Ideological Preferences after Natural Disasters: Evidence from Chile*

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Abstract

Can natural disasters affect voters' ideological preferences? Even as climate change has increased concerns about the frequency and intensity of disasters, the effects of these negative events on voter behavior are not yet fully understood. Though ideological labels are known to be informative heuristics, the literature has thus far overlooked their role after natural hazards. Might affected citizens become more likely to select candidates with an ideology that can be associated with what victims need after a disaster? Answering this question is difficult since disaster damage can be correlated with multiple victims' unobserved characteristics. To address this challenge, I use a natural experiment created by the floods that occurred in Chile in 2015 to take advantage of random variation in citizens' exposure to a disaster. I then capture voters' electoral choices using a conjoint survey experiment. The findings show that material damage caused by this disaster increased the probability of voters selecting left-wing and independent candidates. Qualitative evidence from interviews helps to illuminate the causal mechanisms underlying these results.

Keywords: Ideological Preferences, Electoral Choices, Natural Disasters, Natural Experiments, Conjoint Experiments.

1 Introduction

Climate change has increased concerns about the frequency and intensity of disasters. Multiple evidence has shown that the increase in global temperatures will rise the likelihood of natural hazards and extreme weather events such as floods, tropical storms, and heat waves in the near future (Van Aalst, 2006; Sauerborn and Ebi, 2012; Banholzer, Kossin and Donner, 2014). These disasters can dramatically worsen victims' living conditions by damaging private property and disrupting public services, among myriad other negative consequences. Therefore, better understanding the political effects of climate change impacts has become an urgent concern.

Previous research has shown that natural hazards can have meaningful effects on victims' electoral choices, which can occur through three main mechanisms. First, affected citizens might always punish the incumbent as a way to channel their anger and frustration (Achen and Bartels, 2016). Second, victims might reward or punish the incumbent based on her performance handling the consequences of the disaster (Healy and Malhotra, 2010; Gasper and Reeves, 2011). Third, exposed individuals might use information about disaster preparedness to infer the quality of the incumbent (Ashworth, Bueno de Mesquita and Friedenberg, 2018).

These arguments, however, do not consider the role candidates' ideologies may play in disaster victims' electoral preferences. Because ideological labels can serve as useful heuristics for specific policy outcomes, affected citizens might become more likely to prefer candidates with an ideology that can be associated with victims post-disaster needs. Can natural disasters affect voters' ideological preferences? Are disaster victims more likely to prefer right-wing, left-wing, or independent candidates?

Answering these questions presents multiple methodological challenges. First, even though the origin of natural disasters might be exogenous to incumbents' performances, these events are not randomized experiments. Indeed, damage incurred by disaster victims can be correlated with a variety of characteristics: for example, low-income individuals might be more likely to live in high-risk areas, such as close to a river or near the mountains. Second, previous research designs do not

tend to account for the importance of sample homogeneity for drawing more credible inferences. Ideally, an observational study should compare subjects from the same natural blocks, such as students from the same school or patients from the same hospital (Pimentel et al., 2015). By drawing units from the same homogeneous sample, the treated and control groups may have similar distributions of unobserved covariates, which will improve comparability between units and reduce sensitivity to hidden biases (Rosenbaum, 2011; Keele, 2015). Third, candidates' characteristics might be endogenous to the disaster. For example, political parties might be reacting to the disaster and nominating candidates with certain attributes to run in exposed districts. As a consequence, we should consider strategies that allow us to isolate candidate characteristics from the disaster itself.

In this paper I present a research design that addresses each of these concerns, focusing on a particular case of flooding in northern Chile. In March 2015, unseasonably heavy rains in that region of the country triggered flash floods, causing severe damage in numerous cities and towns. I focus on a district called Paipote, which was severely affected by the disaster. Some parts of Paipote, however, were not exposed to the flood because of haphazard circumstances. This provides an opportunity to compare voters indirectly affected by the flood (those who experienced isolation and a scarcity of supplies for several days but no material damage) with those who were directly affected by the disaster (those who experienced material damage in addition to isolation and scarcity).

This case allows us to address two of the aforementioned methodological challenges. First, the as-if random nature of exposure to the flood enables us to better identify the political consequences of a natural disaster: unexposed people had not sorted or selected their houses based on their expectations of being affected by a disaster since the magnitude and trajectory of the flood were unpredictable. Second, because Paipote is a homogeneous low-middle income town, the comparability between voters and, therefore, our ability to draw credible inferences from the data, increases.

To better understand which candidates may become more appealing to voters after a natural disaster, I conducted an original survey with an embedded conjoint experiment in the more- and

the less-affected areas of the town three months after the disaster. The main goal of the conjoint analysis was to determine how people value different candidate attributes when making electoral decisions, with ideology being the key attribute of interest. By randomizing candidates' characteristics, the conjoint experiment allows us to identify the effects of each of these attributes on being preferred by respondents (Hainmueller, Hopkins and Yamamoto, 2014). Furthermore, by using hypothetical candidates who were not nominated by political parties but rather randomly generated, this approach helps address the third methodological concern about the endogenity of candidates' characteristics.

I present four hypotheses about the role of candidate ideology in disaster victims' electoral decision-making: (i) Affected voters might not be attuned to politicians' ideological commitments or policy promises, and as a result will not rely on candidates' ideological labels when making their electoral choices. (ii) Disaster victims might prioritize social policies after the catastrophe (for example, new housing), and therefore will be more likely to vote for left-wing candidates associated with such measures. (iii) Exposed citizens might be looking for the economic renewal of their damaged localities, and as a result will be more likely to vote for right-wing candidates associated with economic growth. (iv) In developing countries, where the state has limited capacity to handle sudden negative shocks, affected citizens might be more likely to experience discontent and frustration with the political system, making them more likely to prefer independent candidates who do not represent traditional parties.

