup>4</sup>Authors identify two types of corruption: grand and petty. Grand corruption represents the misuse of public power by high-level officials, while petty corruption refers to extortion by low-ranking officials in daily interactions to gain access to public services. The study was conducted using information from Indonesian taxpayers between January and July 2015 on tax behavior.



the subject of growing literature both inside and outside the laboratory. The study of behavioral interventions to improve tax behavior has been positioned as a tool worth examining when it comes to understanding how tax evasion operates in taxpayers. These specialized works on tax behavior outside the laboratory have led to an extensive debate on the results of deterrent and non-deterrent interventions (Hallsworth, List, Metcalfe, & Vlaev, 2017).

By means of a randomized controlled experiment, Kettle, Hernandez, Ruda, and Sanders (2016) study how the use of reminders (both dissuasive and non-dissuasive) influences client tax behavior. The authors analyze e-mails with four types of messages designed to influence behavior that were sent to taxpayers in Guatemala. The results show that the messages were effective in increasing the proportion of tax returns. However, only two types of messages succeeded in increasing tax collection: Those that referred to a social standard and to tax compliance as a deliberate choice.

In Chile, Agostini and Martínez A (2014) examine the use of information request letters and deterrent messages and note their influence on reducing tax evasion through differential tax treatment of diesel fuel purchases. The results, according to the authors, show that the use of interventions to increase the costs of tax noncompliance decreases tax evasion.

In Argentina, the IDB supported the Tax Compliance Program in LAC, Increasing Tax Morale at the Subnational Level (RG-T2043), designed to understand the effect of messages on tax compliance. López-Luzuriaga and Scartascini (2019) tested whether enforcement of one tax generates positive spillover effects (i.e., increased compliance) on other taxes. The study compared the effect of receiving a deterrence message for the property tax bill on the gross sales tax return. Using the difference-in-differences methodology, the evaluation showed that the increased prominence of penalties and enforcement on property tax debtors increased gross sales tax filings by 2 percent.

In turn, a meta-analysis conducted by Antinyan and Asatryan (2019) collects results from 45 different studies of behavioral interventions, such as the study conducted in Guatemala by Kettle et al. (2016). The authors question whether behavioral interventions are truly effective in increasing levels of tax compliance among individuals and small businesses. Antinyan and Asatryan (2019) conclude that interventions that inform taxpayers about the moral aspects of tax payment are not very effective in increasing compliance and, although interventions that threaten taxpayers with audits and other deterrents may be effective, the importance of these effects is quite limited and temporary.

In summary, the literature shows, on one hand, that the perception of corruption affects other key variables in the socioeconomic well-being of society and the individuals that comprise it. However, there is no consensus on the effect of behavioral initiatives to change citizen perception of corruption. This study tries to contribute to this issue through an experimental survey shared on Facebook.

## **2.3 The Use of Social Media as a Source for Research**

For over a decade, social media has been used as a means of recruiting participants for research on economic, behavioral, educational, public health, and other topics (Akard, Wray, & Guilmer, 2015; Boas, Christenson, & Glick, 2019; Perrotta et al., 2021). Across platforms, Facebook leads in the number of users worldwide. There are approximately 2.91 billion active monthly users (Statista, 2022). Several studies in the literature are exploring techniques to assess Facebook's efficiency and effectiveness as a tool for recruiting a representative sample

of adults (Bennetts et al., 2019; Shaver et al., 2019; Thornton et al., 2016; Whitaker, Stevelink, & Fear, 2017).

Shaver et al. (2019) found that Facebook advertising provided a greater recruiting reach, had a lower cost, and was less time-consuming than the average survey company. In addition, campaign techniques resulted in less selection bias than using participants registered in a survey platform or contacting them through large mailing lists (Shaver et al., 2019).

Studies by Akard et al. (2015) and Perrotta et al. (2021) demonstrate the ability of social media to implement surveys across multiple countries, and to recruit a hard-to-reach audience. Perrotta et al. (2021) applied an online survey in Belgium, France, Germany, Italy, the Netherlands, Spain, England, and the United States to assess individual behavior with regards to COVID. Researchers were able to collect 71,612 responses in the period from March 13 to April 19, 2020. Results allowed them to analyze perceptions according to geographic differences and to establish common patterns such as the growth of the perception of danger as information about the disease increased, from individual-level risk to global views.

Historically, recruiting a population with life-threatening diseases such as cancer has been a very complex task. Akard et al. (2015) test social media as a means to collect data on parents of children with cancer. The campaign had reached over 3 million people, of which 106 belonged to the target sample and 55 completed the survey. In that sense, Facebook proved to be a useful tool even for recruiting a type of population that is difficult to reach.

Online surveys have also proven to be a suitable resource for conducting experiments. Mummolo and Peterson (2019) argue that online survey experiments have multiple features that make them sufficiently robust. To test this, the authors conducted 5 experimental designs on 12,000 participants. They randomly assigned participants information about the researcher's intention to test whether effects were found on respondent behavior. Results show that knowing the researcher's intention does not alter the effects in the treatment group for the experiment (Mummolo & Peterson, 2019).

Given the evidence shown in studies on perception of corruption, as well as the strengths of on-line platforms for conducting research with representative samples, the next step for academia is to evaluate new behavioral interventions such as those included in the survey presented herein. Likewise, this paper contributes to the studies that use social media as a means for research in Latin America to close the gap that exists on this topic.

### 3 Methodology

#### 3.1 Experimental Design

To carry out the different blocks of the survey, we used resources from international organizations such as the Transparency International Corruption Perceptions Index<sup>5</sup>, the World Bank's World Governance Indicators<sup>6</sup> (WGI), questions from the World Value Survey<sup>7</sup> and Latino-

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<sup>5</sup>Since 1995, Transparency International has been preparing the Corruption Perception Index, an instrument that allows countries to be classified according to perceived levels of corruption in the public sector. This index is based on a combination of surveys and assessments by world-renowned international institutions that evaluate corruption in the public sector.

<sup>6</sup>The World Governance Indicators (WGI) project reports aggregate and individual governance indicators for six dimensions of governance for more than 200 countries and territories over the 1996–2019 period.

<sup>7</sup>The World Values Survey (WVS) is an international research program devoted to the scientific and academic study of social, political, economic, religious, and cultural values of people in the world.

barómetro<sup>8</sup>, academic research, and media publications.

