

Appendix

Voting for Democracy: Campaign Effects in Chile's Democratic Transition

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1 Balance Statistics for Interaction Terms

The main text reports balance statistics for the covariates and squared terms used in matching, but not for the interaction terms; these are reported in Table 1. It includes all possible first-order interactions, except for those involving the regional indicators, as well as the unlikely interaction of *Opposition Paper* and *Opposition Radio* with the government television station *TVN*. P-values from difference-in-means t-tests and bootstrapped Kolmogorov-Smirnov (KS) tests were no lower than .107 for the “No” control group and .091 for the “Both” control group.

2 Derivation for the Non-Response Simulation

As discussed in the Results section, I conducted a simulation in which respondents refusing to answer the vote choice question were randomly reassigned to the “Yes” and “No” voting categories based on different assumptions about the relative non-response propensities of true “Yes” and “No” voters. The derivation below shows that the true number of “Yes” and “No” votes for each treatment or control group can be expressed as a function of the reported voting frequencies and the single unknown parameter r that varies in the simulation.

For treatment or control group j , let n_j equal the true number of respondents voting “No,” \hat{n}_j the number that reported a “No” vote, y_j the true number of respondents voting “Yes,” \hat{y}_j the number that reported a “Yes” vote, \hat{m}_j the number missing due to non-response, p_j the proportion of true “No” voters that did not respond, and rp_j the proportion of true “Yes” voters that did not respond. The ratio of “Yes” to “No” non-response propensities, r , is assumed to be constant across treatment and control groups. It is also assumed that everyone in the non-response category cast a valid “Yes” or “No” vote, rather than abstaining or voting blank/null.

Because p_j and rp_j are proportions,

$$0 \leq p_j \leq 1 \tag{1}$$

and

$$0 \leq rp_j \leq 1 \quad (2)$$

The relationship among the quantities defined above can be expressed as a system of three equations in four unknowns:

$$y_j + n_j = \hat{y}_j + \hat{n}_j + \hat{m}_j \quad (3)$$

$$n_j = \frac{\hat{n}_j}{1 - p_j} \quad (4)$$

$$y_j = \frac{\hat{y}_j}{1 - rp_j} \quad (5)$$

By solving for n_j and y_j as a function of the single unknown parameter r , and then letting r take on a range of values, we can conduct a simulation in which the appropriate number of voters in the non-response category are randomly reassigned to the “No” and “Yes” vote categories, and treatment effects and standard errors are calculated for each value of r . To proceed, we will first solve for p_j as a function of r , and then substitute into (4) and (5).

Substituting (4) and (5) into (3), and multiplying through by the common denominator:

$$(1 - p_j)(1 - rp_j) \left(\frac{\hat{n}_j}{1 - p_j} + \frac{\hat{y}_j}{1 - rp_j} \right) = (\hat{y}_j + \hat{n}_j + \hat{m}_j)(1 - p_j)(1 - rp_j^2) \quad (6)$$

$$\hat{n}_j(1 - rp_j) + \hat{y}_j(1 - p_j) = (\hat{y}_j + \hat{n}_j + \hat{m}_j)(1 - p_j - rp_j + rp_j^2) \quad (7)$$

$$0 = p_j^2[r(\hat{y}_j + \hat{n}_j + \hat{m}_j)] - p_j[\hat{n}_j + (1 + r)\hat{m}_j + r\hat{y}_j] + \hat{m}_j \quad (8)$$

Applying the quadratic formula:

$$p_j = \frac{\hat{n}_j + (1+r)\hat{m}_j + r\hat{y}_j \pm \sqrt{\{ -[\hat{n}_j + (1+r)\hat{m}_j + r\hat{y}_j] \}^2 - 4\hat{m}_j r(\hat{y}_j + \hat{n}_j + \hat{m}_j)}}{2r(\hat{y}_j + \hat{n}_j + \hat{m}_j)} \quad (9)$$

$$p_j = \frac{\hat{n}_j + (1+r)\hat{m}_j + r\hat{y}_j \pm \sqrt{(\hat{n}_j + r\hat{y}_j)^2 + \hat{m}_j^2(r^2 - 2r + 1) + 2\hat{m}_j\hat{n}_j(1-r) + 2r\hat{m}_j\hat{y}_j(1-r)}}{2r(\hat{y}_j + \hat{n}_j + \hat{m}_j)} \quad (10)$$

$$p_j = \frac{\hat{n}_j + (1+r)\hat{m}_j + r\hat{y}_j \pm \sqrt{(\hat{n}_j + r\hat{y}_j)^2 + [\hat{m}_j(1-r)]^2 + 2\hat{m}_j(1-r)(\hat{n}_j - r\hat{y}_j)}}{2r(\hat{y}_j + \hat{n}_j + \hat{m}_j)} \quad (11)$$

