**Appendix – Statistical tests and robustness check**

To further check the robustness of our findings, we performed additional statistical analyses and controls. First, tests for multicollinearity were conducted to check that the independent variables were not highly correlated with one another. The Pearson Correlation Coefficient Test indicated that the independent variables were weakly correlated with one another, with the highest correlation being between electoral fragmentation (Enpv) and regional rate of unemployment at 0.67. The full correlation matrix can be found in Table A1.

**Table A1**. Correlation matrix

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | RegUnempl | NatUnempl | Congruence | Closeness | Enpv | Bipolarism | Recession |
| Regional unemployment | 1.00 |  |  |  |  |  |  |
| National unemployment | 0.32 | 1.00 |  |  |  |  |  |
| Congruence | 0.03 | -0.20 | 1.00 |  |  |  |  |
| Closeness | -0.00 | 0.03 | 0.18 | 1.00 |  |  |  |
| Enpv | 0.67 | 0.14 | -0.16 | -0.18 | 1.0 |  |  |
| Bipolarism | -0.12 | -0.55 | 0.20 | -0.05 | -0.08 | 1.00 |  |
| Recession | 0.12 | -0.03 | -0.11 | 0.05 | 0.08 | -0.27 | 1.00 |

We also re-estimated all OLS regression models with robust standard errors not clustered by region (Table A2, in which we also reported standardized coefficients for each independent or control variables) and with clustered-standard errors by year (Table A3) and jointly by year and region (Table A4). These additional checks largely confirm the main findings discussed in the article: the electoral performance of incumbent rulers at the regional level is associated with the rate of unemployment observed in each region. This result holds under different model specifications. What is more, the effect of regional unemployment is strong, statistically significant and, more importantly, more robust and consistent than the effect exerted by the national level of unemployment. These findings also hold when clustered-robust standard errors (by both year and region) are included in the models.

Looking at the standardized coefficients included in Table A2, it is important to stress that the effect of the regional rate of unemployment is, with the only exception of the bipolarism index, the strongest among the ones included in the regression equations.

Finally, to further corroborate our finding with regards to H2, we have also run an additional model including an interaction between (regional and national) unemployment and vertical incongruence (see Table A5, Models 37-41). The results confirm the statistically significant impact of the level of regional unemployment on the electoral performance of the incumbent rulers at the local level.

**Table A2**. Correlates of the electoral performance of regional executives in Italy, 1995-2020

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Model 10 | Model 11 | Model 12 | Model 13 | Model 14 | Model 15 | Model 16 | Model 17 | Model 18 |
| Regional rate of unempl. | -0.329\*\* |  | -0.269\*\* | -0.280\* | -0.386\*\* | -0.329\* | -0.339\* | -0.265\* | -0.360\*\* |
| National rate of unempl. |  | -0.268\* | -0.176 | -0.138 | 0.198 | 0.147 | 0.155 | 0.155 | 0.303 |
| Vertical incongruence |  |  |  | 0.152 | 0.047 | 0.016 | 0.003 | 0.008 | 0.002 |
| Election closeness |  |  |  |  | 0.375\*\*\* | 0.386\*\*\* | 0.390\*\*\* | 0.432\*\*\* | 0.417\*\*\* |
| Electoral fragmentation |  |  |  |  | 0.187 | 0.168 | 0.176 | 0.173 | 0.209 |
| Bipolarism index |  |  |  |  | 0.533\*\*\* | 0.479\*\*\* | 0.479\*\*\* | 0.483\*\*\* | 0.493\*\*\* |
| Economic recession |  |  |  |  |  | -0.164\* | -0.187\* | 0.128\* | 0.854\* |
| E. recession\*V. incongr. |  |  |  |  |  |  | 0.043 |  |  |
| E. recession\*Regional un. |  |  |  |  |  |  |  | -0.342 |  |
| E. recession\*National un. |  |  |  |  |  |  |  |  | -1.057\* |
| Constant | 4.4 | 13.5\* | 14.7\* | 10.7 | -78.8\*\*\* | -69.1\*\*\* | -69.6\*\*\* | -72.6\*\*\* | -82-2\*\*\* |
| *N.* | *87* | *87* | *87* | *87* | *87* | *87* | *87* | *87* | *87* |
| *R²* | *0.108* | *0.072* | *0.136* | *0.158* | *0.440* | *0.462* | *0.463* | *0.474* | *0.506* |