Two experiments were applied in the survey, one related to corruption and the other to government effectiveness. In the first experiment, three informative notes and one control were used:

- **Image:** Map of the corruption perception score in Chile in relation to the rest of Latin America.



- **Corruption Case:** : A brief account of a controversial corruption case in Chile.

**State Defense Council expands complaint against Congressman of the Republic for money laundering. Source: Bio Bio, March 31, 2022.**

The State Defense Council (SDC) expanded a complaint in the judicial investigation for corruption that the Public Prosecutor's Office is conducting against a Congressman of the Republic and two lawyers. In this new document, they are indicated as perpetrators and co-perpetrators of prevarication and money laundering.

- **Placebo:** Information about a Chilean film.

**"Mi país imaginario" (My Imaginary Country) by Patricio Guzman received a standing ovation at the Cannes Film Festival and will be premiered in Chile in August. Source: elmostrador, May 2, 2022.**

The documentary film starts with the social unrest and reforms that took place in Chile in 1990 and is part of the Official Selection of the world's most important film festival in the Special Session category.

- **Control:** No content is shown.

<sup>8</sup>Latinobarómetro is a public opinion survey that annually conducts approximately 20,000 interviews in 18 Latin American countries representing more than 600 million citizens.

You have not been assigned any media articles. Click to continue answering the survey.

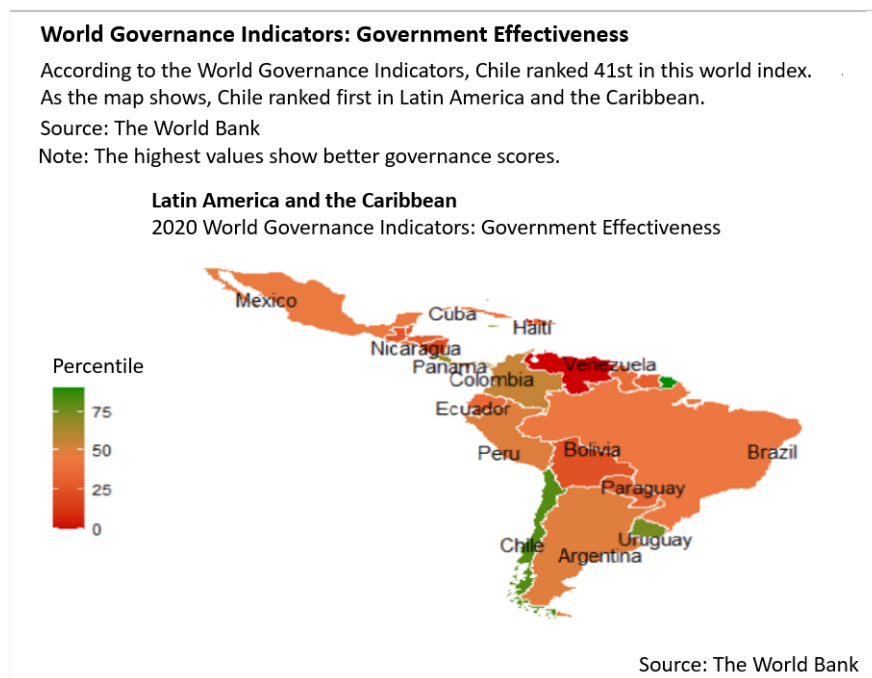
Respondents begin by stating where they think Chile ranks in the corruption perception index<sup>9</sup> and are then presented with one of the randomly assigned messages. Subsequently, they are asked where they think Chile will be the following year. This was done with the intention of measuring the impact of information related to acts of corruption on the perception of corruption.

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<sup>9</sup>The index is in a range from 1 to 180 where 1 indicates a lower perception of corruption and 180 indicates a higher perception of corruption.

In the experiment, four informative notes and a control were presented:

- **Image:** Shows Chile's position in the world index of government effectiveness in relation to the rest of Latin American countries.



- **Negative Case:** Describes a case where the Chilean government shows deficiencies.

**Works at the National Stadium still without a completion date: Sports and music events to be affected. Source: CNN Chile, March 31, 2022**

*Everything indicated that Chile's National Stadium would reopen after renovations for the Santiago 2023 Pan American Games were completed. However, this has not been possible due to contractual changes. This affects sports and cultural institutions that have not been able to carry out their activities at the stadium.*

- **Positive Case:** Describes a successful case for the Chilean government.

**Chile wins international award for development of analytical tools during the COVID-19 pandemic. Source: Radio Uchile, April 5, 2022.**

The Institute for Operations Research and the Management Sciences (INFORMS) awarded Chile the Franz Edelman Award 2022 for its achievements in advanced analytics, operations research, and management science to improve the country's response to the pandemic. Savings of over USD 200 million and at least 2,800 deaths that did not occur are part of the impact of the applications developed by researchers from the Universidad de Chile, together with the Ministries of Science and Health and Entel.

- **Placebo:** Describes a news item related to sports.

**Historic! The "Diablas" made history: Field hockey team qualified for the World Cup for the first time. Source: Bio Bio, January 27, 2022.**

The women's field hockey team made history after beating the United States and qualifying for the World Cup for the first time.

- **Control:** No content is shown.

You have not been assigned any media articles. Click to continue answering the survey.

This block follows the same logic as the previous block, this time to test perceptions of government effectiveness<sup>10</sup> before and after five randomized messages. The second experiment tries to measure the impact of information on government effectiveness on its perception.

Finally, the survey closes by asking five questions on tax behavior developed from the different bibliographic sources consulted and one question on the willingness to file taxes in 2023. At the end of the survey, respondents are asked for their contact information to be included in a lottery.

### 3.2 Survey Implementation

The survey was published and advertised through an external supplier (EncuestamePE). The questions were shared through paid advertisements on Facebook and Instagram in which people were invited to participate. In order to encourage participation, two prizes of USD 50 each were offered to those who answered the entire survey. This methodology tries to propose a viable alternative for testing surveys on social media, allowing massive sharing of content to a specific segment of the population. In this case, filters targeting profiles registered in Chile of people between 18 and 65 years old or above were used.

The advertisements were linked to a single publication where the subject of the study, the prizes offered, and the date of the drawing were specified in general terms (see Figure 1).

The post was active between June 30 and July 14, 2022. During this period, 120,467 profiles viewed the ad at least once, and 3,946 profiles clicked on the link. This 3.27 percent average click-through rate on Facebook is above the average for all industries (Irvine, 2017). Likewise, 3,497 survey responses were registered within this period, and 2,122 were completed. The ads proved to have an effective performance within two weeks.