The combination of the conjoint and natural experiments shows that experiencing material damage from the flood increases the likelihood that a voter will prefer left-wing and independent candidates over those from the center by 13 percentage points. I also conducted interviews to have a better understanding of the causal mechanisms underlying these preferences.

This paper provides two main contributions to the existing literature. First, it investigates a previously overlooked research question about how candidates' ideological labels can help voters make electoral decisions under adverse conditions. Exposed individuals do not just sanction politicians, but also select the ones that can provide them what they urgently need, and ideological

labels can work as helpful heuristics to identify those candidates. Second, it helps us to better understand the effects of disasters on victims' electoral choices. The findings illustrate what kind of politicians enjoy an electoral advantage after natural hazards. Given that disasters such as floods are a growing concern as climate change accelerates, it is relevant that we have a more complete understanding of voter reactions to these events.

The study was registered at Evidence in Governance and Politics prior to the initiation of any research activities (see appendix A). The empirical strategy includes the following: a design-based approach to causal inference (i.e., the combination of natural and conjoint experiments), qualitative interviews to illuminate the causal mechanisms at work, the implementation of a behavioral benchmark to compare the findings from the conjoint experiment with the real electoral results after the flood (see appendix B), and the use of survey data from another disaster in a different region in Chile to improve external validity (see appendix C).

2 Natural Disasters and Electoral Choices

2.1 Prior Research

There are three main arguments in the literature about how citizens make electoral choices after natural disasters.[1] The first holds that voters will always sanction and blame the incumbent government after a natural disaster because they see it as an opportunity to channel the anger and frustration generated by exposure to the negative event. For instance, when studying the electoral consequences of floods, droughts, and shark attacks in the United States, Achen and Bartels (2016) find that the electorate holds incumbents responsible even for calamities beyond their control. They hold "that voters simply punish incumbent leaders any time their own well-being falls below

[1] Other research has explore whether disaster victims are myopic (Healy and Malhotra, 2009; Remmer, 2014), the factors that blur the attribution of responsibility after disasters (Arceneaux and Stein, 2006; Malhotra and Kuo, 2008; Maestas et al., 2008; Gomez and Wilson, 2008; Atkeson and Maestas, 2012), and the effect of natural disasters on turnout (Gomez, Hansford and Krause, 2007; Sinclair, Hall and Alvarez, 2011; Chen, 2013; Lasala-Blanco, Shapiro and Rivera-Burgos, 2017) and political attitudes (Abney and Hill, 1966; Fair et al., 2017; Carlin, Love and Zechmeister, 2014; Kosec and Mo, 2017; Maldonado, Kronmüller and Gutierrez, 2016).

'normal' levels, regardless of whether the incumbents have performed well or badly" (Achen and Bartels, 2016, p.138).

The second argument posits that voters can reward or punish incumbents depending on their performance handling the consequences of the disaster, in particular when providing relief. For example, Healy and Malhotra (2010) estimate the effects of exogenous economic losses on electoral outcomes, and find that after tornadoes, voters will punish the incumbent only when no disaster declaration has been made. As Healy and Malhotra (2010, p.195) hold, "even though the government cannot be blamed for the adverse natural events themselves, they can be held responsible for mitigation, response, and recovery." There have been similar findings about voters' reactions to government responses after severe weather events (Gasper and Reeves, 2011), floods (Bechtel and Hainmueller, 2011), and fires (Lazarev et al., 2014).

The third argument holds that disasters provide an opportunity for voters to learn new information about the incumbent, which can be used to infer her quality. One crucial piece of information is her level of preparedness for a natural hazard. Voters will take advantage of this information to update their assessments and expectations about the future performance of the government. As Ashworth, Bueno de Mesquita and Friedenberg (2018, p.2) hold, "with high preparedness, voters learn the incumbent is high quality and reelect her. With low preparedness, voters learn the incumbent is low quality and replace her."

2.2 Ideological Preferences

Conversely, in this paper I explore whether citizens rely on candidates' ideological labels when making electoral choices. There are four main expectations about how exposure to a natural disaster might change people's ideological preferences. The first expectation is based on (mixed) evidence showing that voters do not change their policy and ideological preferences in tough times such as after an economic crisis (Bermeo and Bartels, 2013). Previous research has found that people have a hard time understanding the meaning of left-right ideological labels, and that these labels might not always be meaningful to them (Converse and Pierce, 1986). As a result, we would expect

candidates' ideological labels to have a negligible effect on disaster victims' electoral choices.

The second expectation holds that affected citizens will become more likely to vote for left-wing politicians. After a disaster, state-led social policies such as the provision of public housing become crucial for victims, resulting in their greater likelihood of voting for candidates associated with these measures. These policies, furthermore, are typically associated with left-wing parties, which assert that the state has a crucial role in supporting people's well-being (Pribble, 2013) and promote the higher taxation that funds such policies (Levitsky and Roberts, 2013).