Note: Robust standard errors in parentheses = \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

**Table A3**. Correlates of the electoral performance of regional executives in Italy, 1995-2020

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Model 19 | Model 20 | Model 21 | Model 22 | Model 23 | Model 24 | Model 25 | Model 26 | Model 27 |
| Regional rate of unemp. | -0.873\*\*\* | -0.713\*\* | -0.744\*\* | -1.025\*\*\* | -0.874\*\* | -0.899\*\* | -0.703\* | -0.956\*\*\* | -0.885\*\* |
|  | (0.193) | (0.251) | (0.260) | (0.337) | (0.343) | (0.332) | (0.424) | (0.302) | (0.412) |
| National rate of unemp. |  | -1.239 | -0.969 | 1.394 | 1.033 | 1.088 | 1.089 | 2.132\*\*\* | 2.077\*\* |
|  |  | (1.068) | (1.059) | (0.898) | (0.963) | (0.910) | (0.929) | (0.707) | (0.811) |
| Vertical incongruence |  |  | 3.876 | 1.199 | 0.413 | 0.0643 | 0.204 | 0.0469 | -0.00757 |
|  |  |  | (3.105) | (2.583) | (2.531) | (2.701) | (2.453) | (2.526) | (2.545) |
| Election closeness |  |  |  | 0.398\*\*\* | 0.410\*\*\* | 0.415\*\*\* | 0.459\*\*\* | 0.443\*\*\* | 0.459\*\*\* |
|  |  |  |  | (0.133) | (0.133) | (0.128) | (0.120) | (0.121) | (0.115) |
| Electoral fragmentation |  |  |  | 0.948 | 0.855 | 0.895 | 0.879 | 1.062 | 1.057 |
|  |  |  |  | (0.795) | (0.850) | (0.835) | (0.867) | (0.783) | (0.805) |
| Bipolarism index |  |  |  | 0.652\*\*\* | 0.586\*\*\* | 0.585\*\*\* | 0.590\*\*\* | 0.603\*\*\* | 0.603\*\*\* |
|  |  |  |  | (0.136) | (0.134) | (0.131) | (0.114) | (0.0893) | (0.0877) |
| Economic recession |  |  |  |  | -5.114 | -5.823 | 3.988 | 26.59\*\* | 27.86\*\* |
|  |  |  |  |  | (3.701) | (4.604) | (6.159) | (10.69) | (11.72) |
| E. recession\*V. incongr. |  |  |  |  |  | 2.352 |  |  |  |
|  |  |  |  |  |  | (7.952) |  |  |  |
| E. recession\*Regional un. |  |  |  |  |  |  | -0.757 |  | -0.289 |
|  |  |  |  |  |  |  | (0.721) |  | (0.932) |
| E. recession\*National un. |  |  |  |  |  |  |  | -3.238\*\*\* | -3.012\*\* |
|  |  |  |  |  |  |  |  | (1.009) | (1.227) |
| Constant | 4.423\*\* | 14.75 | 10.76 | -78.79\*\*\* | -69.13\*\*\* | -69.57\*\*\* | -72.58\*\*\* | -82.20\*\*\* | -82.61\*\*\* |
|  | (1.824) | (8.652) | (8.554) | (19.09) | (20.06) | (18.86) | (16.12) | (13.18) | (12.41) |
| *N.* | *87* | *87* | *87* | *87* | *87* | *87* | *87* | *87* | *87* |
| *R²* | *0.108* | *0.136* | *0.158* | *0.440* | *0.462* | *0.463* | *0.474* | *0.506* | *0.508* |
| *Year* | *Yes* | *Yes* | *Yes* | *Yes* | *Yes* | *Yes* | *Yes* | *Yes* | *Yes* |
| Note: Robust standard errors clustered by region and year in parentheses \*\*\* p<0.01, \*\* p<0.05, \* p<0.1. |