Though there are two roots, only the lesser of the two is valid. First, consider the greater root when $r > 1$. Note that $\hat{n}_j + r\hat{y}_j \geq \hat{n}_j - r\hat{y}_j$ because $\hat{y}_j > 0$. Hence, by modifying the last term under the radical in the numerator of (11),

$$p_j \geq \frac{\hat{n}_j + (1+r)\hat{m}_j + r\hat{y}_j + \sqrt{(\hat{n}_j + r\hat{y}_j)^2 + [\hat{m}_j(1-r)]^2 + 2\hat{m}_j(1-r)(\hat{n}_j + r\hat{y}_j)}}{2r(\hat{y}_j + \hat{n}_j + \hat{m}_j)} \quad (12)$$

$$p_j \geq \frac{\hat{n}_j + r\hat{y}_j + \hat{m}_j + r\hat{m}_j + \sqrt{(\hat{n}_j + r\hat{y}_j + \hat{m}_j - r\hat{m}_j)^2}}{2r(\hat{y}_j + \hat{n}_j + \hat{m}_j)} \quad (13)$$

$$rp_j \geq \frac{r\hat{y}_j + \hat{n}_j + \hat{m}_j}{\hat{y}_j + \hat{n}_j + \hat{m}_j} \quad (14)$$

Because $r > 1$, the right-hand side of (14) is greater than 1, which violates (2). Next, consider

when $r < 1$. By modifying (11) in a slightly different fashion,

$$p_j \geq \frac{\hat{n}_j + (1+r)\hat{m}_j + r\hat{y}_j + \sqrt{(\hat{n}_j + r\hat{y}_j)^2 + [\hat{m}_j(1-r)]^2 - 2\hat{m}_j(1-r)(\hat{n}_j + r\hat{y}_j)}}{2r(\hat{y}_j + \hat{n}_j + \hat{m}_j)} \quad (15)$$

$$p_j \geq \frac{\hat{n}_j + r\hat{y}_j + \hat{m}_j + r\hat{m}_j + \sqrt{(\hat{n}_j + r\hat{y}_j - \hat{m}_j + r\hat{m}_j)^2}}{2r(\hat{y}_j + \hat{n}_j + \hat{m}_j)} \quad (16)$$

$$p_j \geq \frac{r\hat{y}_j + \hat{n}_j + r\hat{m}_j}{r\hat{y}_j + r\hat{n}_j + r\hat{m}_j} \quad (17)$$

Because $r < 1$, the right-hand side of (17) is greater than 1, which violates (1). Finally, consider the case when $r = 1$:

$$p_j = \frac{\hat{n}_j + 2\hat{m}_j + \hat{y}_j + \sqrt{(\hat{n}_j + \hat{y}_j)^2}}{2(\hat{y}_j + \hat{n}_j + \hat{m}_j)} = 1 \quad (18)$$

But in this case, both (4) and (5) are undefined. Thus, only the lesser root is valid:

$$p_j = \frac{\hat{n}_j + (1+r)\hat{m}_j + r\hat{y}_j - \sqrt{(\hat{n}_j + r\hat{y}_j)^2 + [\hat{m}_j(1-r)]^2 + 2\hat{m}_j(1-r)(\hat{n}_j - r\hat{y}_j)}}{2r(\hat{y}_j + \hat{n}_j + \hat{m}_j)} \quad (19)$$

Substituting (19) into (4) and (5) gives the equations for n_j and y_j that are used in the simulation, where r takes on a vector of values between $\frac{1}{3}$ and 3:

$$\mathbf{r} = \left(3^{-1} \quad 2.9^{-1} \quad \dots \quad 1.1^{-1} \quad 1 \quad 1.1 \quad \dots \quad 2.9 \quad 3 \right)$$

Results from the simulation are presented in Table 2 at the end of this appendix.