The third expectation posits that exposed individuals will be more likely to vote for right-wing candidates based on an assumption that these candidates will be able to jump-start the local economy, which for obvious reasons suffered after the natural disaster. Because right-wing parties have been historically associated with economic competence and growth (Bjørnskov, 2008), affected voters might find their candidates attractive in situations where the economy requires revitalization. Furthermore, since right-wing parties attempt to maximize economic growth (Boix, 1997), affected voters might see voting for them as an opportunity to improve their living conditions.[2]

The fourth expectation holds that independent candidates might experience an electoral advantage after a natural disaster since the experience might prompt people to update their attitudes toward the political system (Carlin, Love and Zechmeister, 2014). In developing countries, where the state has limited capacity to handle sudden negative shocks, voters will be more likely to face discontent and frustration. This, in turn, might make them more likely to prefer independent candidates who do not represent traditional politics. For example, evidence from a flood in Pakistan illustrates how disaster victims changed their attitudes toward the government due to its incompetence (Fair et al., 2017).

Can all candidates promise to implement beneficial social policies, maximize economic growth, or buck traditional parties after a disaster? Maybe, but only some can make credible commitments about actually delivering on their promises. A right-wing party might include social welfare poli-

[2] Hypotheses two and three assume that natural disasters can change people's policy preferences. Previous evidence has shown that negative events, such as unemployment or crime victimization, can affect people's policy preferences (Margalit, 2013; Visconti, 2019*a*).

cies on its platform, but voters will be naturally more inclined to believe that left-wing politicians will deliver on those policies.

Using shortcuts can help voters identify the candidates who can deliver what they need, an association that can be made "without requiring the (probably heroic) assumption that voters actively seek out and process policy-relevant information" (Kim and Margalit, 2017, p.6). Because citizens can draw on informational cues and heuristics to make simple connections between policy outcomes and candidates, ideological labels can function as a one such shortcut (Hamill, Lodge and Blake, 1985; Lau and Redlawsk, 2001).

3 Research Design

3.1 The 2015 Atacama Floods

The Atacama Desert in northern Chile is one of the driest regions in the world. On March 25, 2015, thunderstorms brought the equivalent of 7 years of rain to the desert in only a few hours, which caused massive flooding in several cities in northern Chile. The terrain in this region is "hard and rocky because rainfall is not frequent or abundant enough for either weathering rocks into sand or supporting the kind of ecosystem that would help turn rocks and minerals into soil. Without soil and plant cover to help absorb rainfall, it just runs off instantly as torrents of water."[3] The floods and mudslides left two dozen people dead and more than a hundred missing, and the government estimated the damage to total at least $1.5 billion.[4] More than 30,000 people were affected by the floods, and 3,000 had to live in emergency shelters.[5] As the deputy interior minister declared, this was "the worst rain disaster to fall on the north in 80 years."[6] One of the most devastated areas was Paipote.

Even though the town of Paipote was severely damaged, some houses in the district were

[3] The Associated Press, "Thunderstorms Soak Chile Desert in Years of Rain and Kill at Least 9", The Weather Channel, March 27th, 2015.

[4] Taylor, Alan, "Devastating Floods Hit Northern Chile", The Atlantic, April 8, 2015.

[5] Ford, Dana, "Chile floods: 25 dead, more than 100 missing", CNN, April 25th, 2015.

[6] Staff and agencies in Santiago,"Floods swamp Chile's Atacama region", The Guardian, March 26, 2015.

not exposed to the flooding at all: The floods came from the Andes, following a ravine that was connected downstream with the Copiapó River. However, a mudslide carried debris, garbage, and sediment to a small bridge in Paipote, blocking the circulation of water under the bridge and causing the ravine to overflow. This uneven distribution of water generated damage in many (but not all) areas of the city (see pictures of the bridge and the ravine in appendix D).

What differentiated the more and the less affected areas? In the former, the water flooded houses and generated massive material damage. People living in these areas lost their homes and their belongings, and had to live in emergency housing. People living in the less affected areas were isolated for a number of days and suffered from a scarcity of food and supplies. In these areas, there was only a small amount of water in the streets, and it did not enter homes.[7]

The research design attempts to address each of the three problems presented in the introduction. First, I use a natural experiment where the treatment has a haphazard nature. Second, I focus on a homogeneous town to increase comparability between units and reduce sensitivity to hidden biases. Third, I implement a conjoint experiment to rule out the role of parties nominating particular candidates in the affected districts.

3.2 Natural Experiment

A natural experiment is a specific and rare circumstance where some people are exposed to the treatment but others are not, and none of these individuals can predict their future treatment status. The units cannot self-select themselves into the treatment or control groups; and pretreatment covariates should be, in expectation, similar across both groups (Keele and Titiunik, 2016).

In the case of Paipote, the treatment corresponds to the existence of material damage to people's houses. I define as "more affected areas" the sectors where water entered the houses and people therefore suffered material damage due to the flood. I define as "less affected areas" the sectors

[7] Traditional designs tend to compare exposed and pure control areas, which could be problematic because natural disasters could have multiple downstream effects that are bundled together with material damage. For example, natural hazards might increase the state's presence, deteriorate the provision of public services, and enhance community networks. Therefore, using less affected areas (instead of pure control areas) could help mitigate this problem since partially affected neighborhoods should also be exposed to the downstream consequences of disasters. See appendix E for more details.

where the flood did not enter houses and the citizens were only indirectly affected.[8]

The overflow of Paipote's ravine has two main elements that make it possible to define this situation as a natural experiment. First, the magnitude and trajectory of the flood were unpredictable; interviews show that people were not aware of the potential consequences of the rainfall the day before the disaster. Second, people were not aware of the possible negative externalities of the Paipote Bridge, because this was the largest flood in the region in 80 years and a situation like it had never happened before. Therefore, because the disaster and its consequences (due to the bridge) were not anticipated, one would not expect people to have selected their homes based on their expectations of a future natural disaster. This is a critical issue because sorting is one of the main threats to any natural experiment.