**Table A4**. Correlates of the electoral performance of regional executives in Italy, 1995-2020

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Model 28 | Model 29 | Model 30 | Model 31 | Model 32 | Model 33 | Model 34 | Model 35 | Model 36 |
| Regional rate of unemp. | -0.873\*\*\* | -0.713\*\* | -0.744\*\* | -1.025\*\* | -0.874\*\* | -0.899\*\* | -0.703\* | -0.956\*\* | -0.885\*\* |
|  | (0.310) | (0.345) | (0.352) | (0.458) | (0.422) | (0.425) | (0.378) | (0.398) | (0.385) |
| National rate of unemp. |  | -1.239\* | -0.969 | 1.394\* | 1.033 | 1.088 | 1.089 | 2.132\*\*\* | 2.077\*\* |
|  |  | (0.687) | (0.728) | (0.734) | (0.757) | (0.728) | (0.742) | (0.777) | (0.807) |
| Vertical incongruence |  |  | 3.876 | 1.199 | 0.413 | 0.0643 | 0.204 | 0.0469 | -0.00757 |
|  |  |  | (2.738) | (2.516) | (2.404) | (2.407) | (2.321) | (2.325) | (2.324) |
| Election closeness |  |  |  | 0.398\*\*\* | 0.410\*\*\* | 0.415\*\*\* | 0.459\*\*\* | 0.443\*\*\* | 0.459\*\*\* |
|  |  |  |  | (0.125) | (0.127) | (0.126) | (0.122) | (0.117) | (0.114) |
| Electoral fragmentation |  |  |  | 0.948 | 0.855 | 0.895 | 0.879 | 1.062 | 1.057 |
|  |  |  |  | (0.728) | (0.720) | (0.719) | (0.726) | (0.694) | (0.701) |
| Bipolarism index |  |  |  | 0.652\*\*\* | 0.586\*\*\* | 0.585\*\*\* | 0.590\*\*\* | 0.603\*\*\* | 0.603\*\*\* |
|  |  |  |  | (0.136) | (0.140) | (0.140) | (0.130) | (0.129) | (0.128) |
| Economic recession |  |  |  |  | -5.114\* | -5.823 | 3.988 | 26.59\*\* | 27.86\*\* |
|  |  |  |  |  | (2.988) | (3.575) | (7.262) | (12.79) | (13.69) |
| E. recession\*V. incongr. |  |  |  |  |  | 2.352 |  |  |  |
|  |  |  |  |  |  | (6.807) |  |  |  |
| E. recession\*Regional un. |  |  |  |  |  |  | -0.757 |  | -0.289 |
|  |  |  |  |  |  |  | (0.678) |  | (0.764) |
| E. recession\*National un. |  |  |  |  |  |  |  | -3.238\*\* | -3.012\*\* |
|  |  |  |  |  |  |  |  | (1.263) | (1.340) |
| Constant | 4.423 | 14.75\*\* | 10.76\* | -78.79\*\*\* | -69.13\*\*\* | -69.57\*\*\* | -72.58\*\*\* | -82.20\*\*\* | -82.61\*\*\* |
|  | (3.034) | (5.943) | (6.151) | (17.66) | (18.84) | (18.46) | (16.93) | (17.30) | (17.00) |
| *N.* | *87* | *87* | *87* | *87* | *87* | *87* | *87* | *87* | *87* |
| *R²* | *0.108* | *0.136* | *0.158* | *0.440* | *0.462* | *0.463* | *0.474* | *0.506* | *0.508* |
| Region | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Year | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |

Note: Robust standard errors clustered by region and year in parentheses \*\*\* p<0.01, \*\* p<0.05, \* p<0.1.

