

Information and Deception in Spatial Voting: The case of the 2009 Chilean Presidential Elections

Armijo Keller, Roberto

Introduction

This paper is an attempt at bridging the gap between the theory of political sophistication and advances in the Spatial Theory of voting that deal with political deception. Under the premise that politicians seek out to maximize their vote share through deception or ambiguity; it is important then to incorporate into spatial analysis the effects political sophistication and information channels have on voter's perception of politician's ideological positions.

To this end, following Lin¹, I use a heteroskedastic probit model that allows the specification of heterogeneity in the distribution and interpretation of information and apply it to the Chilean *Centro de Estudios Públicos* (CEP) survey of October of 2009², just prior to the December election, which resulted in a run-off between right-wing coalition candidate Sebastian Piñera, and the candidate for the incumbent left-wing coalition, Eduardo Frei.

The Spatial Theory of Voting and Deception.

The premise behind the Spatial Theory of Voting is that both candidate and voters act in order to maximize their individual utility. In the case of voters by choosing the candidate that brings them the biggest expected benefit; candidates seek to attain or keep a post, as their utility is derived from the rents and power provided by them³. The Spatial Theory of voting not only decomposes politics into the voter's choice but also on the policy platforms proposed by

¹Lin, Tse-Min. "Information and Ideological Structure in Spatial Voting". Taiwan Journal of Democracy. Volume 7, No. 1, July 2011.

² Centro de Estudios Públicos. "*Estudio de Nacional de Opinión Pública, Oct. 2009*". Website www.cepchile.cl

³ Downs, Anthony. "An *Economic Theory of Political Action in a Democracy*" The Journal of Political Economy 65:135-150. 1957.

candidates, there lies the importance of voters accurately knowing the positions of politicians, being the substantive subject this paper looks into.

A problem faced by candidates is to credibly place themselves in positions that allow them to maximize their vote share. A candidate may emit messages during his campaign to position himself in a way to accomplish this goal but if this message is not accepted in the minds of voters, this strategy will not bear fruits.

Further advances on the Spatial Theory of Voting modify the assumption that a candidate must position himself in a point of the policy continuum and through the use of deception he is able to position himself in a range of the spectrum⁴. Under this modified model a candidate does not necessarily have to move to the position that maximizes his vote share but rather attempt to expand his range in that direction.

But deception from politicians is not the only kind of deception individuals face; they must also deal with deception coming from within themselves. Research has even found that in the presence of deception⁵, that is behavior that due to ideology may come to disregard or reinterpret freely available information, the Median Voter theorem does not always hold.

Political Sophistication

Being the dependent variable of this paper vote choice for a presidential election, it is important to look at whether political sophistication affects them. Larry Bartels⁶ tests and rejects the hypothesis of no information effects on vote choice at conventional levels of statistical significance for the 1992, 1988, 1984, 1980 and 1976 United States presidential elections; this work however, like

⁴ Gonzalez, Jorge. "The political instinct : the role of deception in the Chilean transition to democracy". Thesis (Ph. D.)--University of Texas at Austin, 2000.

⁵ Cowen, Tyler "self-deception as the root of political failure". Public Choice, Volume 124, Numbers 3-4, September 2005.

⁶ B Bartels, Larry M. Uninformed Votes: Information Effects in Presidential Elections. American Journal of Political Science, 40: 194-230, 1996.

many others, only states that information has an effect on vote choice but does not delve into the causal mechanisms of this effect.

There is also the question about the effects of learning on the changing of preferences; Barabas and Jerit⁷ show that prominent media coverage may increase policy-specific knowledge. But media can also be a source of biases; Prior⁸ states that the availability of more media makes the political knowledge gap wider as people will self select into the type of media that fits with their preferences.

Besides obtaining information from media outlets, individuals can obtain it through talking and discussing with others. The effects political discussion and deliberation have on attitudes and level of political sophistication is another theory from which I will draw on in order to test the hypothesis of information and knowledge having an effect on perceptions of politicians' positioning. Authors such as Lupia⁹ have presented compelling arguments for a more deliberative democracy; the premise is that the exchange of competing opinions will lead to better outcomes as a whole. Andersen and Hansen¹⁰ even make the claim that deliberation makes for better citizens. List, Luskin, Fishkin and McLean¹¹ go as far to claim that deliberation may reduce majority cycling among other social choice paradoxes by increase sing proximity to single peakedness; of

⁷ Barabas, Jason and Jennifer Jerit. Estimating the Causal Effects of Media Coverage on Policy-Specific Knowledge. *American Journal of Political Science*, 53 (1): 73–89, 2009.