The interviews help reconstruct the night of the floods, demonstrating that people living in Paipote were not able to predict which areas would be exposed. The story of Carmen, a 21-year-old mother, is a good example of the two points mentioned above.[9] Carmen lived in an unexposed area where the flood did not enter her house. On the night of the flood she heard firefighters in the streets saying that people needed to evacuate because that area would be affected by mudslides. She decided to go with her baby to her grandparents' house located near the bridge. After a few hours her new refuge was completely flooded, and they barely escaped. Her own house, however, was not affected at all since it was located in an area where water did not enter homes. The decision to move from an unexposed to an exposed area reflects the lack of information about the possible trajectory of the flood (I discuss concerns about spillovers in the next subsection).

Figure 1 shows the more and the less affected areas, the bridge, and the floods coming from the Andes. As expected, the haphazard treatment assignment produced balance in the placebo covariates in the survey,[10] as I show in section 4.1.

[8] I determined if an area was more or less affected using qualitative evidence from fieldwork. This decision is confirmed by official government images (figure 1), a map marked by the local fire department after the flood, and satellite images (appendix D).

[9] The names of the interviewees have been changed according to the IRB consent form, but the age, gender, and occupation (when reported) have not been modified.

[10] Variables that should not be affected by exposure to the floods such as people's age, education, and gender.

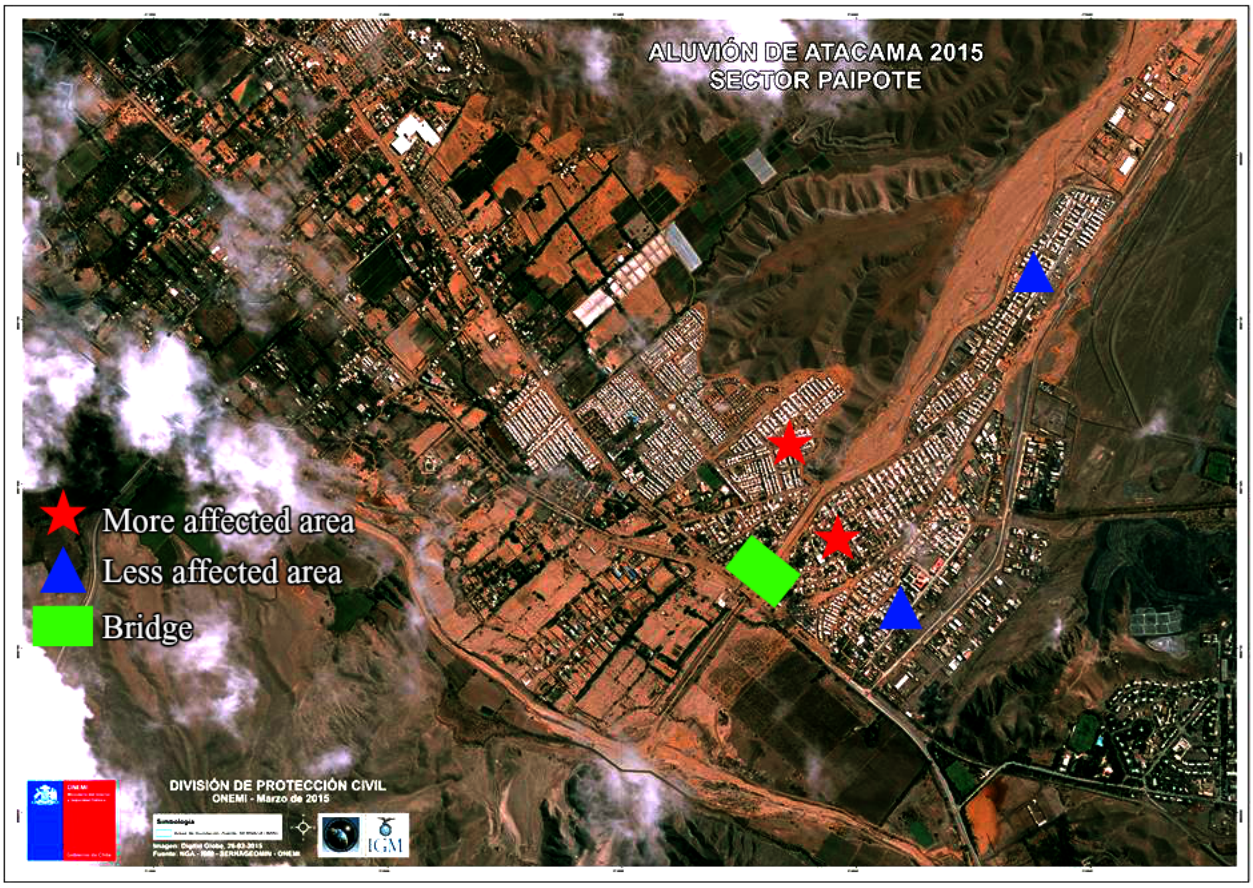

Figure 1: Map of Paipote

3.3 Spillovers and Reducing Sensitivity to Hidden Biases

In natural experiments, the identification of causal effects relies on two core (untestable) assumptions. The first is geographic treatment ignorability (Keele and Titiunik, 2016), which means that the distribution of potential outcomes should be the same for the control and exposed areas. The second is non-interference: in other words, potential outcomes for any subject do not vary with the treatment assigned to other subjects.

