(online) **Appendix**. Supporting information *for* "Electoral systems, partisan politics, and income redistribution: A critical quasi-experiment"

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Contents

A Detailed modeling results and supplementary analyses **3**

A.1 Raw data trend plots and panel data structure 3

A.2 Default R model outputs 8

A.2.1 Model 1. Effective number of parliamentary parties: *effparleg* 8

A.2.2 Model 2. Voter turnout: *vturn* 9

A.2.3 Model 3. Government composition: cabinet posts of right-wing parties in the percentage of total cabinet posts: *govright* 10

A.2.4 Model 4. Share of seats of the largest party classified as conservative: *sconserv* 11

A.2.5 Model 5. Relative redistribution: *relred* 14

A.2.6 Model 6. Welfare generosity index: *ueskgen* 14

A.2.7 Model 7. Total government spending, including interest government expenditures, as a share of national GDP: *govexp* 15

A.3 Factor loadings for DM-LF models 17

A.4 Convergence diagnostics for MCMC 20

A.4.1 Trace plots 20

A.4.2 Gelman-Rubin-Brooks convergence diagnostic 24

A.5 Estimation without latent factors 29

B Data and replication materials **30**

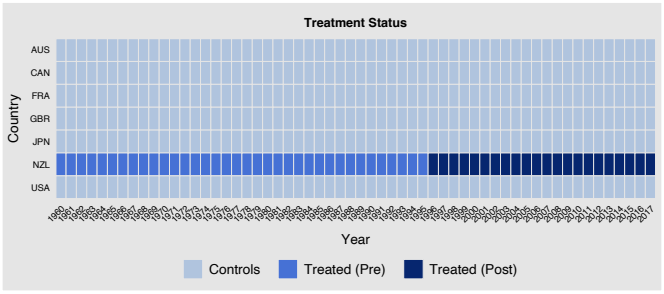
B.1 Data sources 30

B.2 Control variables 31

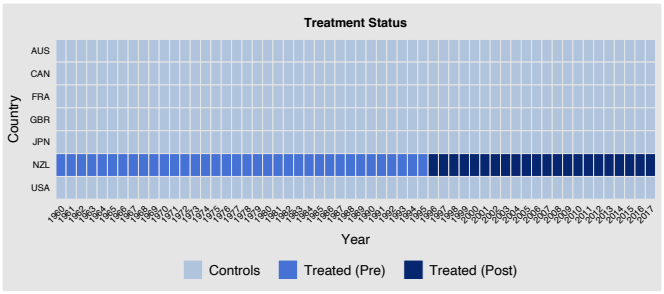
B.3 Supplemental material 32

A Detailed modeling results and supplementary analyses

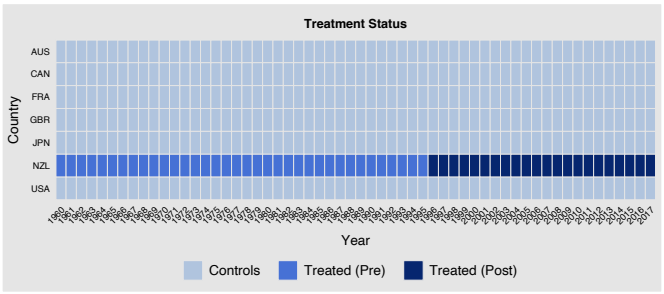
A.1 Raw data trend plots and panel data structure



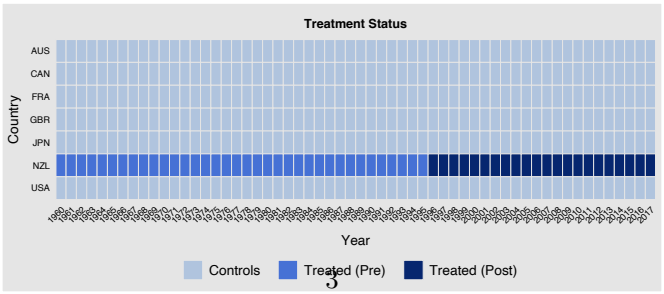
(a)



(b)