3 Placebo Test Results

As discussed in the Results section, for a placebo test involving an alternative treatment, I examine the effect of watching soap operas (*TVsoaps*) and televised movies/serials (*TVmovie*) on vote choice. The basic procedure is to show that there is a significant bivariate relationship before matching between each covariate and the outcome, and that, after matching, the relationship disappears. Because the outcome is a multi-category variable, I tested these bivariate relationships by estimating a multinomial logistic regression of vote choice on each covariate plus an intercept. Coefficients for the alternative treatment variable in each for these four regressions are in Table 3.

Table 1: Balance Statistics for Interaction Terms Before and After Matching. ‘Std. mean diff.’ is the mean difference of the treated and control observations, divided by the standard deviation of the treated observations, multiplied by 100. P-values are from bootstrapped Kolmogorov-Smirnov (KS) tests or mean difference t-tests (two-sample before matching, paired after matching).

Covariate	“Yes” vs. “No”				“Yes” vs. Both			
	Std. mean diff.		Min. p-val., KS or t-test		Std. mean diff.		Min. p-val., KS or t-test	
	Before	After	Before	After	Before	After	Before	After
Education × Family Income	-4.04	5.90	0.57	0.35	24.44	1.43	0.01	0.19
Education × Age	17.53	1.24	0.04	0.71	51.01	2.68	0	0.5
Education × Religiosity	1.19	5.61	0.55	0.38	29.13	-8.13	0	0.29
Education × Male	-4.40	6.65	0.60	0.37	9.29	-3.5	0.19	0.66
Education × Employed	-8.46	-0.74	0.34	0.78	8	-2.6	0.37	0.56
Education × Urban	1.41	-3.33	0.87	0.44	15.54	-5.33	0.03	0.09
Education × TVnews	10.21	5.23	0.24	0.45	41.29	-2.17	0	0.72
Education × TVinfo	21.85	-0.93	0.01	0.81	48.84	-1.87	0	0.48
Education × Opposition Paper	-26.70	3.41	0.01	0.35	-64.99	3.41	0	0.37
Education × Opposition Radio	-11.94	1.00	0.08	0.72	-23.67	4.99	0.01	0.52
Education × UCTV	-22.95	1.11	0.01	0.65	-11.19	4.42	0	0.18
Education × TVN	18.04	-0.31	0.04	0.95	37.3	-6.1	0	0.36
Family Income × Age	14.34	8.15	0.04	0.18	10.25	1.28	0.21	0.6
Family Income × Religiosity	-2.03	-0.34	0.30	0.75	-4.75	1.89	0.24	0.82
Family Income × Male	3.59	-3.64	0.68	0.62	-21.14	-6.83	0.03	0.35
Family Income × Employed	2.92	-0.73	0.62	0.91	-15.11	0.13	0.11	0.97
Family Income × Urban	12.67	-1.84	0.15	0.64	-18.41	-1.13	0.05	0.79
Family Income × TVnews	4.32	0.67	0.62	0.93	-12.6	0.49	0.09	0.63
Family Income × TVinfo	9.63	-5.24	0.08	0.56	19.3	-10.41	0.04	0.33
Family Income × Opposition Paper	-11.46	2.35	0.08	0.53	-76.58	2.35	0	0.37
Family Income × Opposition Radio	-9.42	2.51	0.24	0.48	-50.19	5.75	0	0.55
Family Income × UCTV	-8.01	-1.59	0.03	0.66	-34.78	2.1	0	0.62
Family Income × TVN	3.13	2.75	0.17	0.56	9.19	-11.9	0	0.16
Age × Religiosity	9.22	0.37	0.16	0.65	27.55	-2.64	0	0.71
Age × Male	5.05	3.20	0.56	0.70	3.85	-8.03	0.43	0.33
Age × Employed	1.44	1.49	0.87	0.50	3.47	4.66	0.45	0.24
Age × Urban	12.31	-1.77	0.14	0.65	13.44	-2.01	0.06	0.39
Age × TVnews	19.88	5.76	0.02	0.36	37.77	0.64	0	0.45
Age × TVinfo	25.38	-4.32	0.00	0.41	46.82	-2.38	0	0.8
Age × Opposition Paper	-26.93	0.26	0.01	0.89	-75.25	-1.63	0	0.31
Age × Opposition Radio	-12.89	1.74	0.16	0.61	-25.85	5.59	0.01	0.6
Age × UCTV	-15.63	0.26	0.07	0.83	-17.15	-1.05	0.06	0.65
Age × TVN	19.68	-1.85	0.02	0.71	35.14	-5.4	0	0.44
Religiosity × Male	-12.99	-0.92	0.16	0.93	-15.25	-14.09	0.11	0.13
Religiosity × Employed	-1.67	-2.57	0.79	0.78	1.72	2.05	0.85	0.75
Religiosity × Urban	3.15	-2.81	0.72	0.60	1.78	-1.74	0.84	0.73
Religiosity × TVnews	2.80	8.03	0.75	0.31	14.29	1.89	0.11	0.82
Religiosity × TVinfo	13.58	-8.41	0.09	0.35	30.18	-5.06	0	0.6
Religiosity × Opposition Paper	-38.17	0.00	0.00	0.97	-87.2	4	0	0.6
Religiosity × Opposition Radio	-21.94	5.08	0.02	0.39	-33.73	4.88	0	0.63
Religiosity × UCTV	-26.40	-1.72	0.00	0.65	-24.91	2.01	0	0.75
Religiosity × TVN	15.36	5.81	0.03	0.39	22.36	-14.94	0	0.12
Male × Employed	-5.76	-8.39	0.52	0.30	-4.8	6.99	0.61	0.22
Male × Urban	-2.21	-5.80	0.80	0.39	-13.73	-5.8	0.14	0.35