Because the unexposed and exposed people live in the same community, potential spillovers are part of the design itself. Thus, if we find a significant difference between the ideological preferences of each group, it can be interpreted in two ways: 1) both groups have changed their preferences in the same direction but exposed individuals are strongly modifiying them, or 2) the

groups have changed their preferences in opposite directions. Qualitative evidence helps us rule out the second alternative: because non-victims express empathy toward affected citizens (see section 5 for details), both groups' preferences should therefore move in the same direction. Consequently, any violation of the non-interference assumption should bias the effects toward zero, and any effect can be seen as a conservative estimate (Keele, Titiunik and Zubizarreta, 2015). In other words, any significant result can be seen as strong evidence of a treatment effect because this is a strong case for finding any result at all.

A powerful strategy for reducing sensitivity to hidden biases is comparing units from the same natural block. This is a desirable approach in observational studies because unmeasured covariates may be more similar within the block (Pimentel, Kelz, Silber and Rosenbaum, 2015). In this case, Paipote is a homogeneous low-middle income town—for example, 90% of the survey respondents do not have any higher education—which makes the more and the less affected citizens comparable because they are drawn from the same "natural block." Any additional data that increases heterogeneity can also increase bias (Keele, 2015). Rosenbaum (2005) shows that reducing unit heterogeneity decreases sensitivity to unmeasured biases. In particular, when there is less unit heterogeneity, there needs to be larger unmeasured biases to explain away a given effect (Sekhon, 2009). This benefit cannot be achieved by merely increasing the sample size. As Keele (2015, p.325) summarizes: "there are reasons for focusing on small samples where differences across treated and control units are reduced not by statistical means but by the design" (see appendix E for an additional strategy for reducing sensitivity to hidden biases).

3.4 The Conjoint Experiment

Three months after the floods, I conducted a survey in Paipote with a conjoint experiment embedded in it. The sampling strategy was exactly the same across the more and less affected areas. On a given street, all households were invited to participate in the survey. By the end of the survey, almost all the streets in town were included in the sampling procedure. Only one neighborhood was not incorporated in the design, because it was both partially affected and a

relatively new area, so it could introduce unwanted heterogeneity (see appendix F for more details about the survey implementation). Nine months after the flood, I interviewed 30 individuals from the same area.[11] This qualitative evidence helps to have a better understanding of why certain types of candidates become more attractive to disaster victims. However, I do not attempt to use the interviews to provide a formal test of the mechanisms.

I use a conjoint experiment that simultaneously tests the influence of various candidate attributes on respondents' mayoral choices. The survey experiment asked a sample of Paipote residents to decide between two hypothetical candidates running for mayor in the 2016 local elections (see appendix G for a discussion about why I use local instead of national elections and for more background on Chilean politics.). The respondents saw information about six attributes for these two candidates to generate realistic-seeming candidate profiles: ideological position, gender, previous political experience, profession, age, and proposals for affected citizens (i.e., expectations for short-term financial relief).[12] These characteristics randomly varied across pairings. The key attribute of interest is ideology, which has four values: center, right, left, and independent. When estimating the results, "center" will work as the reference category to allow us to test the hypotheses presented before.

The outcome was the answer to the following question: if you had to vote for one of these two mayoral candidates, which would you choose? Each of the respondents evaluated eight pairs of profiles. In the analysis I cluster the standard errors by respondent. I conducted 210 surveys, half in the more affected area of Paipote. Since each respondent rated eight pairs of candidates, and each pair provides two outcomes (a 1 for the preferred candidate and a 0 for the non-preferred candidate), this led to 3360 observations. Following Hainmueller and Hopkins (2015), I also randomly assign the order of the attributes to rule out primacy effects for each respondent. In appendix H I provide a table with all the values for each attribute and an example of a possible pair of profiles

[11] 17 exposed and 13 unexposed citizens.

[12] Short-term financial relief, such as the distribution of food baskets, is commonly provided after natural disasters by NGOs, private actors, and the government, regardless of its ideological affiliation. There is no reason to believe that voters will have uniform expectations about the distribution of short-term financial relief across all candidates, so this attribute can capture this variation.

evaluated by a respondent.

Given that the attribute values were randomized, the design allows us to identify the effect of each attribute on the probability of being preferred as mayor.[13] This can be estimated by regressing the binary outcome (preferred or non-preferred) on the set of attributes for each profile.[14]

In this paper, I mainly focus on the interactions between candidate attributes and treatment status to identify how the damage produced by the flood affected the way people make electoral decisions. I compare the electoral choices of citizens who suffered material damage from the flood with those of citizens who did not. Equation 1 describes the main quantity of interest:

$$Y = \alpha + \beta_1 Ideology + \beta_2 Profession + \beta_3 Gender + \beta_4 Age + \beta_5 Experience + \beta_6 Expectations + \gamma Treatment + \delta_1 Ideology * Treatment + \delta_2 Profession * Treatment + \delta_3 Gender * Treatment + \delta_4 Age * Treatment + \delta_5 Experience * Treatment + \delta_6 Expectations * Treatment + \varepsilon \quad (1)$$

Y represents the candidate selected by the respondents. The coefficients β and δ are vectors, because each attribute contains different values. For example, ideology has four values, but the β_1 vector provides only three coefficients because centrist candidates are the reference category. The coefficient vectors β_1 describe the effect of the candidate's ideology on the control group. Consequently, the vector of interest is δ_1, because it describes the change in effect of the candidate's ideology between control and exposed conditions (see appendix I for multiple diagnostic checks for the conjoint analysis).

[13] I follow the approach developed by Hainmueller, Hopkins and Yamamoto (2014) to estimate the average marginal component effect (AMCE). This represents the average difference in the probability of being preferred as mayor when comparing two different attribute values: for example, a "female" candidate versus a "male" candidate. And due to the random assignment of attributes, the "female" and "male" profiles will have, on average, the same distribution of all the other attributes (Hainmueller and Hopkins, 2015).