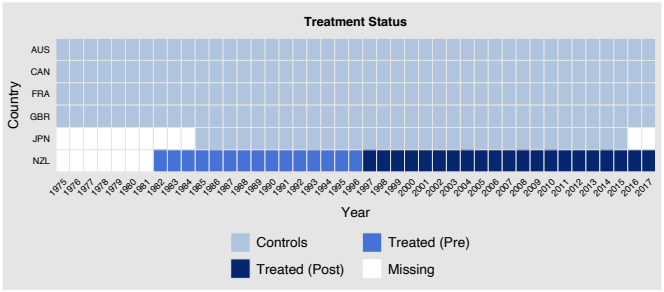


(c)

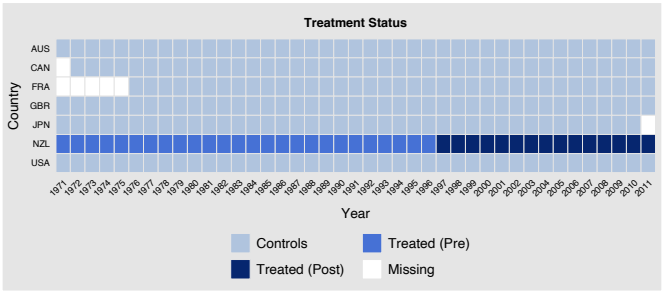


(d)

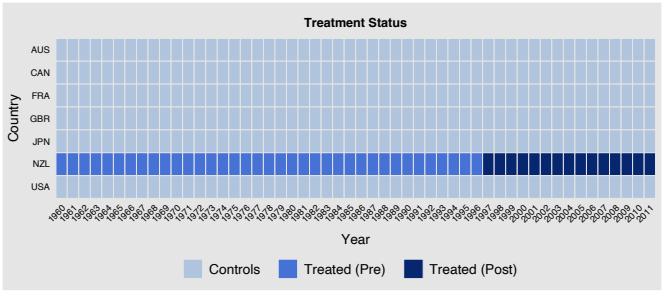
Figure 1: Panel data structure (NZL): (a) effparleg (b) vturn (c) logit.govright (d) logit.sconserv



(a)



(b)



(c)