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<sup>10</sup>The index is in a range from 1 to 209 where 1 indicates more effectiveness and 209 indicates less effectiveness.

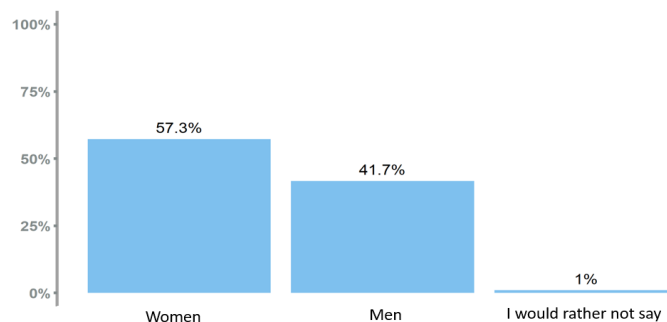
**Figure 1: Publicity Post on Facebook.**



## 4 Sociodemographic Characteristics of Participants

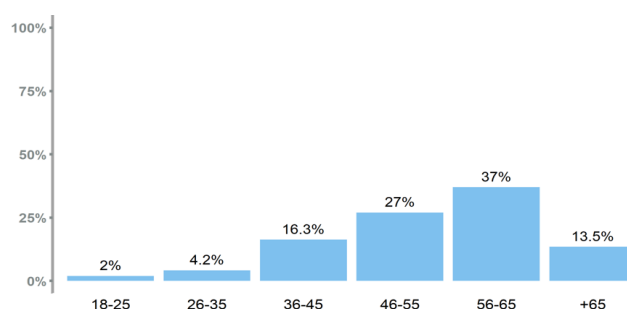
The survey registered a total of 2,122 responses completed in 14 days. However, the sample is reduced to 1,899 after applying the Chilean nationality filter, which corresponds to 89 percent of the surveys registered by the system. The sociodemographic data and the subsequent analysis correspond only to the sample of Chilean participants.

Of the total number of respondents, 57.3 percent said they were female with an average age of 53. Of the total number of respondents, 41.7 percent said they were male with an average age of 56. The remaining 1 percent prefer not to specify their gender and their average age is 49.

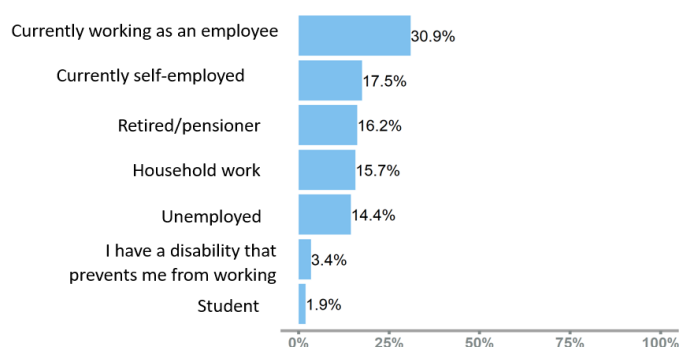


In general, this shows a prevalence of respondents older than 46, which can be explained by the survey topic, which is specified at the beginning of the questions: "We appreciate your interest in participating in this online survey. These questions are part of an academic research on the perception of corruption and tax behavior in Chile." Income tax returns apply to citizens who are part of an economically active population, so young students may not have been interested in the survey (see Figure 4).

**Figure 3: Participant Age**

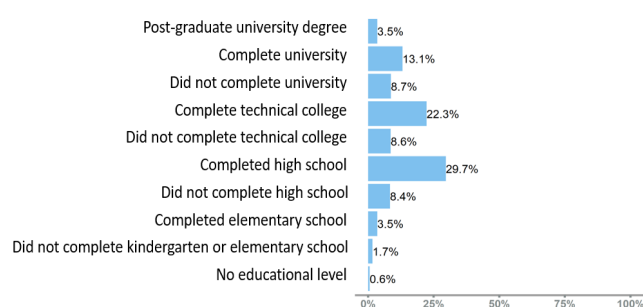


**Figure 4: Main Activity**



With regards to the educational level of registered participants, 56 percent of the sample has technical, university, or postgraduate studies (see Figure 5).

**Figure 5: Education**



## 5 Results

The following subsections will present the results of the experiments conducted on corruption, effectiveness, and their relationship with tax behavior.



## 5.1 First Experiment

The first experiment begins by asking respondents to give their opinion on how they think Chile ranks in terms of corruption according to the “Transparency International Corruption Perceptions Index,” considering that, in 2021, the country ranked 27th out of a total of 180 countries. Among respondents, there is a common perception that corruption in Chile is higher than what was published by the international index.

On average, participants place Chile in 114th place in the index. Only 19 people place it among the top 10 countries with the least corruption, while 268 people consider Chile the most corrupt country in the index.

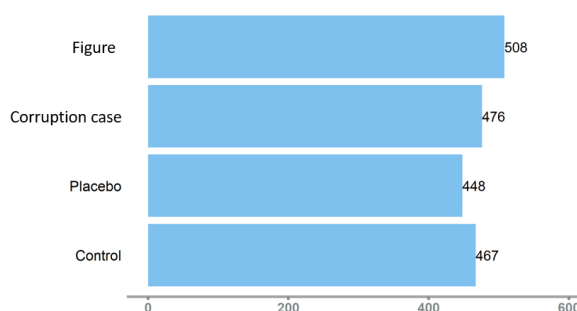
**Table 1. Pre-treatment Question Descriptives of the Corruption Index**

Observations	Average	St. Dev.	Min.	Max.	Q25	Q50	Q75
1899	114,8	47,88	1	180	85	120	154

Source: Authors' Elaboration.

After this question, the procedure continued with a random assignment to determine the type of treatment received by each respondent. Figure 6 shows the results of randomization among those who completed the survey.

**Figure 6: Randomization Results for the First Treatment**



Next, participants were asked for their perception of corruption post-treatment. To this end, a question about Chile’s expected position in the next Corruption Perception Index (2022) is asked. Although the results of this question again show a high perception of expected corruption in Chile (with positions higher than the 27th position obtained in 2021), the average is lower than initially declared.