⁸ Prior, Markus. News vs. Entertainment: How Increasing Media Choice Widens Gaps in Political Knowledge and Turnout. *American Journal of Political Science*, 49 (3): 577–592. 2005.

⁹ Lupia, Arthur. Deliberation Disconnected: What it Takes to Improve Civic Competence. *Law and Contemporary Problems*, 65: 133 - 150. 2002.

¹⁰ Andersen, Vibeke Normann & Kasper M. Hansen. How deliberation makes better citizens: The Danish Deliberative Poll on the euro. *European Journal of Political Research* 46: 531–556. 2007.

¹¹ List, Christian, Robert C. Luskin, James S. Fishkin, and Iain McLean. Deliberation, Single-Peakedness, and the Possibility of Meaningful Democracy: Evidence from Deliberative Polls, ms. London School of Economics, London, UK. 2007.

particular importance in the postulates of spatial theory as established by Downs.

It is important to take into account that while research on the effect of deliberation has proven its effectiveness in changing attitudes and constraining extremist tendencies, most of the samples in those studies and highly controlled and do not really take into account how discussion takes place in the real world where groups tend to go to extremes. There are two mechanisms that explain group polarization; the desire to maintain reputation within the group and the limited argument pool within a group¹². There is evidence that talking about politics with likeminded individuals during an election campaign was significantly linked to extremism of attitudes¹³.

Data and Methodology

The data used in this paper comes from the CEP (Centro de Estudios Públicos) survey, which is freely available online; this organization has conducted sixty four public opinion surveys since 1986 and is widely considered as the most reliable barometer of Chilean public opinion. Specifically, the data comes from survey #61 corresponding to October of 2009; it allows observing public opinion right before the December 2009 presidential elections.

In order to measure the effects information attainment and knowledge have on spatial voting considerations, I develop a heteroskedastic probit model on which the dependent variable is vote choice for the runoff election [1 = voting for the right-wing coalition candidate]. The independent variable is the difference between the spatial distances from the voter's ideal point to the right-wing and left-wing coalition candidates [See appendix 1].

¹² Sunstein, Cass R. "Deliberative Trouble? Why Groups Go to Extremes." *Yale Law Journal* 110: 71-119. 2000.

¹³ Binder, Andrew R., Kajsia E. Dalrymple, Dominique Brossard, and Dietram A. Scheufele. The Soul of a Polarized Democracy: Testing Theoretical Linkages Between Talk and Attitude Extremity during the 2004 Presidential Election. *Communication Research*, 36: 315-340. 2009.

Media attainment variables, based on questions on the use of media sources and political discussion, which are structured on a 3-point scale (Never, Sometimes and Frequently), are used along with a dichotomous variable of political sophistication are considered to be the source of disturbance. This last variable is a test on whether individuals could correctly order all four candidates on a left-right scale.

On this heteroskedastic probit model, the probability of voting for the right-wing candidate is given by the cdf of the normal distribution. The difference with a standard probit, in which disturbances would be assumed as being normally distributed and with a fixed variance, is that the heteroskedastic probit model allows their variance to be dependent on information and knowledge variables [See appendix 2].

Table 1. Heteroskedastic Probit Analysis of Vote Choice
Dependent Variable: Vote choice (0 = Frei, 1=Piñera)

Heteroskedastic Probit Estimates				
Model 1		Model 2		
Independent Vars	Coefficient	Std. Err.	Coefficient	Std. Err.
Intercept	0.4710053	0.0769926	0.5195689	0.2150729
Spatial Distance	-1.342082**	0.126391	-1.337338*	0.4982952
<i>Disturbances</i>				
Knowledge			0.4481081	0.3194123
TV news exposure			-0.0015915	0.229798
Newspaper Exposure			-0.0815553	0.243683
Discussion w/family			-0.4925244 *	0.2394071
Discussion w/ friends			0.5358109 *	0.2193925
N	484		483	
Log-likelihood.	-264.17995		-176.31417	

** 99% confidence level

* 95% confidence level

Results and discussion

Table 1 shows the results of the MLE estimation of the probit model; model 1 is the standard probit model and model 2 is the probit model with heteroskedasticity. In both models the coefficient for spatial distance is negative and statistically significant; the magnitude of the effect varies slightly but the standard error is much higher in the heteroskedastic model.