Figure 2: Panel data structure (NZL): (e) relred (f) ueskgen (g) govexp

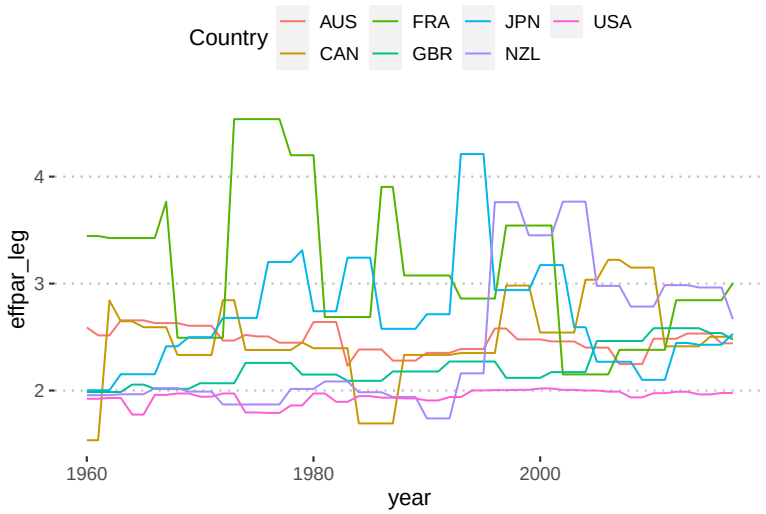


Figure 3: effparleg

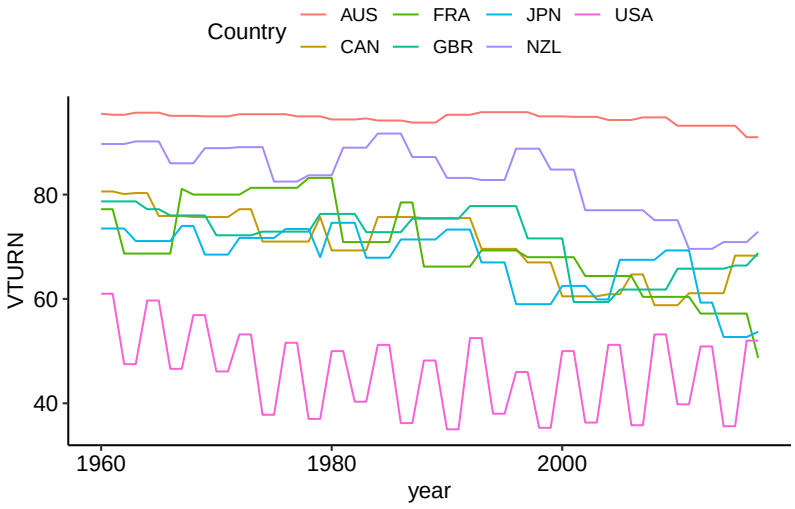


Figure 4: vturn

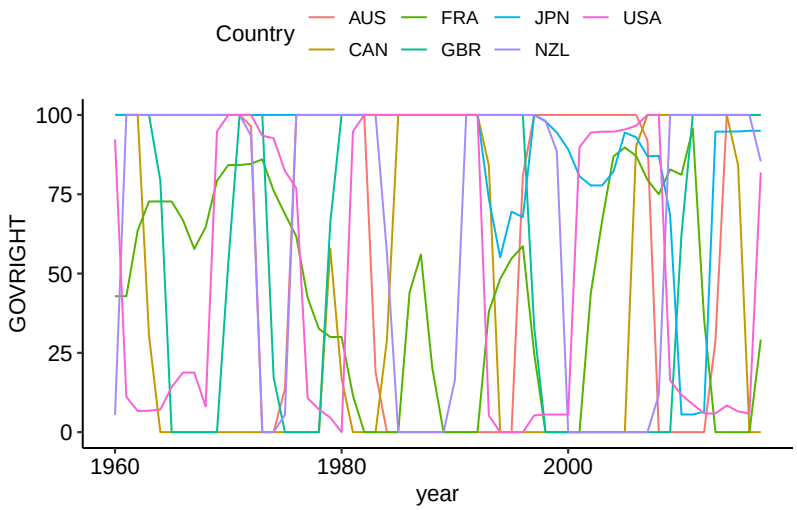


Figure 5: govright

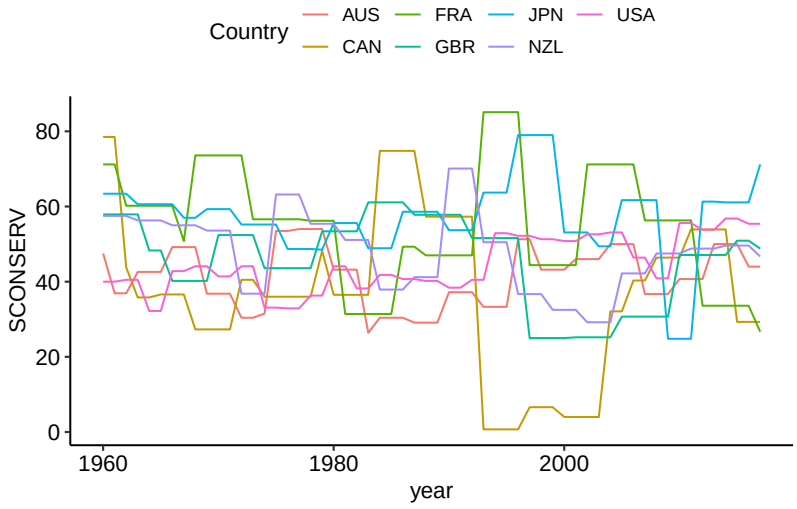


Figure 6: sconserv

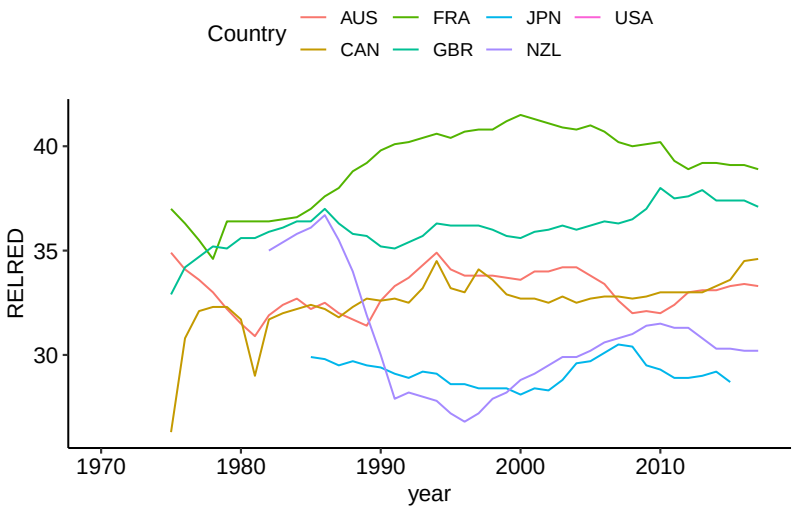


Figure 7: relred

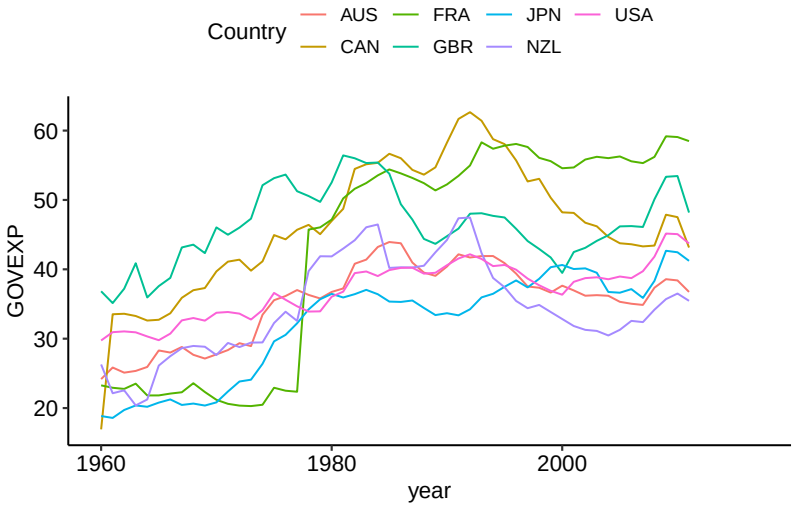


Figure 8: govexp

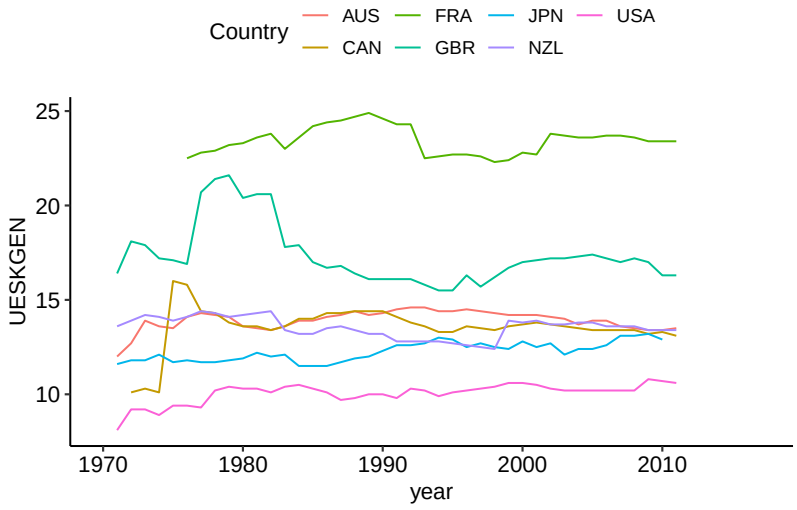


Figure 9: ueskgen

A.2 Default R model outputs

A.2.1 Model 1. Effective number of parliamentary parties: *effparleg*

R output; *effparleg* model output

	observed	estimated_counterfactual	estimated_ATT	time
-34	1.96	1.96	-0.001299	-34
-33	1.96	1.95	0.007002	-33
-32	1.97	1.97	-0.004461	-32
-31	1.97	1.95	0.017900	-31
-30	1.97	1.94	0.024037	-30
-29	2.02	1.96	0.058641	-29
-28	2.02	1.94	0.077552	-28
-27	2.02	1.99	0.029238	-27
-26	1.99	2.02	-0.030485	-26
-25	1.99	1.99	-0.001975	-25
-24	1.99	1.99	-0.000163	-24
-23	1.87	1.99	-0.123216	-23
-22	1.87	1.90	-0.028307	-22
-21	1.87	1.88	-0.013075	-21
-20	1.87	1.86	0.006742	-20
-19	1.87	1.95	-0.079094	-19
-18	1.87	1.93	-0.060114	-18
-17	2.02	2.00	0.016512	-17
-16	2.02	2.01	0.003211	-16
-15	2.02	1.97	0.048552	-15
-14	2.08	2.05	0.031977	-14
-13	2.08	2.05	0.036084	-13
-12	2.08	2.05	0.035199	-12
-11	1.98	2.04	-0.056156	-11
-10	1.98	2.03	-0.049624	-10
-9	1.98	1.93	0.053270	-9

```
-8      1.94                    1.94       0.001878   -8
-7      1.94                    1.95      -0.009297   -7
-6      1.94                    1.81       0.132265   -6
-5      1.74                    1.82      -0.077855   -5
-4      1.74                    1.80      -0.060406   -4
-3      1.74                    1.82      -0.084570   -3
