Inter-American
Development Bank

Department of Research
and Chief Economist

POLICY BRIEF

No. IDB-PB-232

The Devil is in the Details

Policy Design Lessons from Field Experiments in the Pampas

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October 2014

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2014

Cataloging-in-Publication data provided by the
Inter-American Development Bank
Felipe Herrera Library

Castro, Lucio.
The devil is in the details: policy design lessons from field experiments in the Pampas / Lucio Castro, Carlos Scartascini.
p. cm. — (Resumen de políticas del BID ; 232)
Incluye referencias bibliográficas.
1. Political planning—Argentina. 2. Policy sciences—Argentina. 3. Economics—Psychological aspects—Argentina. I. Scartascini, Carlos G., 1971-. II. Banco Interamericano de Desarrollo. Departamento de Investigación y Economista Jefe. III. Título. IV. Serie.
IDB-PB-232

http://www.iadb.org

Abstract

There is growing evidence that individual responses to public policies are, to a large extent, mediated by the way the policies are framed, by people's cognitive and computational capabilities, and by people's subjective beliefs. For example, people may react to price changes but not to complicated schemes that rely on people's computational abilities. Similarly, people may react better to simple information such as a picture than to a very detailed analysis of benefits and costs. Henceforth, even very well-intentioned policies may not have the desired impact if they do not take into account people's capabilities and beliefs. This policy paper draws lessons that should help policymakers design more effective public policies by reviewing the evidence coming from recent field experiments and quasi-experiments sponsored by the Inter-American Development Bank.

JEL classifications: C93, D03, D12, H26, H41, Q41, Q48
Keywords: Policy design, Policy implementation, Price, Behavioral economics, Natural gas consumption, Tax compliance, Field experiment

1. Introduction

Prices are central to individuals' decision-making, hence they can serve as a policy tool. Market prices condense information about the alternative uses of each unit of labor and capital, and they determine people's choices about what to buy, what to produce, and how much time to dedicate to leisure activities. Most of the time, no other information is needed for people to make informed decisions.[1] Prices, however, may be affected by market failures and may leave potential welfare gains on the table (because of externalities, public goods, etc.). Therefore, decision-makers may sometimes affect prices in order to modify people's decisions. For example, introducing taxes on cigarettes helps to increase their price and thereby reduce consumption.

While prices condense information and guide decisions, there is growing evidence that individual responses to market and non-market prices are, to a large extent, mediated by the way prices and information are framed, by people's cognitive and computational capabilities, by people's subjective beliefs, and by other people's responses to the same information (Thaler and Sunstein, 2008; Thaler, Sunstein and Balz, 2010; World Bank, forthcoming). In other words, sometimes people respond to "perceived" prices and regulations and not to actual prices and regulations (Congdon, Kling and Mullainathan, 2011).

An implication of these findings is that policymakers do not necessarily need to change prices via taxes, subsidies, or regulations to affect behavior; behaviors can also be influenced by changing the information set available to citizens. For example, while governments can reduce cigarette consumption by increasing the price, they can also employ information campaigns about the dangers of smoking. "Nudging," or providing information that affects decisions in the margin, is used by the private sector. Every marketing campaign, and even the way groceries are presented in supermarket aisles, is intended to lead people into making decisions that they would probably not make otherwise. Governments can "nudge," too, and they are increasingly doing so, at least in developed countries (Sunstein, 2014).

[1] Until not that long ago one of the main branches of economics (microeconomics) was referred to as "Price Theory" because of the central role of prices in the determination of people's decisions. As Arnold Harberger states, "no revolution separates today's microeconomics from old-fashioned price theory" (Harberger, 2008)

When nudges are well chosen, they make people's lives better while maintaining freedom of choice at relatively low costs (Sunstein, 2013).[2] Of course, nudges are not meant to solve every problem.[3] Moreover, not every nudge works, and not every informational campaign is effectively a nudge. Moreover, some nudges may have unintended consequences, as they may lead to behaviors opposed to those expected by the design team.

In this policy brief we review the role of prices and nudges, and we focus on the role of policy design on public policy outcomes. As we argue next, by drawing on recent experimental and semi-experimental research on natural gas consumption and tax compliance in Argentina, we find some important lessons. First, prices matter, but policy design matters too. Individuals need to understand the full extent of the regulations for these policies to have an effect. Even a first best public policy may not work if individuals do not know the full extent of the policy—people cannot react to information of which they are not aware. Therefore easy-to-grasp and well-disseminated policies are needed. Second, certain policy objectives can be reached without changing prices or introducing restrictive regulations, but by nudging people instead. As stated before, people react to perceived prices. By changing the information set, prices change too (e.g., a cigarette may be cheap if the negative consequences of smoking are not known but extremely expensive once the health cost of smoking is internalized). Third, not every type of information is a nudge; again, design matters as well. Messages should be salient, clear and concise, and images and text included in materials should be consistent and transmit closely related concepts and ideas in a simple and precise manner. The credibility of the informational treatments and its source is also crucial. Consequently, not every nudge works, and not every field experiment is successful. Fourth, people's reactions to nudges depend on their set of beliefs; nudges may have unintended consequences. People's reactions depend on the interaction between the nudge and the individual's own beliefs.[4]