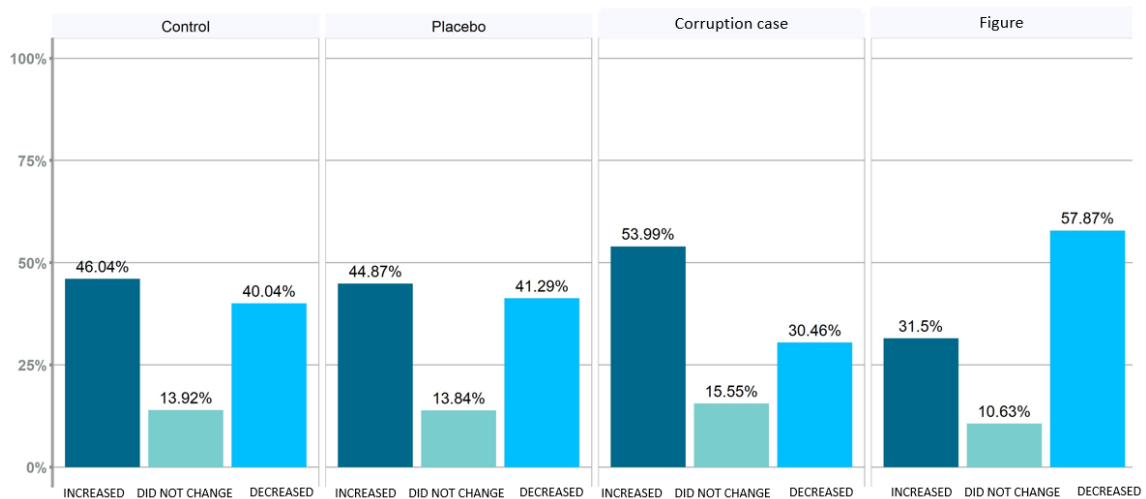
**Table 2. Post-treatment Question Descriptive of the Corruption Index**

Observations	Average	St. Dev.	Min.	Max.	Q25	Q50	Q75
1899	110,5	50,7	1	180	70	117	154

Source: Authors' Elaboration

The average for this question was reduced by 4 points, leaving the country in the 110th place in the index. Once again, the number of respondents who consider Chile to be among the top 10 countries with the least corruption increased to 31 and the number of respondents who consider Chile to be the most corrupt country in the index decreased to 264. Figure 5 shows how the pre- and post-treatment questions are related according to the type of treatment. If the changes generated by the treatment are considered, participants who received the image showing Chile's favorable position in the index with respect to Latin America show a decrease in the perception of corruption in their country in the post-treatment question.

**Figure 7: Change in the Perception of Corruption Pre- and Post-treatment**



To better understand what has been observed in the previous figures about these treatments and the impact of each one of them on the perception of corruption, the following linear regression model was applied.<sup>11</sup>

$$Y_i\text{postrat} = \beta_0\text{sin caso}_i + \beta_1\text{pretrat}_i + \beta_2\text{corrupcase}_i + \beta_3\text{placebo}_i + \beta_4\text{imagen}_i + \beta_5\text{edad}_i + \beta_6\text{sexo}_i + \beta_7\text{educacion}_i + \epsilon_i \quad (1)$$

<sup>11</sup> Postrat: Perception of corruption post-treatment (index); Sin caso: The respondent does not receive any type of information; Pretrat: Perception of corruption pre-treatment (index); Corrupcase: The respondent receives information about a corruption case; Imagen: The respondent receives information about Chile's position with respect to Latin America and the Caribbean; Placebo: The respondent receives information about a Chilean film; Edad: Age of the respondent; Sexo: Gender of the respondent; Educación: The last educational level attained by the respondent.

**Table 3. Regression Results of the First Treatment**

	<i>Dependent Variable:</i> Post-Treatment Corruption Score
Placebo	2.727 (2.354)
Corruption case	6.435*** (2.321)
Image	-19.470*** (2.278)
Pre-treatment corruption score	0.702*** (0.017)
Age 18-25	-6.626 (6.240)
Age 26-35	-1.390 (4.607)
Age 36-45	5.412* (3.065)
Age 46-55	3.921 (2.770)
Age 56-65	0.510 (2.618)
Female	7.947*** (1.710)
I would rather not say	0.805 (8.316)
Post-graduate university degree	-7.768 (7.680)
Completed elementary school	-7.238 (7.660)
Completed high school	-9.092 (6.466)
Did not complete high school	-10.533 (6.895)
No educational level	9.676 (12.047)
Completed technical college	-3.673 (6.531)
Did not complete technical college	-5.016 (6.880)
Completed university	-6.014 (6.696)
Did not complete university	-6.207 (6.875)
Constant	32.998*** (7.064)
Observations	1,899
R <sup>2</sup>	0.517
Adjusted R <sup>2</sup>	0.511

*Note:* \*p<0.1; \*\*p<0.05; \*\*\*p<0.01

Table 3 shows regression results for the first treatment. The “Image” treatment is shown to be significant and would decrease, on average, 19 places the perception of corruption in Chile in the index with respect to those respondents who do not receive any type of message. The reduction of 19 positions translates into 10.5 percentage points with respect to the total range of the index. The image shows Chile’s position in the 2021 index and compares it with the rest of the Latin American countries. Thus, a visual instrument that shows the country in a better relative position over its neighbors reduces the perception of corruption, even when the respondent has initially responded with a high corruption score for the country. On the other hand, the corruption case describing the involvement of a Chilean congressman in a money laundering process increased Chile’s position in the corruption index by an average of 6 points, placing it as a more corrupt country.

## 5.2 Second Experiment

The second experiment begins by asking respondents to state their perceptions of government effectiveness in Chile. To do so, they must place Chile in the position it would be in according to the World Bank’s Government Effectiveness Indicators. In the 2020 index, Chile was at number 41 out of 209 countries.

The responses show a perception of government effectiveness that is lower than that published in the index. The average for this response placed Chile in position 114 of the index, and 157 of the responses considered Chile as the country with the least government effectiveness.