Male × TVnews	1.81	-0.47	0.59	0.78	-4.92	-4.73	0.4	0.54
Male × TVinfo	12.64	5.59	0.15	0.54	15.37	-8.39	0.09	0.4
Male × Opposition Paper	-13.41	2.88	0.15	0.56	-66.92	0	0	1
Male × Opposition Radio	-12.80	2.59	0.17	0.71	-46.18	2.59	0	0.8
Male × UCTV	-14.66	-10.43	0.11	0.11	-29.31	5.96	0	0.25
Male × TVN	10.14	7.03	0.25	0.35	16.83	-12.3	0.06	0.14
Employed × Urban	3.71	2.93	0.68	0.62	-9.78	-2.93	0.3	0.16
Employed × TVnews	-1.46	0.00	0.87	0.88	-1.54	-2.5	0.87	0.57
Employed × TVinfo	8.07	2.90	0.36	0.74	20.66	1.45	0.02	0.86
Employed × Opposition Paper	-19.40	3.60	0.05	0.56	-64.92	0	0	1
Employed × Opposition Radio	-5.58	5.18	0.54	0.48	-36.39	-2.59	0	0.8
Employed × UCTV	-14.31	-7.94	0.12	0.16	-24.42	0	0.01	1
Employed × TVN	10.39	6.91	0.23	0.37	18.28	0	0.04	1
Urban × TVnews	4.18	-1.91	0.64	0.75	-4.75	-3.82	0.55	0.36
Urban × TVinfo	8.00	-4.05	0.37	0.56	17.84	-12.15	0.05	0.15
Urban × Opposition Paper	-9.76	0.00	0.29	1.00	-64.69	0	0	1
Urban × Opposition Radio	-6.73	0.00	0.46	1.00	-35.7	5.69	0	0.53
Urban × UCTV	-6.07	-1.38	0.50	0.56	-25.2	0	0.01	1
Urban × TVN	10.12	3.26	0.25	0.48	15.36	-9.78	0.09	0.18
TVnews × TVinfo	20.02	-0.46	0.02	0.96	37.23	-3.22	0	0.62
TVnews × Opposition Paper	-18.54	3.87	0.05	0.49	-71.35	3.87	0	0.1
TVnews × Opposition Radio	-20.12	-0.79	0.03	0.89	-42.39	0	0	0.97
TVnews × UCTV	-16.76	-3.80	0.02	0.41	-24.94	4.27	0.01	0.29
TVnews × TVN	16.80	4.49	0.05	0.38	26.68	-10.98	0	0.12
TVinfo × Opposition Paper	-2.97	0.00	0.74	1.00	-10.45	10.81	0.29	0.18
TVinfo × Opposition Radio	2.95	-5.18	0.74	0.56	4.55	12.96	0.61	0.2
TVinfo × UCTV	4.50	1.40	0.61	0.82	11.05	4.19	0.22	0.6
TVinfo × TVN	11.50	-5.85	0.19	0.37	23.39	-14.63	0.01	0.13
Opposition Paper × Opposition Radio	-25.78	0.00	0.01	1.00	-87.2	-14.42	0	0.1
Opposition Paper × UCTV	-36.19	3.30	0.00	0.32	-110.58	0	0	1
Opposition Radio × UCTV	-34.87	2.48	0.00	0.32	-73.2	-17.35	0	0.11