The review we perform in this policy note does not aim to be comprehensive. There are plenty of very good survey papers and books that take stock of a plethora of field experiments

[2] In this article, Jeremy Waldron discusses the role of nudges and paternalism, its benefits and pitfalls, and analyzes right and not-so-right ways to nudge people: http://www.nybooks.com/articles/archives/2014/oct/09/cass-sunstein-its-all-your-own-good/?utm_content=buffer7cc15&utm_medium=social&utm_source=twitter.com&utm_campaign=buffer

[3] In this article Cass Sunstein discusses the roles of nudges and addresses some critics concerns: http://www.theguardian.com/commentisfree/2014/apr/24/nudge-backlash-free-society-dignity-coercion (*The Guardian*, Thursday 24 April 2014).

[4] For example, an informational campaign about the dangers from smoking may decrease consumption on those who did not realize its dangers beforehand, but it may do nothing for those whose beliefs didn't change afterwards. Moreover, some people may change their beliefs in the opposite direction and increase their consumption.

(Duflo, 2006; Levitt and List, 2009; Thaler, Sunstein and Balz, 2010; Congdon, Kling, and Mullainathan, 2012), including very detailed summaries of how to run an experiment and how to do it well (List, Sadoff and Wagner, 2011; Gerber and Green, 2012; Glennerster and Takavarasha, 2013; Teele, 2014).[5] The objective of this policy paper is narrower. It aims to distil policy and policy design lessons from a series of research projects sponsored by the Inter-American Development Bank (IDB) in the areas of energy consumption and tax compliance applying experimental and quasi-experimental design in a country in Latin America.[6]

2. Prices and Regulations Matter, but Design Matters Too

In a recent paper with other colleagues (Bastos et al., 2014),we exploit the introduction of a new tariff schedule for residential natural gas in the Greater Buenos Aires area, Argentina, to estimate the short-run impact of price increases on residential natural gas consumption. The new tariff schedule introduced a non-linear and non-monotonic relationship between households' accumulated consumption and unit prices, thus generating exogenous price variation, which we exploited in a regression-discontinuity (RD) design. The new tariff schedule introduced a set of thresholds with different tariffs for each cubic meter of gas consumed. People were assigned to each threshold according to their past-year consumption. For example, those with past consumption between 800 and 1,000 m^3 would pay a rate of \$0.156 for every m^3 consumed, and those who had consumed between 1,000 and 1,500 m^3 would pay a rate of \$0.165. It's important to mention once more the difference between this design (where each additional unit consumed affects the price of every future m^3 to be consumed) and the more traditional design in which each unit consumed faces a marginal price that affects only that unit.

The objectives of the policy reform, even though never fully explicitly stated by the authorities, were to: i) increase revenues so that the government could reduce the amount of subsidies given to the companies; ii) establish a progressive tariff schedule so those with higher consumption would face a higher cost per m^3 than those with lower consumption; the price per m^3 was determined according to yearly accumulated consumption and it was revised bi-monthly;

[5] We are far from the being the first to tackle this discussion. See, for example, Baicker, Congdon, and Mullainathan (2012) for a similar take on the area of health insurance, and Mullainathan, Ludwig, and Kling (2011) on field experiments and behavioral mechanisms.

[6] The IDB's publication "Development Effectiveness Overview (DEO)" summarizes many of the impact evaluations undertaken by the institutions involved. Further information is available at: http://www.iadb.org/en/topics/development-effectiveness/development-effectiveness-publications,8177.html

iii) reduce consumption; the tariff schedule favors those who reduce consumption by offering a lower price for every cubic meter consumed.

In the paper, we find that an increase in the average price of natural gas in the utility bill received by consumers induced a statistically significant and prompt decline in residential gas consumption: a 25 percent price increase reduced residential gas consumption by around 4 percent in the subsequent two-month period (see Bastos et al., 2014). This result suggests that policy interventions via the price mechanism may constitute a powerful instrument to influence patterns of residential energy utilization, even in a relatively short time span. In the longer run, the potential reductions in consumption could be even greater as households adapt their investment decisions accordingly (e.g., substituting natural gas furnaces for electric ones, or buying energy-efficient appliances).

However, while consumers who were affected the most by the rate hike became aware of the change in price, because they saw it reflected on their tax bill (and reacted by lowering their consumption), consumers had a highly imperfect knowledge of the price determination mechanism. Hence, the policy's objectives could not be fully attained. In particular, consumers were not fully aware of the existence of thresholds, the levels of those thresholds, and the tariff associated with each of them.

In order to learn how much information consumers had, we administered a telephone survey to 353 households included in our sample. The survey targeted the member of the household who was responsible for paying the gas bill. Table 1 reports the key results from the survey. As expected from the results discussed above, nearly 92 percent of households reported that they were able to remember the amount charged in the last gas bill.[7] About 75 percent of consumers stated that they regularly read their gas bills.

[7] The proportion of households who paid their bill by direct debit is relatively small (14 percent), which alleviates the concern that consumers might not be aware of how much they are charged every period.