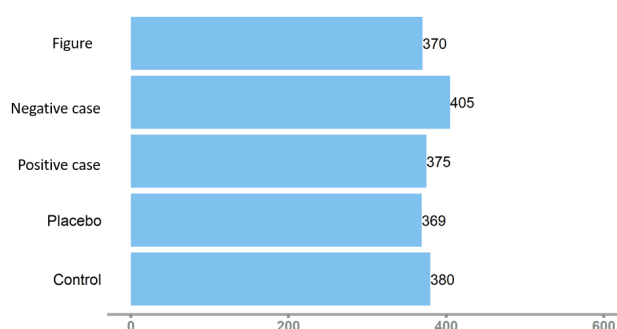
**Table 4. Pre-treatment Question Descriptive of the Government Effectiveness Index**

Observations	Average	St. Dev.	Min.	Max.	Q25	Q50	Q75
1899	113,8	54,87	1	209	70	108	152

Source: Authors' Elaboration

As in the previous treatment, the survey continued with a random assignment to determine which type of treatment is applied to the respondent after this question. Figure 8 shows the results of randomization among those who completed the survey

**Figure 8: Randomization Results of the Second Treatment**



In the next stage of the second treatment, respondents were asked, post-treatment, about their perception of government efficiency, according to the next Government Effectiveness Index 2021. The results of this question show again a low perception of expected government effectiveness for Chile, with levels higher than the 41st place obtained in 2020.<sup>12</sup> On average, Chile was ranked 113th, reducing its position by 1 point with respect to the question before the treatment. In this case, 147 respondents consider Chile to be the least effective nation in the index.

**Table 5. Post-treatment Question Descriptive of the Government Effectiveness Index**

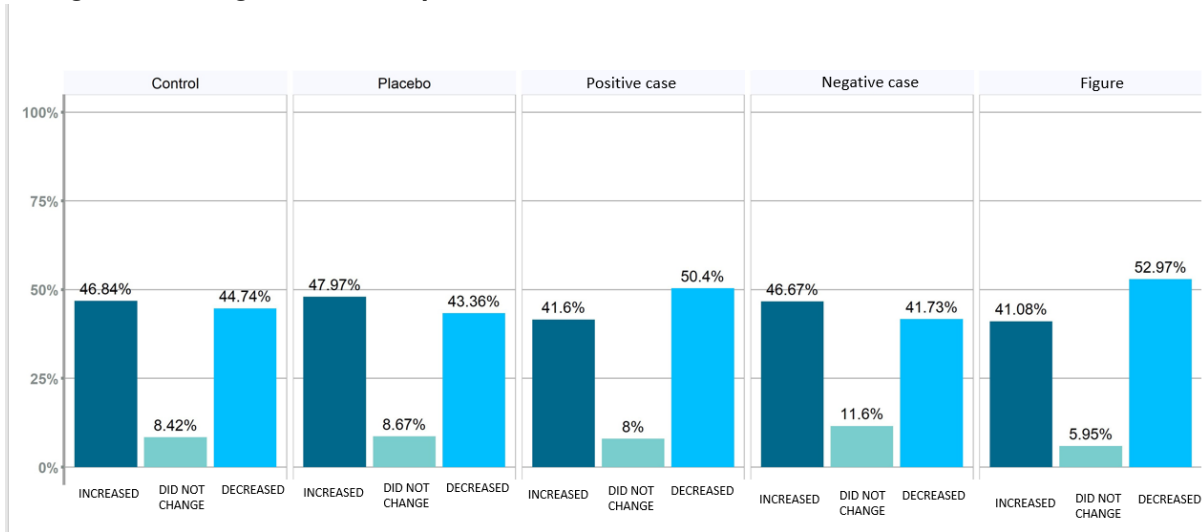
Observations	Average	St. Dev.	Min.	Max.	Q25	Q50	Q75
1899	112,8	55,85	1	209	70	108	155

Source: Authors' Elaboration

As in the analysis of the previous treatment, Figure 6 shows the relationship between the pre- and post-treatment questions according to each treatment. Looking at the changes generated by the treatment, a positive relationship can be seen between the image treatment and a reduction in government inefficiency positions.

<sup>12</sup>The World Bank had not yet published the 2021 index at the time of the survey.

**Figure 9: Change in the Perception of Government Effectiveness Pre- and Post-treatment**



To better understand the effect of these treatments on the perception of government effectiveness, the following linear regression model was applied:<sup>13</sup>

$$Y_i\text{postrat2} = \beta_0\text{sin caso}_i + \beta_1\text{pretrat2}_i + \beta_2\text{caso positivo}_i + \beta_3\text{caso negativo}_i + \beta_4\text{placebo}_i + \beta_5\text{imagen}_i + \beta_6\text{edad}_i + \beta_7\text{sexo}_i + \beta_8\text{educacion}_i + \epsilon_i \quad (2)$$

<sup>13</sup> Postrat2: Perception of government effectiveness post-treatment (index); Sin caso: The respondent does not receive any type of information; Pretrat2: Perception of government effectiveness pre-treatment (index); Caso Positivo: The respondent receives information about a success story by the Chilean government; Caso negativo: The respondent receives information about a case that shows the limited capacity of the Chilean government; Imagen: The respondent receives information about Chile's position with respect to Latin America and the Caribbean; Placebo: The respondent receives information about the national hockey team; Edad: Age of the respondent; Sexo: Gender of the respondent; Educación: The last educational level attained by the respondent.

**Table 6. Regression Results of the Second Treatment**

<i>Dependent variable:</i>	
Post-treatment effectiveness score	
Placebo	2.389 (3.277)
Image	-8.130** (3.271)
Positive case	-8.549*** (3.254)
Negative case	0.338 (3.203)
Pre-treatment effectiveness score	0.604*** (0.019)
Age 18-25	-5.914 (7.840)
Age 26-35	1.004 (5.792)
Age 36-45	-0.009 (3.856)
Age 46-55	-2.871 (3.486)
Age 56-65	-0.951 (3.295)
Female	4.564** (2.132)
I would rather not say	-12.519 (10.453)
Post-graduate university degree	1.249 (9.672)
Completed elementary school	-10.160 (9.653)
Completed high school	-11.939 (8.141)
Did not complete high school	-6.438 (8.683)
No educational level	2.584 (15.135)
Completed technical college	-6.912 (8.231)
Did not complete technical college	-3.816 (8.658)
Completed university	-9.579 (8.431)
Did not complete university	-4.178 (8.661)
Constant	53.366*** (8.904)
Observations	1,899
R <sup>2</sup>	0.371
Adjusted R <sup>2</sup>	0.364

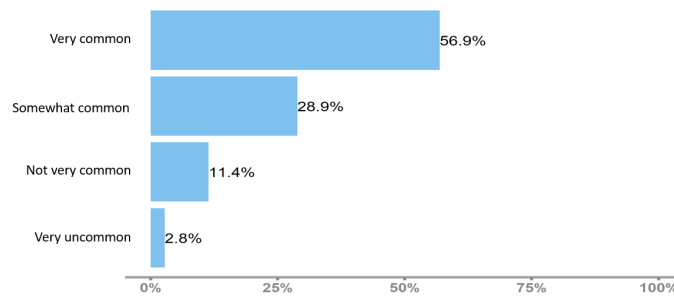
*Note:* \*p<0.1; \*\*p<0.05; \*\*\*p<0.01

Table 6 shows regression results for the second treatment. As shown in the linear regression, the treatments including the image depicting the comparison of Chile with the rest of the Latin American countries and the positive case describing the award given to Chile for the development of analytical tools during the COVID-19 pandemic are significant. Both reduce the perception of effectiveness index in Chile by an average of 8 places with respect to those respondents who did not receive any type of message. There is a reduction of 3.8 percentage points in the index, representing a more favorable perception of effectiveness. The rest of the treatments do seem to be significant. These results show the positive effect that visual tools and positive narrative can have on citizen perception of government effectiveness.