In model 2, where disturbances are specified as a function of knowledge, media exposure and discussion; the results show that only discussion with friends and discussion with family are statistically significant. The interesting part of these results is that discussion with family has a negative coefficient while discussion with friends has a positive coefficient. Meaning that discussion with family decreases variance, the opposite of discussing with friends. These results call for deeper theoretical analysis for proper interpretation.

Interpreting Heteroskedastic probit models coefficients is not without its quirks. As elaborated by Achen¹⁴; higher variance will improve the fit but this can come from a number of sources; ambivalence in answers can be one of them, this can be easily associated with lack of political sophistication. Another source of variance can be opposing opinions (extremism) with little ambivalence in answers; how political sophistication plays out in this case is a more complicated matter. There is also a problem in identifying whether the knowledge and information variables affect the variance of spatial perceptions or the dependent variable directly.

It is because of the above that results cannot be interpreted without them being grounded in the theory of political sophistication. In order to deal with the identification problem that has just been presented, the working assumption in interpreting these results is that the knowledge and information variables will

¹⁴ Achen, Christopher H. Toward a new political methodology: Microfoundations and ART. *Annual Review of Political Science* 5: 423–450. 2002.

only affect the variance of spatial position perceptions and not the dependent variable (vote choice) directly.

I interpret the contrasting effects between discussion with family and discussion with friends as the results of differences in the heterogeneity of opinions among these groups of individuals. I see it as more likely that individuals within the same family will be likeminded, thus resulting in more extreme views as per the claim of Sunstein and Binder et al. that homogeneous groups to extremes; as well as lower ambivalence as stated by Achen.

Under the assumption that friends are coworkers are more likely to have more heterogeneous views than family; the effect of discussion with friends can be interpreted as people having effects more like those Andersen and Hansen; and list et al. find deliberation, which is among heterogeneous groups, has in changing attitudes, introducing higher variance in the results as individuals' views change.

It is worth noting that in this model knowledge has no statistically significant effect; this may be a result of the way it is defined in this paper. The knowledge variable is not an actual measure of knowledge but rather a proxy as there are not knowledge questions on this survey. It is because of this that I cannot actually claim that knowledge does not have an effect on the variance of perceptions of spatial positioning of candidates.

Finally, media effects not having a statistically significant effect on the variance of perceptions on candidates' positioning calls for attention. Media is not being able to reduce uncertainty about candidates or be a source of learning and/or extremist biases is something that should be looked at.

Appendix 1: Spatial Analysis

By using the Cahoon-Hinich method of factor analysis using the UAI stakeholder software¹⁵, I estimate politician's perceived location in space as well as respondent's ideal points. This is done through the analysis of thermometer feeling scores on the CEP #61 survey.

$$T_{ji} = -(|\pi_j - z_i|)^2 + \varepsilon_{ji}$$

Being T_{ji} the i^{th} respondent's score on the j^{th} politician; π_j the coordinates of the j^{th} candidate; and z_i the ideal point for the i^{th} voter and ε_{ji} being random error. By taking the survey data, the method estimates z_i and π_j and assuming the thermometer scores are linear in quadratic Euclidian distance.

Given that not all respondent's answer the eight thermometer score questions used, from the 1505 survey respondents, only the the answers of a subset of 484 are used. Using this method on the UAI allows the mapping of ideological preferences along two dimensions; the first dimension is a pivot dimension along the left-right scale based on polled individuals' self identification, which coupled with their perceptions on individual politicians allows to determine their actual position on the ideological scale. The second dimension represents underlying societal conflicts outside this continuum.

For this paper I only use the dimension I clearly identify as the left-right cleavage being the most important dimension of competition in Chilean politics; this dimension stems from a generative fissure on the party system product of

¹⁵ Developed by Universidad Adolfo Ibañez, Chile.

the authoritarian-democratic conflict of the Military government that ruled the country from 1973 to 1989¹⁶.