Table 2: Non-Response Simulation Results

r	"No"- "Yes"				"No" Vote				"Yes" Vote				
	p-value	Both-"Yes"	p-value	Both-"No"	p-value	Both-"No"	p-value	Both-"Yes"	p-value	Both-"Yes"	p-value	Both-"No"	p-value
3 ⁻¹	0.037	0.479	0.035	0.474	0.971	-0.002	0.977	-0.125	0.006	-0.054	0.233	0.072	0.137
2.9 ⁻¹	0.043	0.407	0.041	0.395	0.977	-0.002	0.977	-0.131	0.004	-0.06	0.182	0.071	0.139
2.8 ⁻¹	0.043	0.409	0.041	0.397	0.977	-0.002	0.977	-0.131	0.004	-0.06	0.183	0.071	0.139
2.7 ⁻¹	0.043	0.407	0.041	0.393	0.979	-0.001	0.979	-0.132	0.004	-0.06	0.181	0.071	0.14
2.6 ⁻¹	0.043	0.407	0.041	0.394	0.978	-0.001	0.978	-0.131	0.004	-0.06	0.181	0.071	0.139
2.5 ⁻¹	0.042	0.416	0.047	0.332	0.925	0.005	0.925	-0.131	0.004	-0.066	0.144	0.065	0.182
2.4 ⁻¹	0.042	0.414	0.047	0.331	0.926	0.005	0.926	-0.131	0.004	-0.066	0.144	0.065	0.182
2.3 ⁻¹	0.042	0.418	0.047	0.33	0.919	0.006	0.919	-0.13	0.004	-0.066	0.143	0.064	0.185
2.2 ⁻¹	0.048	0.354	0.054	0.271	0.915	0.006	0.915	-0.137	0.003	-0.073	0.111	0.064	0.187
2.1 ⁻¹	0.049	0.348	0.054	0.271	0.927	0.005	0.927	-0.137	0.003	-0.073	0.111	0.065	0.181
2 ⁻¹	0.049	0.346	0.054	0.27	0.925	0.005	0.925	-0.137	0.003	-0.073	0.11	0.065	0.182
1.9 ⁻¹	0.055	0.293	0.053	0.284	0.973	-0.002	0.973	-0.143	0.002	-0.072	0.12	0.071	0.142
1.8 ⁻¹	0.048	0.356	0.052	0.293	0.942	0.004	0.942	-0.136	0.003	-0.071	0.125	0.066	0.179
1.7 ⁻¹	0.054	0.298	0.059	0.235	0.932	0.005	0.932	-0.143	0.002	-0.078	0.094	0.065	0.183
1.6 ⁻¹	0.06	0.245	0.065	0.192	0.932	0.005	0.932	-0.149	0.001	-0.084	0.073	0.065	0.184
1.5 ⁻¹	0.06	0.248	0.065	0.188	0.923	0.005	0.923	-0.148	0.001	-0.084	0.071	0.064	0.188
1.4 ⁻¹	0.06	0.246	0.071	0.153	0.84	0.011	0.84	-0.149	0.001	-0.09	0.054	0.059	0.232
1.3 ⁻¹	0.066	0.206	0.07	0.164	0.941	0.004	0.941	-0.154	0.001	-0.089	0.061	0.066	0.184
1.2 ⁻¹	0.072	0.162	0.075	0.134	0.957	0.003	0.957	-0.161	0.001	-0.094	0.047	0.067	0.177
1.1 ⁻¹	0.071	0.167	0.082	0.105	0.853	0.01	0.853	-0.16	0.001	-0.101	0.035	0.059	0.231
1	0.084	0.103	0.095	0.06	0.842	0.011	0.842	-0.173	0	-0.114	0.018	0.059	0.236
1.1	0.084	0.104	0.093	0.068	0.873	0.009	0.873	-0.173	0	-0.112	0.021	0.061	0.224