### 5.3 Questions on Tax Behavior

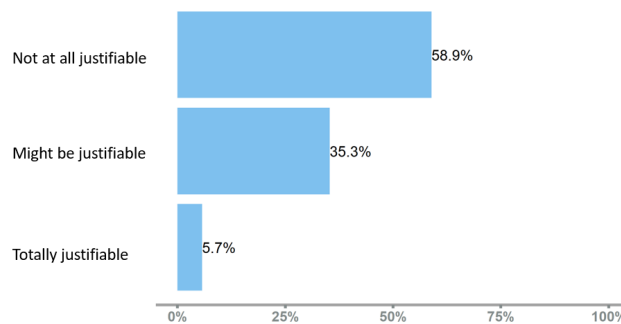
The first question in this block tries to discover the perception of respondents regarding the generalization of tax evasion considering that literature shows that, to the extent that citizens consider it a systematic practice, the feeling of responsibility is eroded. About 85.8 percent of respondents consider tax evasion to be common or quite common.

**Figure 10: Systematic Tax Evasion**



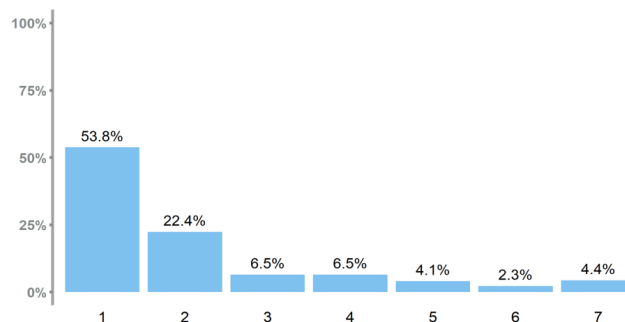
Respondents are then presented with a fictional case to examine their perception of tax evasion of a relatable third party. The case is as follows: "Juan Pérez is a medium-sized automobile entrepreneur in Chile. Through his lawyers and accountants, he managed to reduce the total amount of taxes he would have to pay by 40 percent by 2021. What is your opinion about this?" Although more than 55 percent consider tax evasion to be quite common, 58.9 percent believe that this behavior is not at all justifiable. A moderate 35 percent think that the entrepreneur's actions could be justifiable.

**Figure 11: Fictional Case**



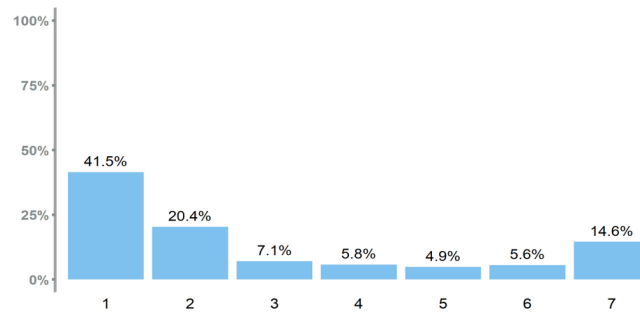
Subsequently, they are asked about their tendency to lie on their tax declarations. On average, on a scale of 1 to 7, where 1 is "strongly disagree" and 7 is "strongly agree," participants answered 2. Only 4.4 **percent** stated that they would do so.

**Figure 12: "If I could lie on my tax return, I would"**



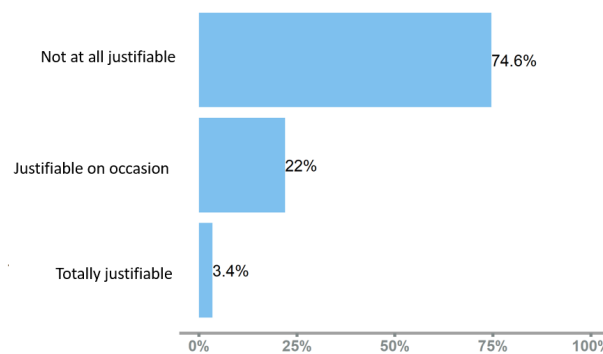
Using the same scale, participants were asked how much they agree with the idea that, since tax evasion is a common practice, they should not feel guilty about tax evasion. On average, participants responded with a score of 2.87. In contrast with the previous question, 25 percent of the participants selected a score closer to "Strongly agree" with what is expressed in the sentence.

**Figure 13: “Since everybody generally evades taxes, you should not feel guilty about doing it as well”**



Finally, participants were asked how justifiable they consider tax evasion to be. In contrast to when asked about a third party, the direct question showed a greater refusal to justify tax evasion; the total number of people who considered it not at all justifiable increased by 17 percentage points.

**Figure 14: How justifiable do you think it is to evade taxes?**

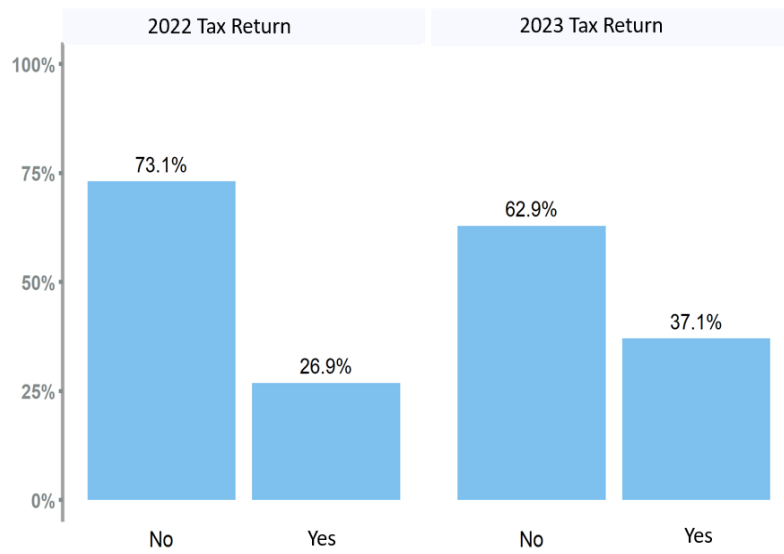


#### **5.4 Relation between Perception of Corruption and Effectiveness and Tax Behavior**

This section explores the relationship between changes in perception and respondent tendency to file taxes. At the beginning of the survey, participants were asked whether they had filed their annual income tax in 2022 (a process that was due in May). Then, before the end of the survey, they were asked if they would file tax returns the following year. Figure 14 shows that the percentage of affirmative responses increased by approximately 10 percent.