Figure 1. Perceived positions of second-round candidates

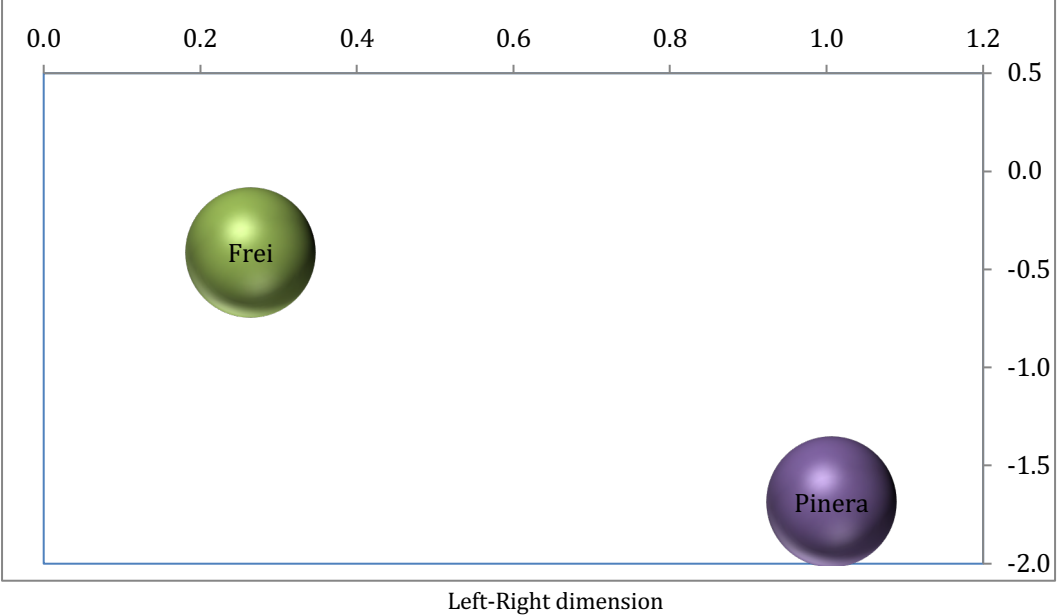
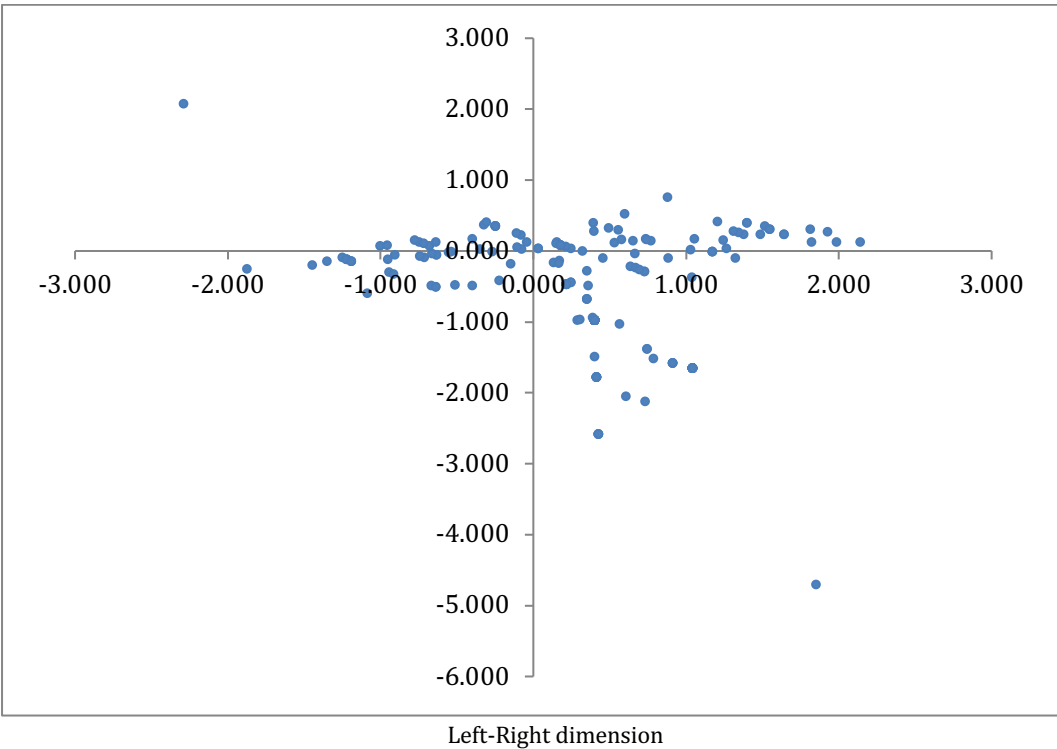


Figure 2. Respondent's ideal points.