1.2	0.082	0.113	0.1	0.05	0.743	0.018	0.743	-0.171	0	-0.119	0.015	0.052	0.304
1.3	0.089	0.085	0.098	0.057	0.873	0.009	0.873	-0.178	0	-0.117	0.018	0.061	0.228
1.4	0.089	0.086	0.105	0.042	0.768	0.016	0.768	-0.177	0	-0.124	0.012	0.053	0.292
1.5	0.096	0.064	0.11	0.032	0.788	0.015	0.788	-0.184	0	-0.129	0.009	0.055	0.28
1.6	0.094	0.067	0.11	0.034	0.769	0.016	0.769	-0.183	0	-0.129	0.01	0.053	0.296
1.7	0.1	0.051	0.116	0.026	0.774	0.016	0.774	-0.189	0	-0.135	0.007	0.054	0.293
1.8	0.099	0.053	0.122	0.019	0.683	0.023	0.683	-0.188	0	-0.141	0.005	0.047	0.359
1.9	0.099	0.054	0.122	0.019	0.681	0.023	0.681	-0.188	0	-0.141	0.005	0.047	0.361
2	0.098	0.056	0.121	0.021	0.683	0.023	0.683	-0.186	0	-0.14	0.006	0.047	0.364
2.1	0.106	0.039	0.126	0.016	0.714	0.02	0.714	-0.194	0	-0.145	0.004	0.049	0.34
2.2	0.098	0.055	0.127	0.016	0.605	0.029	0.605	-0.187	0	-0.146	0.004	0.041	0.431
2.3	0.104	0.042	0.133	0.011	0.604	0.029	0.604	-0.193	0	-0.152	0.003	0.041	0.432
2.4	0.104	0.041	0.133	0.012	0.609	0.028	0.609	-0.193	0	-0.152	0.003	0.041	0.427
2.5	0.104	0.042	0.131	0.013	0.62	0.028	0.62	-0.192	0	-0.15	0.003	0.042	0.421
2.6	0.104	0.042	0.132	0.013	0.618	0.028	0.618	-0.192	0	-0.151	0.003	0.042	0.423
2.7	0.103	0.042	0.131	0.013	0.62	0.028	0.62	-0.192	0	-0.15	0.003	0.042	0.422
2.8	0.103	0.041	0.138	0.009	0.54	0.034	0.54	-0.192	0	-0.157	0.002	0.035	0.499
2.9	0.103	0.042	0.137	0.009	0.537	0.035	0.537	-0.192	0	-0.156	0.002	0.035	0.502
3	0.103	0.043	0.13	0.014	0.626	0.027	0.626	-0.191	0	-0.149	0.004	0.042	0.42

Table 3: Alternative Treatment Placebo Test

	Plebiscite Vote:		
	No	Blank/ None	NR
Pre-matching			
TVsoaps	-0.15*	0.04	-0.05
	(0.06)	(0.09)	(0.07)
TVmovie	-0.21*	-0.15	-0.07
	(0.08)	(0.13)	(0.1)
Post-matching			
TVsoaps	-0.1	0.11	0.07
	(0.09)	(0.13)	(0.11)
TVmovie	-0.09	0.13	-0.04
	(0.12)	(0.18)	(0.15)

NOTE: Each line reports coefficients and standard errors from a bivariate multinomial logistic regression of vote choice on the covariate plus an intercept (not shown). Reference category is Yes vote. N = 1242 pre-matching and 474 post-matching. * $p < .05$.