-2      2.16                    2.13       0.026016   -2
-1      2.16                    2.15       0.008582   -1
0       2.16                    2.10       0.063285    0
1       3.76                    1.91       1.853316    1
2       3.76                    1.95       1.809652    2
3       3.76                    1.94       1.817598    3
4       3.45                    1.96       1.486603    4
5       3.45                    2.01       1.444794    5
6       3.45                    2.01       1.444121    6
7       3.77                    2.01       1.753707    7
8       3.77                    1.92       1.849986    8
9       3.77                    1.92       1.847100    9
10      2.98                    1.89       1.085001   10
11      2.98                    1.91       1.066660   11
12      2.98                    1.91       1.072030   12
13      2.78                    1.90       0.884668   13
14      2.78                    1.90       0.888170   14
15      2.78                    1.94       0.842337   15
16      2.99                    1.96       1.025808   16
17      2.99                    2.08       0.908091   17
18      2.99                    2.12       0.868507   18
19      2.96                    2.14       0.820089   19
20      2.96                    2.17       0.794499   20
21      2.96                    2.18       0.780096   21
22      2.67                    2.27       0.394004   22

# Mean result over the treated period: 1.22
```

A.2.2 Model 2. Voter turnout: *vturn*

R output; *vturn* model output

```
    observed estimated_counterfactual estimated_ATT time
-34     89.7                    89.5       0.15715  -34
-33     89.7                    89.7       0.01068  -33
-32     90.2                    90.2      -0.00953  -32
