**Supplementary Appendices for “Rational Learners or Impervious Partisans?:**

**Economic News and Partisan Bias in Economic Perceptions”**

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# A. CODING AND MEASUREMENT OF INDIVIDUAL-LEVEL VARIABLES

Two variables deriving from the survey data are central to our analysis. First, we measure perceptions of national economic conditions ($NEC\_{i\_{t}}$) with standard retrospective questions. Although there is some minor variation across surveys, the following is representative wording: “How do you think the general economic situation in this country has changed over the last 12 months. Has it got a lot worse, got a little worse, stayed the same, got a little better, or got a lot better?” We scale the item to vary on the unit interval, where higher values correspond to more positive economic evaluations.

Second, we capture party identification using measures closely modelled on the original Michigan-School formulation. The typical item reads, “In federal politics, do you usually think of yourself as a Liberal, Conservative, NDP, Bloc Quebecois, or none of these?” In the analysis, we capture party identification with a pair of dummy variables: an incumbent party identifier dummy ($INCPID\_{i\_{t}}$), equal to 1 if the respondent identifies with the incumbent party and 0 otherwise; and an opposition party identifier dummy ($OPPPID\_{i\_{t}}$), equal to 1 if the respondent identifies with an opposing party and 0 otherwise. This specification is a simplification, given that more than one party was in opposition during each of the elections in the analysis. Importantly, while the *magnitude* of the perceptual bias may vary, we expect the anti-incumbent *direction* of the bias to be constant across parties. Summary statistics, by election, for the economic perception and party identification measures are reported in the paper in Table 1.

We also derive a standard set of individual-level control variables from the election studies (coefficient estimates not reported). These include categorical measures of ethnicity (non-Europeans vs. all others); religious identification (Catholics vs. the non-religious vs. all others); language (French-speakers vs. all others); employment (unemployed vs. all others); union membership (union households vs. all others); and region (West vs. Quebec vs. Atlantic Canada). We also control for household income (an ordinal measure rising in $10,000 increments). In the model described in the paper, respondents’ values on these variables are represented by $x\_{j,i\_{t}}$.

# B. DAILY VARIATION IN ECONOMIC NEWS COVERAGE

As noted in the paper, we observe considerable daily variation in the proportion of coverage devoted to the economy and employment topics. For example, as the paper’s Table 1 shows, while the average day during the 2004 election saw 20 percent of election stories coded to the economy topic, the standard deviation of this measure is 8.5 percent. Coverage of the economy topic is similarly variable in each of the other election years. As regards coverage of employment, although daily variation is substantial in 1993 and 1997 – the two elections in which the topic attracts the most attention overall – coverage is fairly stable in the other elections – when employment coverage is no more than half as prominent as in the earlier elections. Even so, the key point is that the information environment, in the manner we characterize it here, varies a great deal over the course of each campaign. Furthermore, Figure B1 – which plots the daily count of stories, by topic, for each election – shows that this variation largely reflects day-to-day fluctuation in coverage, rather than steady trends (increasing or decreasing) within the campaigns.



Figure B1. Coverage of “Economy” and “Employment” over time, by election

# C. ALTERNATIVE SPECIFICATIONS

As noted in the paper, to investigate the robustness of our assumptions, we also investigate the performance of two alternative models. First, a more structured transition equation would be the “return to normalcy” model. This would mean modelling the time varying coefficient as a first order autoregressive process. As Table C1 shows, the random walk is consistently the better fitting model. The table reports deviance information criterion (DIC) values (Spiegelhalter et al., 2002), where lower values indicate a better fit. That said, the results from the return to normalcy model (see Table C2) are very similar. The primary difference is that, because the return to normalcy model assumes the time-varying PID coefficients are autoregressive processes, it also assumes that news media – and therefore the PID coefficients – will return to an equilibrium value in the long-run. The random walk transition equation does not make this assumption.

Our transition equations also assume that the *current* media environment determines the weight placed on partisan identity. As a second robustness check, we estimate models in which it is the *lag* of the environment that matters. Again, as Table C1 shows, using the current media environment consistently produces better fitting models. The models including lags of the media environment produce, as a whole, weaker effects (see Table C3).