Table 1. Knowledge of Bill Amount and Price Determination Mechanism

Last amount billed		
Question		**% Yes**
Do you remember the amount of your last bill?		91.8
Price determination mechanism – Perceived knowledge		
Question		**% Yes**
Do you know how the total amount of the bill is computed?		30.7
Price determination mechanism – Objective knowledge		
Question	**Correct Answer**	**% Correct Answer**
How often does the company re-categorize consumers?	Every billing period	14.4
Re-categorization is calculated based on…	Last year's consumption	38.9
What is the consumption level that divides categories R32 and R33	1500 m3	3.7

Notes: Results from a telephone survey of 353 customers that had an annual accumulated consumption between 1,480 and 1,520 m^3 in the bill issued in May 2009. For the questions about objective knowledge, four alternatives were presented. In the question "How often the company re-categorize consumers?" the options were: a) every billing period, b) every two billing periods, c) every six billing periods, d) other. In the question "Re-categorization is calculated based on …" the options were: a) difference in consumption between the current bill and the previous; b) last year's consumption; c) last semester consumption; d) other. In the question "What is the consumption level that divides categories R32 and R33" the options were: a) 1,000 m^3; b) 2,000 m^3; c) 1,500 m^3; d) Does not know.
Source: Bastos et al. (2014).

Knowledge of the price determination mechanism, however, proved to be almost non-existent. Among surveyed households, 31 percent reported knowledge of the tariff determination mechanism. However, the questions aimed at assessing precise knowledge of the price determination mechanism suggest that the proportion of well-informed consumers is considerably lower. First, only 14 percent of households knew that consumers were re-categorized (and unit prices determined) in each billing cycle. Second, only 39 percent of consumers knew that their billing category was determined on the basis of accumulated consumption over the previous year. Third, only 4 percent of consumers knew that the threshold that divided two of the categories (R32 and R33 specifically) is 1,500 cubic meters.[8] Overall, less than 1 percent of households provided correct answers to the three objective questions posed.

Consequently, while those that were above the discontinuity reduced their consumption as a consequence of the steep increase in the bill they received, they were not aware of the potential benefits from dropping their consumption below the threshold. Those below the threshold, who were not subject to such a steep change in the tariff, were not aware either.

[8] 1,500 cubic meters is the threshold exploited in the RD design. Surveyed-household annual accumulated consumption was always close to that discontinuity.

Therefore, because of their ignorance of the price determination mechanism, they may have crossed the threshold upwards in subsequent periods. As a consequence, one of the objectives of the policy, which was generating incentives for lower overall consumption, was not necessarily fulfilled.

An important conclusion, then, is that consumers react to changes in prices, even in the short term, even if they have to figure out complex tariff structures from past utility bills. Still, designing policies that are too complex may prevent them from reaching their full potential. Simpler designs and good information may get farther. For example, there is ample evidence about the role of information on peers' consumption in influencing household's consumption. Those who are informed that they consume more energy than their neighbors tend to reduce their consumption in spite of no changes to prices (Ferraro and Price, 2013; Costa and Kahn, 2013; Jessoe and Rapson, 2012). Providing similar information about the program, such as easy-to-read charts on the potential savings that may accrue by moving below the consumption threshold, may have had an even greater impact on consumption than the price change itself.

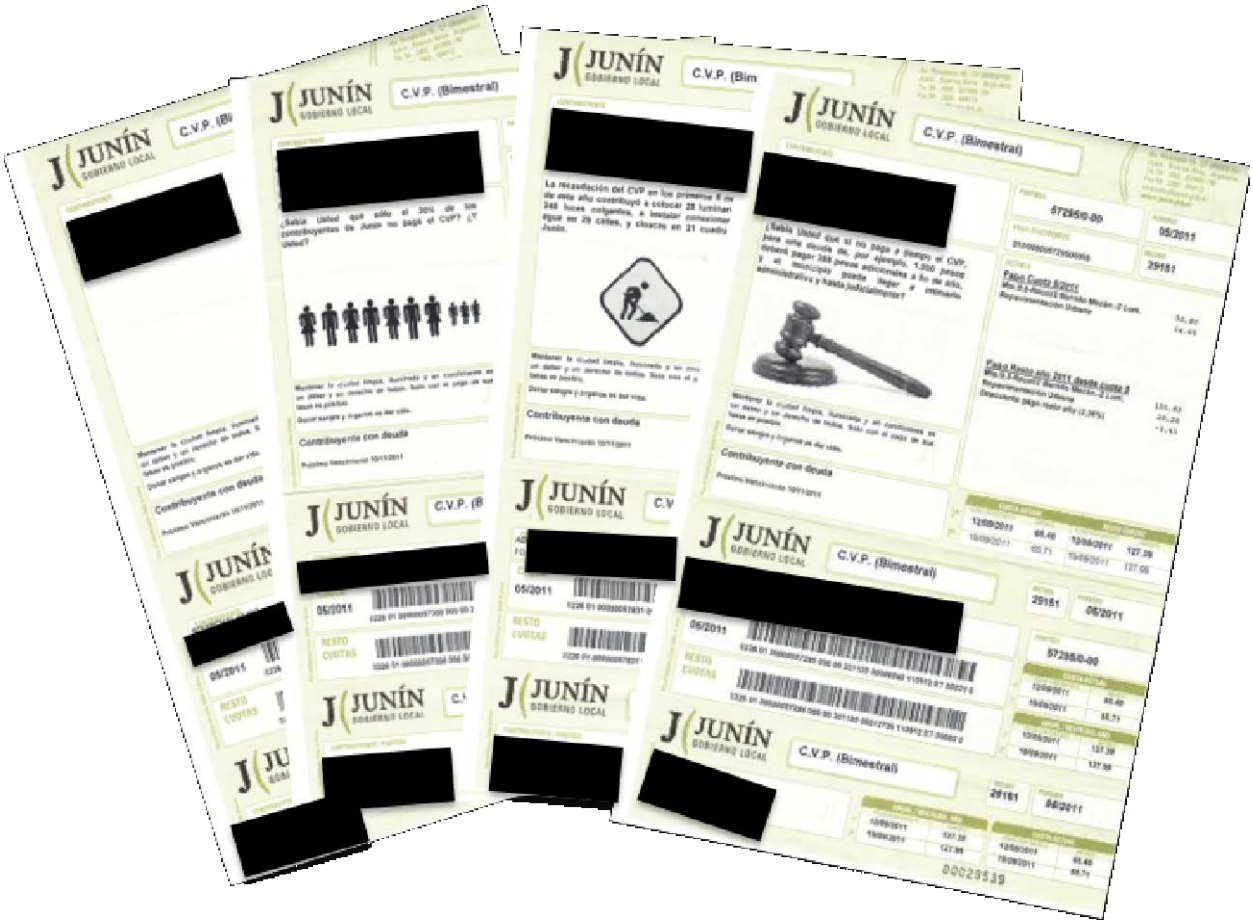
3. You Do Not Need to Change Prices or Regulations to Affect Behavior