**Table A5**. Correlates of the electoral performance of regional executives in Italy, 1995-2020

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Model 37 | Model 38 | Model 39 | Model 40 | Model 41 |
| Regional rate of unemployment | -0.744\*\* | -0.366 | -0.516 | -0.734\*\* | -0.869\*\* |
|  | (0.260) | (0.426) | (0.388) | (0.259) | (0.317) |
| National rate of unemployment | -0.969 | -1.110 | 1.019 | -1.231 | 1.003 |
|  | (1.059) | (1.097) | (0.962) | (0.981) | (0.907) |
| Vertical incongruence | 3.876 | 12.48\* | 7.750 | -2.448 | -0.205 |
|  | (3.105) | (6.825) | (5.148) | (15.61) | (10.13) |
| Vertical incongruence\*Regional unemployment |  | -0.833 | -0.703 |  |  |
|  |  | (0.623) | (0.476) |  |  |
| Election closeness |  |  | 0.372\*\*\* |  | 0.411\*\*\* |
|  |  |  | (0.122) |  | (0.136) |
| Electoral fragmentation |  |  | 0.774 |  | 0.845 |
|  |  |  | (0.796) |  | (0.799) |
| Bipolarism index |  |  | 0.617\*\*\* |  | 0.585\*\*\* |
|  |  |  | (0.156) |  | (0.131) |
| Economic recession |  |  | -5.125 |  | -5.104 |
|  |  |  | (3.678) |  | (3.772) |
| Vertical incongruence\*National unemployment |  |  |  | 0.662 | 0.0637 |
|  |  |  |  | (1.557) | (1.026) |
| Constant | 10.76 | 8.201 | -74.39\*\*\* | 13.29 | -68.75\*\*\* |
|  | (8.554) | (7.774) | (23.57) | (8.641) | (18.22) |
| *N.* | *87* | *87* | *87* | *87* | *87* |
| *R²* | *0.158* | *0.181* | *0.478* | *0.160* | *0.462* |

Note: Robust standard errors clustered by region in parentheses \*\*\* p<0.01, \*\* p<0.05, \* p<0.1.

**Table A6**. Correlates of the electoral performance of regional executives in Italy, 1995-2020

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Model 42 | Model 43 | Model 44 | Model 45 | Model 46 |
| Regional rate of unemployment | -0.744\*\*\* | -0.786\* | -0.615\*\* | -0.744\*\* | -0.526\*\* |
|  | (0.230) | (0.446) | (0.217) | (0.260) | (0.229) |
| National rate of unemployment | -1.202 | -1.211 | 1.142 | -0.969 | -1.321 |
|  | (1.137) | (1.072) | (0.918) | (1.059) | (0.971) |
| Election closeness | 0.376\*\* |  |  |  |  |
|  | (0.137) |  |  |  |  |
| Electoral fragmentation |  | 0.189 |  |  |  |
|  |  | (0.882) |  |  |  |
| Bipolarism index |  |  | 0.655\*\*\* |  |  |
|  |  |  | (0.117) |  |  |
| Vertical incongruence |  |  |  | 3.876 |  |
|  |  |  |  | (3.105) |  |
| Economic recession |  |  |  |  | -8.012\*\* |
|  |  |  |  |  | (3.651) |
| Constant | 8.774 | 13.93 | -67.55\*\*\* | 10.76 | 15.24\* |
|  | (9.306) | (9.425) | (17.10) | (8.554) | (7.976) |
| *N.* | *87* | *87* | *87* | *87* | *87* |
| *R²* | *0.261* | *0.136* | *0.298* | *0.158* | *0.197* |

Note: Robust standard errors clustered by region in parentheses \*\*\* p<0.01, \*\* p<0.05, \* p<0.1.