**Figure 15: Income Tax Declarations**



To measure the effect of the perception of corruption and government effectiveness on tax behavior, the following models were applied:

$$Y_i \text{cambiodicorrupt} = \beta_0 + \beta_1 \text{postrat1}_i + \beta_2 \text{declara2022}_i + \beta_3 \text{edad}_i + \beta_4 \text{sexo}_i + \beta_5 \text{educacion}_i + \epsilon_i \quad (3)$$

$$Y_i \text{cambiodieffect} = \beta_0 + \beta_1 \text{postrat2}_i + \beta_2 \text{declara2022}_i + \beta_3 \text{edad}_i + \beta_4 \text{sexo}_i + \beta_5 \text{educacion}_i + \epsilon_i \quad (4)$$

In the first model, the post-treatment corruption score is used as an independent variable and 2022 tax declaration, age, gender, and educational level were used as control variables. In the second model, the effect of the government effectiveness score post-treatment is measured and the same control variables are used.

**Table 7: Regression Results of Model 1**

		<i>Dependent Variable:</i>
		Tax Declarations 2023
Post-treatment corruption score	-0.001*** (0.0002)	
Tax declarations 2022	0.697*** (0.020)	
Age 18-25	0.190*** (0.063)	
Age 26-35	0.133*** (0.047)	
Age 36-45	0.097*** (0.031)	
Age 46-55	0.075*** (0.028)	
Age 56-65	0.062** (0.027)	
Female	-0.027 (0.018)	
I would rather not say	-0.046 (0.082)	
Post-graduate university degree	0.182** (0.079)	
Completed elementary school	0.064 (0.079)	
Completed high school	0.023 (0.066)	
Did not complete high school	-0.016 (0.070)	
No educational level	-0.072 (0.120)	
Completed technical college	0.073 (0.067)	
Did not complete technical college	0.105 (0.070)	
Completed university	0.108 (0.069)	
Did not complete university	0.108 (0.070)	
Constant	0.129* (0.070)	
Observations	1,800	
R <sup>2</sup>	0.479	
Adjusted R <sup>2</sup>	0.473	

Note: \*p<0.1; \*\*p<0.05; \*\*\*p<0.01

Table 7 shows the results of the first model. The post-treatment corruption score is shown to be significant and to have a negative effect on the willingness to file taxes in 2023, although the size of the effect is moderate. In this sense, ranking Chile high among the most corrupt countries decreases the participants willingness to file tax returns the following year by 0.001 or 0.1 percentage points.

**Table 8: Regression Results of Model 2**

	<i>Variable dependiente:</i> Tax Declarations 2023
Post-treatment effectiveness score	-0.0004** (0.0001)
Tax declarations 2022	0.698*** (0.020)
Age 18-25	0.199*** (0.063)
Age 26-35	0.136*** (0.047)
Age 36-45	0.094*** (0.031)
Age 46-55	0.072** (0.028)
Age 56-65	0.061** (0.027)
Female	-0.033* (0.017)
I would rather not to say	-0.056 (0.082)
Post-graduate university degree	0.191** (0.079)
Completed elementary school	0.064 (0.079)
Completed high school	0.026 (0.066)
Did not complete high school	-0.012 (0.071)
No educational level	-0.077 (0.120)
Completed technical college	0.074 (0.067)
Did not complete technical college	0.107 (0.070)
Completed university	0.111 (0.069)
Did not complete university	0.113 (0.071)
Constant	0.107 (0.070)
Observations	1,800
R <sup>2</sup>	0.477
Adjusted R <sup>2</sup>	0.471

Note: \*p<0.1; \*\*p<0.05; \*\*\*p<0.01

Table 8 shows the results of the second model. The post-treatment government effectiveness score is shown to be significant and to have a negative effect on the willingness to file taxes in 2023, although the size of the effect is smaller than for corruption. In that sense, an additional score in the government effectiveness measurement decreases participants willingness to file taxes the following year by 0.0004 or 0.04 percentage points. As a consequence, the perception that Chile is among the countries with the lowest government effectiveness reduces the participants willingness to file taxes the following year.

## 6 Conclusions

The preliminary results of the survey establish several relevant points for the continuation of this research. Based on the results, it can be said that presenting Chile in a favorable position with respect to the rest of the Latin American countries reduces respondent's perception of corruption in their country by 19 points and increases their perception of state efficiency by 8 points. Moreover, presenting a negative case of Chile's efficiency is detrimental to participants perception of their government's efficiency by 8.5 points and presenting a case of corruption increases the perception of corruption by 6 points. The other treatments tested do not have much relevance in terms of change in perception. This could be due to factors that are not present in the survey, such as previous knowledge of these acts of corruption. That is, those cases exposed are already known by the respondents.

Likewise, based on the responses obtained and the two models proposed, both the perception and effectiveness scores have an impact on respondent willingness to file taxes in 2023. A one

point increase in the index for perception of corruption in Chile is associated with a reduction of 0.001 in the willingness to file taxes on a scale of 0 -1. Furthermore, a 1 point increase in the index for perception of government effectiveness is associated reduction of 0.004 with the willingness to file taxes.

The results of this research provide evidence of the strength of the messages about corruption and government effectiveness. Visual tools have been demonstrated to have a positive effect on citizen perception of the indicators shown. By reducing the perception of corruption and effectiveness, the willingness to pay taxes increases in parallel, even in a context where more than 50 percent of participants consider tax evasion as a quite common practice.