In the same way that providing information about peers' consumption may affect how much a household uses natural gas, providing information on whether neighbors pay their taxes or not can affect individuals' decision to evade or comply (Coleman, 1996, 2007). Because changing tax codes and randomizing the provision of public goods tends to be difficult (if not impossible), a novel strategy is to affect taxpayers' beliefs using information alone (Castro and Scartascini, 2013, summarize a vast literature).

In order to test the role of information on tax compliance, we conducted an experiment that affected the collection of the most relevant municipal tax in a municipality of Argentina. This tax, locally known as *tasas*, is levied upon individuals according to the size of their property and the services they receive from the local government, such as street lighting, trash collection, and street cleaning. In the Municipality of Junín, a midsized and largely urbanized district located in the upper north of Argentina's main province, Buenos Aires, approximately 23,000 individual taxpayers of this *tasa* who are billed bimonthly were randomly divided into four groups.

One of the groups received no treatment (the control group), while the other three were treated by including messages on their tax bill. The treatments were designed to test the main determinants of tax compliance according to the literature and the reasons people in Latin America state for explaining non-compliance: deterrence (or beliefs about enforcement and fines; "If I don't pay nothing happens"), equity (or beliefs about other taxpayers' behavior; "Why would I pay if nobody else does it?"), and fairness (or beliefs about the use of resources by the government; "Why would I pay; the government misuses the money it collects"); these reasons are addressed by Congdon, Kling and Mullainathan (2011) and Hashimzade, Myles, and Tran-Nam (2013). At the same time, the experiment would provide evidence on the effect and effectiveness of nudging taxpayers. Illustration 1 provides a sample of the actual tax bills utilized in the experiment, and Table A.1. in the Appendix presents the messages and the pictures that were included in the tax bill for the three groups of taxpayers.

Illustration 1. Sample of Bills with Three Treatments and Control Messages



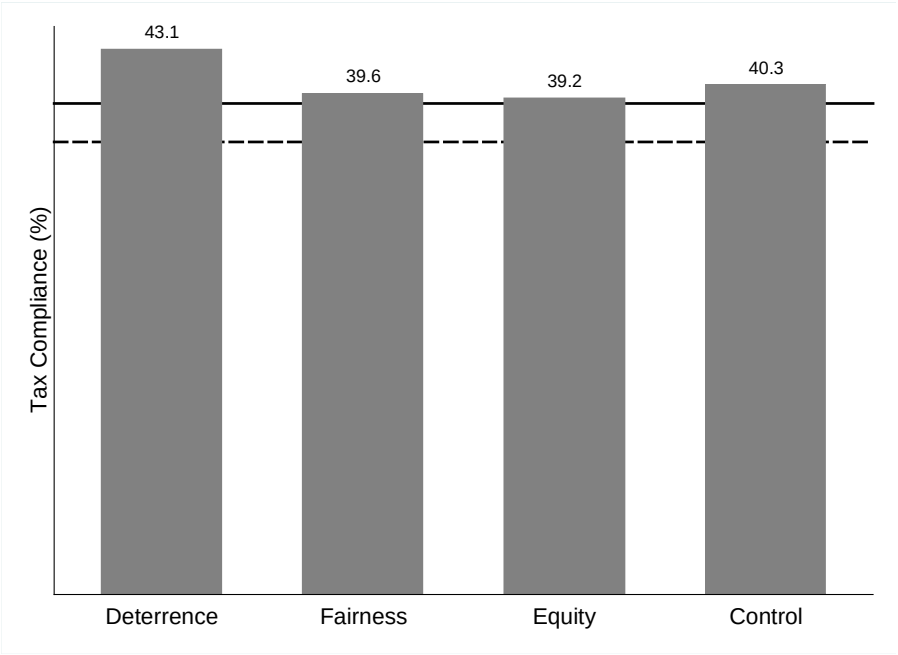
The results indicate that introducing messages into the tax bill may be a good instrument for affecting taxpayers' behavior. Still, not all the messages seem to have the same effect. The most effective message was the one on deterrence that listed the actual fines and potential administrative and judicial steps that the municipality might follow in the event of noncompliance. More precisely, tax compliance among the taxpayers that received this deterrence message increased by almost 5 percentage points with respect to the control group (which is equivalent to reducing tax evasion by more than 10 percent).[9] We do not find any average treatment effects for the other two messages.