[14] The estimator for the AMCE is nonparametric and does not require a functional form assumption (Hainmueller, Hopkins and Yamamoto, 2014).

3.5 Defining the Treatment

Half of the surveys and conjoint experiments were conducted in the more affected areas of Paipote. However, some flood victims moved to houses located in the less affected areas to live temporarily with relatives or friends. In particular, seven survey respondents in a less affected area were actually flood victims who lived in a more affected area the night of the disaster. Therefore, 112 respondents lived in the more affected area during the natural disaster, and 98 in the less affected one.

The haphazard nature of the flood generated two different sectors: one where people suffered extensive material damage due to the flood, and another where the mudslides did not enter homes. Table 1 reports the number of people from these two areas who reported material damage after the flood.[15]

Table 1: Exposed and unexposed respondents

	More affected area	Less affected area	Total
Material damage reported	109	4	113
No material damage reported	3	94	97
Total	112	98	210

Material damage status is almost perfectly correlated with the area where the subjects were living. In the analysis, the treatment status is equal to 1 if the respondent reported material damage, and 0 if he or she reported indirect or no damage.[16] The results are the same when using the area as the treatment (see appendix J). The subjects who received the treatment will be referred to, from

[15] The survey included the following question: How affected were you by the floods? The answers were categorized as follows: 1 when respondents said "nothing happened," 2 when they reported indirect consequences such as isolation, 3 when they reported partial material damage, and 4 when they reported complete material damage. The first and second categories generate the "no material damage" status, and the third and fourth the "material damage" status.

[16] It is possible to imagine that this natural experiment involves assignment to treatment into "hypothetical clusters." However, it is not clear what such a cluster would consist of with this design (a street, a group of streets, a block, a group of blocks, etc.). Additionally, because Paipote is a homogeneous town, I expect the citizens within each "hypothetical cluster" to be no more similar than citizens in other "hypothetical clusters."

now on, as the "exposed group," and those who did not report material damage as the "unexposed or control group."

Five percent of the survey respondents did not want to participate in the conjoint experiment or quit before finishing it: three in the less affected area and seven in the more affected area. I found no evidence to support the idea that the treatment affected the probability of completing the conjoint experiment (p-value: 0.30).[17] These 10 respondents are excluded from further analysis. Therefore, there are 106 individuals in the exposed group and 94 in the unexposed group, which leads to a total of 3200 observations (16 candidate-pairs evaluated by each respondent.)

4 Results: Natural and Conjoint Experiment

4.1 Covariate Balance

Exposed and unexposed individuals should have similar distributions of observed and unobserved covariates. Although there are no pretreatment covariates available in this study, a number of the variables captured in the survey should not be affected by the treatment (i.e., placebo covariates), such as gender,[18] age, and education.[19] Table 2 reports the means and the standardized differences for the three placebo covariates.

Table 2: Balance of placebo covariates

Covariate	Mean exposed	Mean control	Standardized difference
Gender	1.72	1.77	0.11
Age	46.21	43.41	0.19
Education	3.20	3.01	0.14

[17] I tested this by regressing a binary indicator of a failed conjoint experiment on the treatment.

[18] Male:1, Female:2.

[19] 1: Primary Education Incomplete, 2: Primary Education Complete, 3: Secondary Education Incomplete, 4: Secondary Education Complete, 5: College Education Incomplete, 6: College Education Complete, 7: Graduate Studies.

Both groups are comparable because their standardized differences are below 0.2. One-fifth of a standard deviation is the usual rule of thumb for checking whether covariate balance was achieved (Silber et al., 2013). It is also possible, however, to improve balance by constraining the standardized differences to be lower than 0.05 using optimal multivariate matching (see appendix J). This statistical method helps reduce overt biases. Though hidden biases are still a threat in any observational study, the particularities of Paipote (specifically, its being a homogeneous residential town) and the haphazard nature of the treatment assignment makes the comparison between these groups more credible.

4.2 Voters' Electoral Choices

Figure 2 provides a graphical comparison of the electoral choices of exposed and unexposed respondents. The first panel reports the effect of candidates' ideological labels on the probability of being preferred as mayor for exposed respondents, while the second panel does the same for unexposed individuals. The third panel illustrates the differences between the exposed and unexposed group (δ_1 coefficient vectors), with these results being interpreted as the effects of the flood on the attributes that explain the probability of being preferred as mayor. The dots indicate point estimates, and the lines indicate 95% confidence intervals. The reference category is a candidate that belongs to the center of the ideological spectrum (the dot without a confidence interval). Because we are evaluating different hypotheses in this analysis, we provide corrections for multiple comparisons in appendix K. Additionally, I report the results for all the other attributes in appendix L.