¹⁶ Tironi, Eugenio; Aguero, Felipe and Valenzuela, Eduardo. "Clivajes politicos en Chile: Perfil Sociologico de los votantes de Lagos y Lavin. Perspectivas. 2001.

Appendix 2: Heteroskedastic Probit Model

I begin by defining the model as a standard probit model. Being U_{ji} a representation of voter's i utility if candidate j is elected; it is defined as a function of spatial distance; where π_j represents the coordinates of the j^{th} candidate and z_i represents the ideal point for the i^{th} voter as determined by the Cahoon-Hinich method of multidimensional scaling. The β coefficient then should be negative; as the voter's utility would decrease the farther the candidate is from his ideal point.

$$U_{ji} = \beta \| \pi_j - z_i \| + \varepsilon_{ji}$$

In probabilistic spatial theory a voter has uncertainty about the candidate's position, here represented by ε_{ji} . Under the standard assumptions of unbiasedness, voter uncertainty about candidates would be assumed to follow a normal distribution with mean zero and homoskedastic variance.

$$\varepsilon_{ji} \sim (0, \frac{\sigma^2}{2})$$

In the two-candidate run-off election, voters should vote for candidate j (1,2) if the utility they derive from that candidate's election is larger than the utility derived from the opponent winning. Being $\varepsilon_i = \varepsilon_{j1} - \varepsilon_{j2} \sim (0, \sigma^2)$.

$$U_{1i} - U_{2i} = \beta (\| \pi_1 - z_i \| - \| \pi_2 - z_i \|) - \varepsilon_i$$

The standard probit model is then defined as:

$$\Pr[\text{vote} = 1] =$$

$$\Pr[U_{1i} > U_{2i}] =$$

$$\Pr[U_{1i} - U_{2i} > 0] =$$

$$\Pr[\beta (\| \pi_1 - z_i \| - \| \pi_2 - z_i \|) - \varepsilon_i > 0] =$$

$$\Pr[\beta(\|\pi_1 - z_i\| - \|\pi_2 - z_i\|) > \varepsilon_i] =$$

In this model uncertainty assumed as being equal to 1; making it explicit allows later on to incorporate heteroskedasticity into the model.

$$\Pr\left[\frac{\beta(\|\pi_1 - z_i\| - \|\pi_2 - z_i\|)}{\sigma} > \frac{\varepsilon_i}{\sigma}\right] =$$

Here Φ is the cumulative distribution function of the standard normal distribution. There is an identification problem in separating the $\frac{\beta}{\sigma}$ parameter; in the standard probit model σ is assumed as 1, while in the heteroskedastic probit model it can take other values.

$$\Phi\left[\frac{\beta(\|\pi_1 - z_i\| - \|\pi_2 - z_i\|)}{\sigma}\right] =$$

Given the theory regarding politicians attempting deception and voters interpreting freely available information differently, the latter's degree of uncertainty about the position of candidates should be dependent on information. Here γ is a vector of coefficients and x_i is a vector representing knowledge and information sources covariates.

$$\sigma = e^{\gamma'x_i}$$

By replacing the σ term in the standard probit model, it now becomes a heteroskedastic probit model.

$$\Pr[\text{vote} = 1] = \Phi \left[\frac{\beta (\|\pi_1 - z_i\| - \|\pi_2 - z_i\|)}{e^{(\gamma x_i)}} \right]$$

For simplicity's sake I replace the $(\|\pi_1 - z_i\| - \|\pi_2 - z_i\|)$ expression for spatial distance for d_i .

$$\Pr[\text{vote} = 1] = \Phi \left[\frac{\beta d_i}{e^{(\gamma x_i)}} \right]$$

This heteroskedastic probit model can be estimated using the maximum likelihood method, not too differently from how it would be done for a standard probit model. With vote , d and x being the vectors containing values for vote choice, spatial distance and information for all respondents in the CEP survey; the log likelihood function is given by:

$$\ell(\beta, \gamma \mid \text{vote}, d, x) = \sum_{i=1}^n [\text{vote}_i \ln(\Phi(\frac{\beta d_i}{e^{(\gamma x_i)}})) + (1 - \text{vote}_i) \ln((1 - \Phi)(\frac{\beta d_i}{e^{(\gamma x_i)}}))]$$

Given the set of observed values of vectors vote , d and x , to obtain the maximum likelihood estimate, I maximize the ℓ function over the space of choices for β and γ belonging to \mathbf{R} .