To provide some intuition for the findings in terms of revenues collected instead of individual-level decisions as we do in Castro and Scartascini (2013), Figure 1 plots the tax compliance ratio, computed as tax payments over tax liabilities, for the three treatment groups and the control group in the period following the experiment. The figure also displays the tax compliance ratio for the period when randomization was conducted (solid line) as a benchmark as well as for the same billing period but one year earlier (dashed line).

This figure suggests that tax compliance for taxpayers that received the deterrence message was almost 3 percentage points higher than for taxpayers in the control group (no message). In terms of evasion rates, it implies an increase in compliance of more than 7 percent. This difference is statistically significant according to a nonparametric test of proportions. Notice that tax compliance increases for both the treatment and the control groups with respect to the previous billing period and the same period a year earlier. A potential explanation is that the Municipal authorities' introduction of a simplified tax bill with an improved design in the same bimonthly billing period in which the experiment was conducted provided an incentive for this generalized increase in tax compliance across the treatment groups and the control. It is noteworthy that this effect does not affect the validity of our results, as the same redesigned bill was distributed to every taxpayer.

[9] Our results may be underestimating the full effect. First, even though every taxpayer should have received the message, not all of them may have read it. Second, any contamination of the control group would also bias our results downward.

Figure 1. Tax Compliance by Treatment Groups and Control Group (in percent)



Notes: This figure plots the tax compliance ratio (tax payments over tax liabilities) for the treatment groups and the control. It also displays, in a solid line, the average tax compliance ratio prior to the experiment (Period 3 – May-June) as well as, in a dotted line, the average tax compliance ratio in the same period 5 (September-October) but one year before (2010). The difference in compliance between the group that received the deterrence message and the control is statistically significant at the 1 percent level according to a proportions test. Differences are not statistically significant for the other two groups.
Source: Castro and Scartascini (2013).

4. Information Matters, but How You Present It Does Too: Messages Should Be Salient

In the previous sections we argued that prices matter and that policy design matters too, and that providing information can have an effect on people's behavior. However, just as policy design matters, so does the way information is conveyed.

In the municipality of Esteban Echeverría, located in the Greater Buenos Aires (GBA) area, we conducted a similar field experiment. As in the case of Junín, we introduced messages in the bill of the most important *tasa*, also a property tax. We randomly divided the population of taxpayers into three groups. The first group received a message making reference on how tax compliance could contribute to purchasing more cars for the police. The second group of

taxpayers received a message similar to the one we sent in Junín stating the administrative and legal consequences of not complying with the tax code, and providing a simplified example for a hypothetical debt of the interest to be paid after a one-year period. Finally, the third group received a placebo message: a text about the need to keep Esteban Echeverría clean that is supposed to be included in the tax bill according to existing local legislation.

Due to a decision taken by the local authorities, we were not able to modify the tax bill to increase the salience of the messages. As a result, the messages had to be included in a box located in the upper section of the existing bill, mingled with a standard text included in each billing cycle by the municipality. Also, the text was typed using a smaller typeface than the standard text, and the bill included other pieces of relevant information such as the taxpayer's contact details, the due date of the bill and the amount to pay. Further, we were also unable to include any pictures in the bill see Illustration 2) and were not allowed to use the back of the bill, as had been originally arranged with the authorities.

Illustration 2. Sample Tax Bills with Treatment Messages (in Spanish)

Note: The box that included the message in the tax bill is circled in red.

As a consequence, the message was less salient than other information contained in the bill, such as Esteban Echeverría's name and coat of arms. In fact, according to a survey we carried out among taxpayers who participated in the experiment, 40 percent responded that when they receive the bill they only look at the amount of money they owe to the tax authorities. Also, around 17 percent of the surveyed taxpayers said that they did not pay attention to any other information contained in the bill (Table 2). These results are aligned with recent evidence on the presence of "inattentive taxpayers" or taxpayers with limited attention to the information related to the penalties and the probabilities of detection in case of non-compliance with the tax code (Congdon, Kling and Mullainathan, 2012).