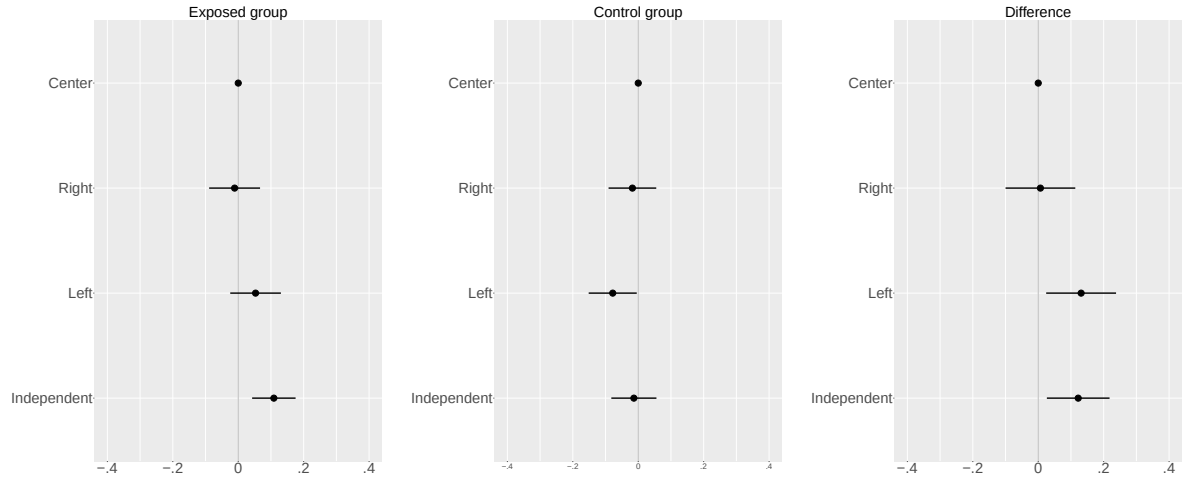

Figure 2: Effects of candidates' ideologies on the probability of being selected as mayor

Affected and unaffected citizens do have different ideological choices: independent and left-wing candidates become more attractive to disaster victims. The difference plot shows that flood exposure increases the chances of preferring a left-wing or independent candidate over a centrist candidate by 13 percentage points, and no effect for right-wing politicians. The results show a slightly negative bias against left-wing candidates in Paipote (control group), but the disaster makes it disappear. Meanwhile, independent candidates did not have any advantage or disadvantage (control group) and clearly become more attractive for disaster victims.

5 Discussion

Why are disaster victims more likely to vote for left-wing candidates? There are two main answers to this question. One response is that voters associate left-wing candidates with the incumbent or the opposition and they are rewarding or punishing real politicians by using ideology as a proxy. However, the mayor of Copiapó does not hold a clear ideological position. He was a member of the Socialist party (center-left) before running as mayor, but in 2008 switched to the PRI (center) and in 2012 and 2016 ran without party support. Therefore, it does not seem that rewarding left-wing candidates is an alternative way of punishing or rewarding the incumbent mayor (see appendix M for a more detailed discussion about alternative hypotheses).

A second option is that disaster victims prefer left-wing politicians because of the policies they can implement, which seems more plausible. Citizens affected by natural disasters might seek to improve their living conditions, which could lead them to prioritize social policies after the catastrophe (for example, new housing), and therefore be more likely to vote for the left-wing candidates associated with such measures. Survey data from Chile shows that a majority of respondents link the distribution of public housing with left-wing politicians (Visconti, 2019*b*), suggesting that this ideological label can work as a meaningful heuristic in this context. Evidence from interviews shows the importance of housing for disaster victims. As Pedro, a 39-year-old farmer, put it: "It is not just financial relief; we also need more material support. As my brother says, we need fences, houses, a permanent home [...]. The best help would be a house, but we are not asking for a huge house, but something that we can keep improving." Daniela, a 31-year-old housewife, provides further insight into victims' policy preferences: "[We need] solutions to our problems and not stopgap measures [...]. [The government] should focus on the key things and give priority to the issues that have real relevance [. . .]. It is more important to fix a house where a child needs a home to live than a bus stop." These examples show that victims focus on multidimensional social policies—in particular, on housing—and not on just short-term relief such as food baskets, which can be distributed by any party regardless of ideology.[20]

Independent candidates also have an electoral advantage in exposed areas, although not over left-wing candidates (see appendix N). Previous research has shown that natural disasters might also modify victims' political attitudes (Fair et al., 2017; Carlin, Love and Zechmeister, 2014). Consequently, the advantage of independent candidates over right-wing or centrist ones can be an expression of voters' new attitudes toward the political system. There have been similar findings in the economic voting literature in Latin America, where negative economic conditions have been associated with the diminution of traditional parties' share of the vote (Carreras, 2012; Lupu, 2014; Murillo and Visconti, 2017). Natural disasters might have the same effect on affected voters, making them more likely to support independent candidates. Qualitative evidence helps confirm

[20] I provide the interviews in Spanish in appendix O.

the idea that victims might channel their anger and frustration by punishing traditional politicians. Eduardo, a 71-year-old retiree, holds that after the flood, "the outrage increased, which is a hard thing to deal with, the outrage generated by the neglect of national and local authorities." Marco, a 40-year-old miner, echoes this sentiment when talking about the kind of political authorities needed. For him, he'd like to see a candidate who "does everything for the people, since when you run for a public office, as the word 'public' says, the idea is to help people and that is not what happened here. Therefore, we need politicians who want to help and not who want to find a (political) position." As a result, disaster victims might see independent candidates as an attractive electoral alternative under adverse conditions.[21]

It is not contradictory to find that voters are more likely to reward both left-wing and independent candidates. Indeed, when there is multiparty competition, both kinds of candidates can experience a boost at the same time. In this case, disasters can affect citizens' political preferences through multiple causal channels. On the one hand, natural hazards can make victims select candidates that can provide them the welfare policies they need (i.e., left-wing candidates). On the other hand, disasters can modify affected citizens' political attitudes and make them more likely to vote for authorities that allow them to channel their anger and frustation (i.e., independent candidates).