Table C1. Media Coverage Effects

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|   | **1993** | **1997** | **2000** | **2004** | **2006** |
| DIC -- random walk | 29557.6 | 34085.1 | 30960.6 | 33621.9 | 31144.7 |
| DIC -- AR TVC | 29559.4 | 34091.4 | 30966.9 | 33628.2 | 31143.4 |
| DIC -- lag media | 29575.1 | 34094.8 | 30965.7 | 33624.2 | 31140.2 |
|  |  |  |  |  |  |

Table C2. Autoregressive Time-Varying Coefficients

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|   | **1993** | **1997** | **2000** | **2004** | **2006** |
| Economy [INC BIAS] | -0.69\*\*\* (-1.2, -0.17) | 0.13 (-0.35, 0.62) | 0.29 (-0.16, 0.72) | 0.22 (-0.22, 0.67) | 0.23 (-0.35, 0.77) |
| Economy [OPP BIAS] | -0.15 (-0.58, 0.27) | 0.33\* (-0.11, 0.8) | -0.13 (-0.57, 0.21) | 0.07 (-0.34, 0.52) | 0.03 (-0.46, 0.52) |
| **Economy [PID BIAS]** | -0.53\*\*\* (-0.99, -0.06) | -0.2 (-0.68, 0.26) | 0.42\*\* (-0.01, 0.86) | 0.14 (-0.35, 0.63) | 0.2 (-0.33, 0.75) |
| Employment [INC BIAS] | -0.35\*\* (-0.73, 0.05) | -0.54 (-1.18, 0.17) | -0.04 (-1.1, 0.98) | -0.26 (-1.45, 0.87) | -1.87\*\*\* (-3.16, -0.67) |
| Employment [OPP BIAS] | -0.13 (-0.42, 0.2) | -0.26 (-0.82, 0.28) | -0.28 (-1.13, 0.55) | -0.15 (-1.32, 0.87) | -0.78\* (-2, 0.46) |
| **Employment [PID BIAS]** | -0.22\* (-0.56, 0.11) | -0.27 (-0.88, 0.36) | 0.22 (-0.82, 1.27) | -0.11 (-1.33, 1.16) | -1.11\*\* (-2.3, 0.11) |
| Intensity [INC BIAS] | 0 (0, 0) | 0 (0, 0) | 0 (0, 0) | 0 (0, 0) | 0 (0, 0) |
| Intensity [OPP BIAS] | 0 (0, 0) | 0 (0, 0) | 0 (0, 0) | 0 (0, 0) | 0 (0, 0) |
| DIC | 3505.56 | 34091.4 | 30966.9 | 30966.9 | 31143.4 |
|  |  |  |  |  |  |

Notes: (a) \*\*\*95% CI, \*\*90% CI, \*80% CI; (b) models include control variables, described in appendix; (c) DIC = Deviance Information Criterion, which is used to compare models with alternate specifications in the appendix.