Table 2. Knowledge on Information in the Tax Bill and Informational Treatments' Retention

Last bill		
Question		
Do you read the tax bill?	Only the amount to pay	41.1%
	Never	17.1%
Question		**% Never**
Do you read the information placed on the back of the bill?		59.4%
Question		**% No**
Do you read the newsletter that comes along the tax bill?		42.2%
Informational Treatments' Retention and Effects		
Question		**% Yes**
Do you remember any message included in your last tax bill?		17%
Question		**% Yes**
Did you feel compel to make any payments by the message		49.9%

Notes: Results from a household survey of a representative sample of 300 taxpayers that participated in the experiment.

As expected, the messages introduced in the tax bill went largely unnoticed in Esteban Echeverría. For instance, the survey results indicate that only 17 percent of taxpayers remembered any message in the tax bill. Even though there was little retention of the informational treatments, almost half of the taxpayers that reported remembering the message stated that they felt compelled to make some payments. Still, in contrast to Junín, we were not able to find any statistically significant effects on tax compliance in this municipality. Therefore, messages and information matter, but this information should reach individuals in a clear, salient, and concise way.

5. Designing Messages

While messages and information matter, not every message carries the same informational value. Private sector marketing campaigns follow rigorous testing and fieldwork, and public policy campaign messages that try to affect people's behavior should do so as well.

As an input for the design of the messages to be used in the experiment, in addition to a pre-experimental survey, we carried out a focus group in Esteban Echeverria with a representative sample of 20 taxpayers.[10] During the focus group, a moderator showed alternative versions of the messages and pictures to the participants and asked them about their reactions and feelings. She also moderated the discussions that arose among the participants related to the usefulness and likely impacts of the messages on taxpayers' compliance with the tax code.

The focus group yielded interesting results about how to write and present the messages in the tax bill. First, images and text included in the message should be consistent and transmit closely related concepts and ideas in a simple and precise manner. For instance, when shown a picture of a balance scale representing the justice system along with a text stating "complying with the tax code also contributes to a more equitable society. Did you know that the richest people pay more taxes in Esteban Echeverria?" the majority of the participants mentioned that the image of the balance scale contradicted the idea of a progressive tax system where taxes are higher for wealthier individuals. Also, participants said that the idea of "a more equitable society" was "too abstract" and lacked a concrete and specific meaning.

Second, the credibility of the informational treatments is crucial. For instance, participants believed that the statement "did you know that by paying your taxes you are contributing to make Esteban Echeverria a safer place for everyone?" was not credible. This qualitative evidence is aligned with the survey's results: 55 percent of taxpayers reported that crime had worsened in the last six months and another 37 percent said that the security situation had not experienced any major improvement over the same period. Also, 35 percent of taxpayers surveyed reported having directly or indirectly experienced a crime.

Finally, the results of the focus group suggest that messages should be carefully tailored. One of the participants of the focus group was a middle-aged female who was functionally illiterate. When the moderator asked the group how they felt about a football red card and a

[10] In the case of Junín, because of funding restrictions, the focus group was smaller and included random participants instead of being a sample of taxpayers from the city.

message asking “did you know that if you do not pay your taxes on time the Municipality can take administrative and legal actions?”, the woman replied that she felt guilty avoiding the tax code but sometimes she did not pay her taxes because she had to choose between feeding her five children and paying taxes. This qualitative result suggests that messages should be sensibly designed to avoid offending citizens’ sensibilities, particularly in light of the vast socioeconomic differences prevailing in developing countries. In fact, we accounted for these dissimilarities in the design of the experiment in Esteban Echeverria by excluding a noticeably poor neighborhood from the group of taxpayers that received the punitive message as the Municipality considered sending it to them counterproductive and potentially dangerous.

6. Results Depend on Beliefs

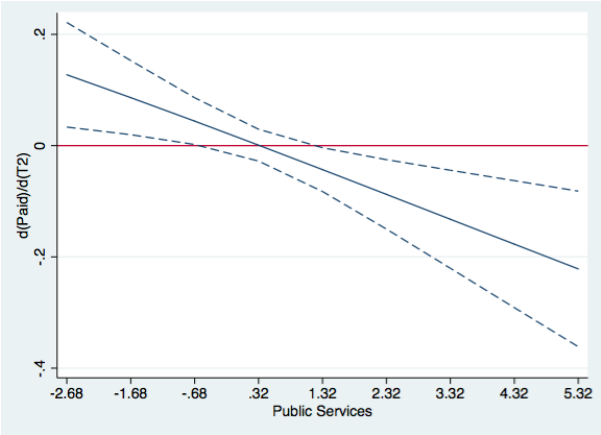
So far, we have argued that prices and information (nudges) are both viable ways of influencing people’s behaviors. Still, in the same way people sometimes react to decreases in prices by decreasing consumption (as is the case with some luxury goods, which lose some of the qualities that make them unique), even in the presence of clear, salient, and concise messages, with pictures that transmit closely related concepts, people’s reactions to the same message may differ across the population.

In the case of the experiment carried out in Junín, we checked for heterogeneous effects across the observable characteristics that may be reasonably assumed to affect compliance behavior variably across taxpayers. First, we suspect that people evaluate the fairness message (provision of public goods) differently according to their own experience with the municipality’s provision of public services. On the one hand, those who receive poor (good) services may update their beliefs upward (downward) when they are informed about public works the municipality has engaged in recently.