This research opens up new questions about the effect of the perception of corruption. In the future, a latent opportunity would be to evaluate how the change in the perception of corruption affects tax compliance by making use of supervised learning mechanisms for data analysis in order to characterize taxpayers. The type of results shown in this survey could allow for a better characterization of taxpayers. If this information is complemented with socioeconomic data and, at the same time, income tax returns are added as a proxy for tax behavior, there could be an opportunity to analyze the use of machine learning methodologies to predict taxpayers tax behavior according to the characterization that arises from the results of this type of survey.

## References

- Agostini, C. A., & Martínez A, C. (2014). Response of tax credit claims to tax enforcement: Evidence from a quasi-experiment in chile. *Fiscal Studies*, 35(1), 41–65.
- Akard, T., Wray, S., & Guilmer, M. (2015). Facebook ads recruit parents of children with cancer for an online survey of web-based research preferences. *Cancer nursing*, 38(2).
- Alm, J., Martinez-Vazquez, J., & McClellan, C. (2016). Corruption and firm tax evasion. *Journal of Economic Behavior & Organization*, 124, 146–163.
- Antinyan, A., & Asatryan, Z. (2019). Nudging for tax compliance: A meta-analysis. *ZEW-Centre for European Economic Research Discussion Paper*(19-055).
- Bannister, F., & Connolly, R. (2011). The trouble with transparency: a critical review of openness in e-government. *Policy & Internet*, 3(1), 1–30.
- Baum, M. A., Gupta, M. S., Kimani, E., & Tapsoba, M. S. J. (2017). *Corruption, taxes and compliance*. International Monetary Fund.
- Bennetts, S., Hokke, S., Crawford, S., Hackworth, N., Leach, L., Nguyen, C., & Cooklin, A. (2019). Using paid and free facebook methods to recruit australian parents to an online survey: an evaluation. *Journal of Medical Internet Research*, 21(3).
- Besley, T., & Persson, T. (2014). Why do developing countries tax so little? *Journal of economic perspectives*, 28(4), 99–120.
- Boas, T., Christenson, D., & Glick, D. (2019). Recruiting large online samples in the united states and india: Facebook, mechanical turk, and qualtrics. *Political Science Research and Methods*, 8(2), 232–250.
- Carreras, M., & Vera, S. (2018). Do corrupt politicians mobilize or demobilize voters? a vignette experiment in colombia. *Latin American Politics and Society*, 60(3), 77–95.
- Cheeseman, N., & Peiffer, C. (2020). Why efforts to fight corruption hurt democracy: Lessons from a survey experiment in nigeria. *Anti-Corruption Evidence*.
- Corbacho, A., Gingerich, D., Oliveros, V., & Ruiz-Vega, M. (2016). Corruption as a self-fulfilling prophecy: evidence from a survey experiment in costa rica. *American Journal of Political Science*, 60(4), 1077–1092.
- Dammert, L., & Malone, M. (2002). Inseguridad y temor en la argentina: el impacto de la confianza en la policía y la corrupción sobre la percepción ciudadana del crimen. *Desarrollo Económico*, 42(166), 285–301.
- Gangl, K., Kirchler, E., Lorenz, C., & Torgler, B. (2015). Wealthy tax non-filers in a developing country: Taxpayer knowledge, perceived corruption and service orientation in pakistan. *Perceived Corruption and Service Orientation in Pakistan (August 13, 2015)*.
- Grimmelikhuisen, S. (2012). Linking transparency, knowledge and citizen trust in government: An experiment. *International Review of Administrative Sciences*, 78(1), 50–73.
- Hallsworth, M., List, J. A., Metcalfe, R. D., & Vlaev, I. (2017). The behavioralist as tax collector: Using natural field experiments to enhance tax compliance. *Journal of public economics*, 148, 14–31.
- Irvine, M. (2017). *Facebook ad benchmarks for your industry*. <https://www.wordstream.com/blog/ws/2017/02/28/facebook-advertising-benchmarks>.
- Jahnke, B., & Weisser, R. A. (2019). How does petty corruption affect tax morale in sub-saharan africa? *European Journal of Political Economy*, 60.
- Kettle, S., Hernandez, M., Ruda, S., & Sanders, M. (2016). *Behavioral interventions in tax compliance: Evidence from guatemala*. The World Bank.
- López-Luzuriaga, A., & Scartascini, C. (2019). Compliance spillovers across taxes: The role of penalties and detection. *Journal of Economic Behavior Organization*, 164.
- Mummolo, J., & Peterson, E. (2019). Demand effects in survey experiments: An empirical assessment. *American Political Science Review*, 113(2), 517–529.
- OCDE. (2017). *Trust and public policy*. Retrieved from <https://www.oecd-ilibrary.org/>

[content/publication/9789264268920-en](https://doi.org/10.1080/09638189.2021.1988920)

- Peiffer, C. (2018). Message received? experimental findings on how messages about corruption shape perceptions. *British Journal of Political Science*, 50(3), 1207–1215.
- Perrotta, D., Grow, A., Rampazzo, F., Cimentada, J., Del Fava, E., Gil-Clavel, S., & Zagheni, E. (2021). Behaviours and attitudes in response to the covid-19 pandemic: insights from a cross-national facebook survey. *EPJ data science*, 10(1).
- Rosid, A., Evans, C., & Tran-Nam, B. (2019). Perceptions of corruption and tax non-compliance behaviour: Policy implications for developing countries. *Available at SSRN 3317994*.
- Shaver, L., Khawer, A., K, A.-B., Roebbothan, B., Asghari, S., & Wang, P. (2019). Using facebook advertising to recruit representative samples: Feasibility assessment of a cross-sectional survey. *Journal of medical Internet research*, 21(8).
- Statista. (2022). *Number of monthly active facebook users worldwide as of 4th quarter 2021*. <https://www.statista.com/statistics/264810/number-of-monthly-active-facebook-users-worldwide/>.
- Sundström, A. (2019). Corruption and violations of conservation rules: A survey experiment with resource users. *World Development*, 85, 73–83.
- Thornton, L., Batterham, P., Fassnacht, D., Kay-Lambkin, F., Cleave, A., & Hunt, S. (2016). Recruiting for health, medical or psychosocial research using facebook: Systematic review. *Internet interventions*, 4, 72–81.
- Timmons, J. F., & Garfias, F. (2015). Revealed corruption, taxation, and fiscal accountability: Evidence from brazil. *World development*, 70, 13–27.
- Whitaker, C., Stevelink, S., & Fear, N. (2017). The use of facebook in recruiting participants for health research purposes: a systematic review. *Journal of medical Internet research*, 19(8).