Table C3. Lag of Media

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|   | **1993** | **1997** | **2000** | **2004** | **2006** |
| Economy [INC BIAS] | -0.21 (-0.68, 0.29) | 0.16 (-0.46, 0.76) | -0.11 (-0.56, 0.32) | 0.03 (-0.47, 0.54) | -0.18 (-0.68, 0.28) |
| Economy [OPP BIAS] | -0.26\*\*\* (-0.63, 0.1) | -0.05 (-0.55, 0.41) | -0.16 (-0.54, 0.22) | 0.03 (-0.46, 0.53) | -0.39\*\* (-0.89, 0.05) |
| **Economy [PID BIAS]** | 0.05 (-0.38, 0.56) | 0.2 (-0.33, 0.76) | 0.06 (-0.41, 0.52) | 0.01 (-0.52, 0.51) | 0.22 (-0.27, 0.72) |
| Employment [INC BIAS] | -0.45\*\* (-0.85, -0.05) | 0.17\* (-0.48, 0.83) | -0.96\*\* (-1.97, 0.07) | -0.21 (-1.38, 1.22) | -2.23\*\*\* (-3.37, -0.97) |
| Employment [OPP BIAS] | -0.25 (-0.57, 0.07) | 0.24 (-0.3, 0.82) | -0.46 (-1.33, 0.48) | -1.12\*\* (-2.38, 0.1) | -1.14\*\*\* (-2.22, -0.02) |
| **Employment [PID BIAS]** | -0.2 (-0.56, 0.17) | -0.08 (-0.65, 0.47) | -0.52 (-1.43, 0.42) | 0.93\* (-0.35, 2.32) | -1.12\*\* (-2.25, 0.01) |
| Intensity [INC BIAS] | 0 (0, 0) | 0 (0, 0) | 0 (0, 0) | 0 (0, 0) | 0 (0, 0) |
| Intensity [OPP BIAS] | 0 (0, 0) | 0 (0, 0) | 0 (0, 0) | 0 (0, 0) | 0 (0, 0) |
| DIC | 29575.1 | 34094.8 | 30965.7 | 30965.7 | 31140.2 |
|  |  |  |  |  |  |

Notes: (a) \*\*\*95% CI, \*\*90% CI, \*80% CI; (b) models include control variables, described in appendix; (c) DIC = Deviance Information Criterion, which is used to compare models with alternate specifications in the appendix.

# D. ESTIMATION DIAGNOSTICS

Table D1. Gelman and Rubin Diagnostic

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | 1993 | 1997 | 2000 | 2004 | 2006 |
|  | PSRF\* | 95% CL\*\* | PSRF | 95% CL | PSRF | 95% CL | PSRF | 95% CL | PSRF | 95% CL |
| Economy [PID BIAS] | 1.01 | 1.05 | 1.00 | 1.01 | 1.00 | 1.00 | 1.00 | 1.01 | 1.01 | 1.04 |
| Employment [PID BIAS] | 1.01 | 1.06 | 1.00 | 1.00 | 1.00 | 1.01 | 1.00 | 1.00 | 1.01 | 1.01 |
| Economy [INTERCEPT] | 1.00 | 1.01 | 1.03 | 1.14 | 1.00 | 1.01 | 1.02 | 1.1 | 1.15 | 1.52 |
| Economy [INC BIAS] | 1.00 | 1.01 | 1.02 | 1.06 | 1.00 | 1.00 | 1.04 | 1.16 | 1.14 | 1.49 |
| Economy [OPP BIAS] | 1.00 | 1.02 | 1.03 | 1.14 | 1.00 | 1.00 | 1.02 | 1.08 | 1.1 | 1.36 |
| Employment [INTERCEPT] | 1.01 | 1.04 | 1.05 | 1.21 | 1.00 | 1.00 | 1.00 | 1.00 | 1.06 | 1.24 |
| Employment [INC BIAS] | 1.00 | 1.00 | 1.02 | 1.1 | 1.00 | 1.00 | 1.01 | 1.01 | 1.07 | 1.28 |
| Employment [OPP BIAS] | 1.02 | 1.07 | 1.04 | 1.16 | 1.00 | 1.01 | 1.00 | 1.00 | 1.04 | 1.16 |
| Intensity [INTERCEPT] | 1.01 | 1.04 | 1.09 | 1.34 | 1.01 | 1.06 | 1.00 | 1.00 | 1.03 | 1.08 |
| Intensity [INC BIAS] | 1.01 | 1.02 | 1.04 | 1.18 | 1.01 | 1.04 | 1.00 | 1.00 | 1.03 | 1.12 |
| Intensity [OPP BIAS] | 1.01 | 1.04 | 1.11 | 1.4 | 1.01 | 1.04 | 1.00 | 1.00 | 1.02 | 1.07 |

\*Potential Scale Reduction Factor

\*\*Confidence Level

The convergence is assessed by comparing the estimated between-chains and within-chain variances for each model parameter. Large differences between these variances indicate nonconvergence (Gelman and Rubin 1992; Brooks and Gelman). If the potential scale reduction factor is less than 1.2 and less than the 95% confidence level statistic, there is no evidence of nonconvergence.