We find that the fairness message seems to have a positive effect on those who receive a lower quantity and/or quality of public services (upward revision of beliefs following the message) and a negative effect on those who receive better services (Figure 2).

Figure 2. Interaction Effects of the Treatments with Public Service Provision

Marginal effect of fairness message according to public goods received



Source: Castro and Scartascini (2013).

Regarding the equity message, we may suspect that people's beliefs are highly correlated with past payment behavior. Those who pay regularly may estimate tax evasion in the community to be lower than those who usually do not pay. Past payment behavior would naturally also affect the deterrence message directly. Only those who do not pay would change their behavior after learning or updating their beliefs regarding enforcement. As shown in Figure 3a, which summarizes the marginal effects for the interaction between the deterrence message and the lagged outcome variable, the message has a positive impact on those taxpayers who did not pay in the previous period but no statistically significant effect on those who did. The opposite occurs regarding the equity message, as shown in Figure 3b. While the effect of the message is zero for those who had not complied before, it is negative for those who had. That is, the message seems to have been a disincentive for those who had complied in the past and had been overstating other people's rates of compliance. There is, of course, an alternative explanation. The fact that the government was advertising the degree of evasion may lead some people to believe that enforcement is lax and nothing would happen if they evade as well.

Figure 3. Interaction Effects of the Treatments with the Lagged Dependent Variable

Figure 3a. Marginal effect of deterrence message according to past payment behavior

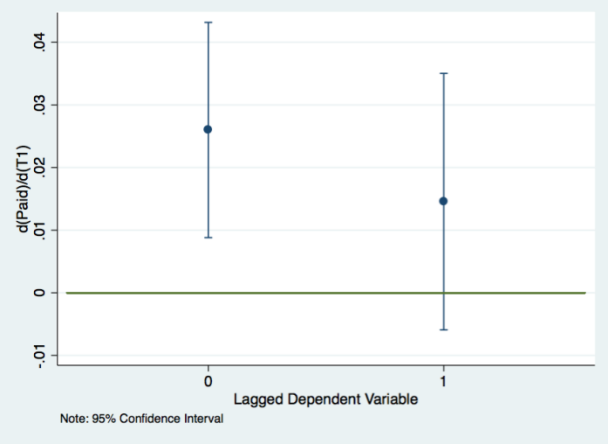
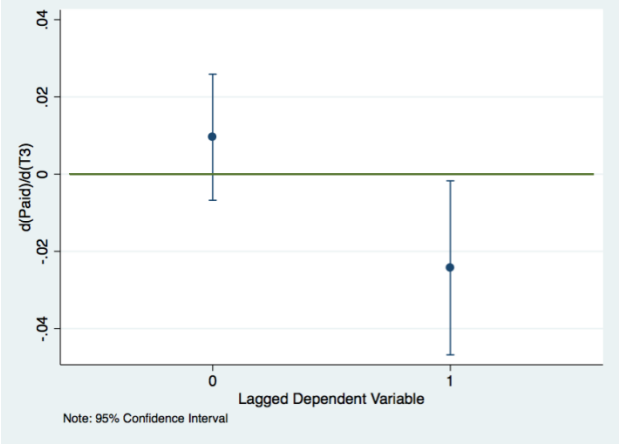


Figure 3b. Marginal effect of equity message according to past payment behavior



7. Policy Lessons

In this policy brief we review the role of prices and nudges, and we focus on the role of policy design on outcomes. The review we perform in this policy note does not aim to be comprehensive. There are plenty of very good survey papers and books that take stock of a plethora of field experiments, including very detailed summaries of how to conduct an experiment properly. The objective of this policy paper, however, is narrower. It aims to distill policy and policy design lessons from a series of research projects sponsored by the Inter-American Development Bank (IDB) in the areas of energy consumption and tax compliance, applying experimental and quasi-experimental design in a country in Latin America. The evidence should help the IDB and practitioners in the region to design policies that have a higher change of success.

According to the evidence in this policy brief and insights from the more general literature, the implications are the following:

Lesson 1: Individuals react to prices. The convenience of using the price mechanism depends on price elasticity and on the ability of the policymaker to pass the regulation. For example, introducing new taxes seems to be more complicated than running an informational campaign about the dangerous effects of smoking.

Lesson 2: Individuals react to policy design (if they are aware of it!). Theoretically sound policies may have no effect if they are not well publicized or if they are too complicated for citizens to understand.

Lesson 3: It is not always necessary to affect prices. Information can also help, and well-designed nudges can go a long way toward producing changes in behavior.

Lesson 4: In order to have an impact, messages should be salient, clear and concise. Images and text included in the text should be consistent and transmit closely related concepts and ideas in a simple and precise manner. The credibility of informational treatments is crucial, and messages should be carefully tailored to avoid offending citizens' sensibilities.

Lesson 5: People react to information according to their beliefs. Information treatments may have unintended consequences.

Overall, the five policy lessons indicate that nudges may be an effective policy alternative for inducing behavior change without altering prices or regulations. However, they also warn policymakers and practitioners about the need to bear in mind that "the devil is in the details" when designing and applying these tools, in particular in the context of a developing country.