In interpreting these results, it is important to understand whether people can use ideological labels as meaningful heuristics in Chile. Traditionally, political ideology has indeed been a crucial lens for understanding Chilean voting patterns (Zechmeister, 2015; Calvo and Murillo, 2019). This is because Chile, historically, has had stable patterns of programmatic political competition (Roberts, 2013), where the center-left parties are liberal and more pro-state, while the center-right

[21] Is it possible that independent candidates also provide signals of distribution of social policies? Two years before the floods, in the 2013 presidential elections, Franco Parisi, a candidate who ran using a platform that reinforced his independence from traditional politicians, was able to obtain 10 percent of the vote share. His strategy was to not be considered left- or right-wing and to strongly criticize the party system configured after the transition to democracy in 1990. When respondents evaluate an independent candidate, I expect that they might picture someone similar to Parisi: a candidate who cannot be attached to any clear ideological group or traditional political party. Therefore, there is no reason to believe that the independent label functions as a proxy for the distribution of social benefits such as housing. Independent candidates do not generate clear policy expectations in Chile. Are independent candidates a common phenomenon in local elections in Chile? Between 2004 and 2016, 24% of mayors ran as independent candidates. Therefore, voters are used to seeing candidates who do not belong to parties that provide them with ideological content.

parties are more socially conservative and pro-market (Luna, 2014). As a result, ideological labels function as a meaningful heuristic in this context. In countries where ideology is less salient, voters may use other shortcuts to identify the candidate that can provide the support they need (e.g., party labels).

It is important to consider whether disaster victims may be changing their ideological beliefs or, on the contrary, are making strategic electoral choices. The evidence I provide supports the latter: There is no difference between the ideological position of exposed and unexposed groups on the left-right scale (see appendix M). The natural and conjoint experiment, furthermore, shows that they are more likely to vote for left-wing and independent candidates, but are not modifying their ideological beliefs (i.e., their self-placement on the left-right continuum) or becoming more (or less) likely to report an ideology. This illustrates that voters can have flexible preferences based on the circumstances they are facing. Context, in short, is crucial for explaining people's electoral choices: on some occasions, they might be willing to yield ground on their beliefs to get what they need, and ideology can be a helpful heuristic toward achieving that goal.

Finally, the interviews are also helpful in showing the empathy unexposed individuals feel toward their exposed neighbors. Throughout the interviews, unexposed citizens constantly cited examples of their neighbors' suffering, indicating their empathy toward them. In one interview, Ana, a 33-year-old housewife who was not exposed to the flood, mentions how difficult it was for her "to hear the testimony of the people, to hear how they survived, how [some of them] had to tie themselves to a fence so the water did not sweep them away [...] and how some kids lost everything." Tania, a 40-year-old housewife and also a non-victim, provides the following anecdote: "I remember that when I was on the bus, I met a couple of grandparents who were going to the store. I helped them to walk back to their house, and the grandmother told me she'd lost everything, and her daughter lives with them, but only the daughter got relief benefits. What do you think about that—if they are two families, they should get two benefits, but got only one?" This finding helps to illustrate why any spillover effect should bias the results toward zero, and that, therefore, our estimates are conservative.

6 Conclusions

Voters living in developing countries are frequently exposed to natural disasters and income shocks, where a lack of preparedness and lower state capacity make them very vulnerable to negative events. These individuals may be even more exposed to catastrophes as climate change intensifies. Climate scientists are increasingly concerned that rising temperatures will increase the intensity and frequency of natural disasters (Lippsett, 2012; Zseleczky and Yosef, 2014). These events, in turn, may contribute to a greater saliency of the politics of natural disasters.

There are crucial challenges that need to be addressed when studying how disasters affect victims' electoral preferences. Even though a natural hazard might affect a particular area without a deliberate target, it is not a randomized experiment. Exposed and unexposed areas might be very different in terms of both observed and unobserved characteristics. Furthermore, parties and candidates might react to the disaster and nominate particular politicians to the affected areas, which would undermine the efforts to study the political effects of catastrophes.

This research design aims to address these issues. I exploit the haphazard nature of the 2015 floods in Paipote, and the town's high levels of homogeneity to understand how adverse conditions affect voters' ideological preferences. This type of natural experiment within natural blocks creates a situation in which treatment assignment can resemble a randomized experiment due to certain unusual circumstances (Zubizarreta, Small and Rosenbaum, 2014) and homogeneous units should have more similar unmeasured covariates (Pimentel, Kelz, Silber and Rosenbaum, 2015). In addition, the implementation of a conjoint experiment allows addressing the problem of potential party reactions to the disaster.

In doing so, this study provides novel findings about voter reactions to natural disasters: victims are more likely to prefer left-wing and independent candidates. Qualitative evidence helps illuminate the mechanisms behind these findings. Affected citizens become more likely to prioritize social policies linked to left-wing candidates, particularly public housing, as well as to express anger and frustation toward the political establishment, which makes independent candidates be-

come more attractive to them. Though external validity could be a concern because the primary evidence comes from one particular place, respondent characteristics (i.e., low-middle income and educational levels) accurately represent the median voter in Latin America, experimental results are paired with real electoral outcomes (see appendix B), and survey evidence from a different disaster is also used (see appendix C). The floods in northern Chile, thus, help us learn about how disaster victims tend to reward candidates with certain ideological labels.

This argument, however, can be extended beyond natural hazards to include other types of negative shocks. For example, exposure to sudden increases in crime might make right-wing candidates more attractive to voters because they may be more likely to implement victims' new priority policies, such as iron-fist crime-reduction measures. As a consequence, studying how voters rely on candidates' ideological labels to make electoral decisions can help us better understand how people make electoral choices under adverse conditions more broadly.

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