References

Baicker, K., W.J. Congdon and S. Mullainathan. 2012. "Health Insurance Coverage and Take-Up: Lessons from Behavioral Economics." *Milbank Quarterly* 90(1): 107-134.

Bastos, P. et al. 2014. "Does Energy Consumption Respond to Price Shocks? Evidence from a Regression-Continuity Design." Forthcoming in *Journal of Industrial Economics* (JIE).

----. 2011. "Does Energy Consumption Respond to Price Shocks? Evidence from a Regression-Continuity Design." Working Paper IDB-WP-234. Washington, DC, United States: Inter-American Development Bank.

Castro, L., and C. Scartascini. 2013. "Tax Compliance and Enforcement in the Pampas: Evidence from a Field Experiment." Working Paper IDB-WP-472. Washington, DC, United States: Inter-American Development Bank.

Coleman, S. 1996. "The Minnesota Income Tax Compliance Experiment: State Tax Results." MPRA Paper 4827. Munich, Germany: Munich University Library.

----. 2007. "The Minnesota Income Tax Compliance Experiment: Replication of the Social Norms Experiment." MPRA Paper 5820. Munich, Germany: Munich University Library.

Congdon, W.J., J.R. Kling and S. Mullainathan. 2011. "Policy and Choice: Public Finance through the Lens of Behavioral Economics." Washington, DC, United States: Brookings Institution Press.

Costa, D.L., and M.E. Kahn. 2013. "Energy Conservation 'Nudges' and Environmentalist Ideology: Evidence from a Randomized Residential Electricity Field Experiment." *Journal of the European Economic Association* 11(3): 680-702, 06.

Duflo, E. 2006. "Field Experiments in Development Economics." Cambridge, United States: Massachusetts Institute of Technology. Available at: http://economics.mit.edu/files/800

Ferraro, P.J., and M.K. Price. 2013. "Using Nonpecuniary Strategies to Influence Behavior: Evidence from a Large-Scale Field Experiment." *Review of Economics and Statistics* 95(1): 64-73.

Gerber, A., and D.P. Green. 2012. *Field Experiments: Design, Analysis, and Interpretation*. New York, United States: W.W. Norton & Company.

Glennerster, R., and K. Takavarasha. 2013. *Running Randomized Evaluations: A Practical Guide*. Princeton, United States: Princeton University Press.

Harberger, A. 2008. “Microeconomics.” In: D. Henderson, editor. *The Concise Encyclopedia of Economics*. College Park, United States: Pennsylvania State University, Liberty Fund.

Hashimzade, N., G.D. Myles and B. Tran-Nam. 2013. “Applications of Behavioural Economics to Tax Evasion.” *Journal of Economic Surveys* 27, Issue 5, pages 941–977, December 2013

Jessoe, K., and D. Rapson. 2012. “Knowledge is (Less) Power: Experimental Evidence from Residential Energy Use.” NBER Working Paper 18344. Cambridge, United States: National Bureau of Economic Research.

Levitt, S.D., and J.A. List. 2009. “Field Experiments in Economics: The Past, the Present, and the Future.” *European Economic Review* 53(1): 1-18.

List, J. 2007. “Field Experiments: A Bridge between Lab and Naturally Occurring Data.” *B.E. Journal of Economic Analysis & Policy* 5(2): 1-47.

List, J., S. Sadoff and M. Wagner. 2011. “So You Want to Run an Experiment, Now What? Some Simple Rules of Thumb for Optimal Experimental Design.” *Experimental Economics* 14(4): 439-457.

Mullainathan, S., J. Ludwig and J.R. Kling. 2011. “Mechanism Experiments and Policy Evaluations.” *Journal of Economic Perspectives* 25(3): 17-38.

Sunstein, C.R. 2013. *Simpler: The Future of Government*. New York, United States: Simon & Schuster.

----. 2014. “The Council of Psychological Advisers.” Forthcoming in *Annual Review of Psychology*.

Teele, D.L. 2014. *Field Experiments and Their Critics: Essays on the Uses and Abuses of Experimentation in the Social Sciences*. New Haven, United States: Yale University Press.

Thaler, R.H., and C.R. Sunstein. 2008. *Nudge: Improving Decisions about Health, Wealth, and Happiness*. New Haven, United States: Yale University Press.

Thaler, R.H., C.R. Sunstein and J.P. Balz. 2010. “Choice Architecture.” Available at SSRN: http://ssrn.com/abstract=1583509 or http://dx.doi.org/10.2139/ssrn.1583509.

World Bank. 2015. *World Development Report 2015: Mind and Society*. Washington, DC, United States: World Bank. Forthcoming.

Appendix

Table A.1. Messages Included in the Tax Bill

#	Message	Text of the message	Image
1	Deterrence	Did you know that if you do not pay the CVP on time for a debt of AR$ 1,000 you will have to disburse AR$ 268 in arrears at the end of the year and the Municipality can take administrative and legal action?	
2	Fairness	In the first 6 months of this year, CVP's collection contributed to place 28 new streetlights, water connections in 29 streets and sewerage networks in 21 blocks.	
3	Equity	Did you know that only 30 percent of taxpayers do not pay the CVP? What about you?	
4		Control group	No message/Image