-31     90.2                    90.3      -0.05982  -31
-30     90.2                    90.2       0.04999  -30
-29     86.0                    86.3      -0.32601  -29
-28     86.0                    85.9       0.10697  -28
-27     86.0                    86.0      -0.00164  -27
-26     88.9                    88.8       0.07077  -26
-25     88.9                    88.8       0.07143  -25
-24     88.9                    88.8       0.06878  -24
-23     89.1                    89.1       0.03075  -23
-22     89.1                    89.0       0.10758  -22
-21     89.1                    88.8       0.26436  -21
-20     82.5                    82.8      -0.26567  -20
-19     82.5                    82.8      -0.25412  -19
-18     82.5                    82.7      -0.23570  -18
-17     83.7                    83.8      -0.05852  -17
-16     83.7                    84.0      -0.28214  -16
-15     83.7                    83.8      -0.05507  -15
-14     89.0                    88.9       0.14818  -14
```

```
23 -13     89.0                    88.8       0.23811  -13
24 -12     89.0                    89.0       0.01538  -12
25 -11     91.7                    91.7       0.02861  -11
26 -10     91.7                    91.6       0.12501  -10
27 -9      91.7                    91.4       0.34142   -9
28 -8      87.2                    87.3      -0.06246   -8
29 -7      87.2                    87.5      -0.26362   -7
30 -6      87.2                    87.0       0.19279   -6
31 -5      83.2                    83.3      -0.08477   -5
32 -4      83.2                    83.3      -0.08484   -4
33 -3      83.2                    83.3      -0.10192   -3
34 -2      82.8                    82.9      -0.05966   -2
35 -1      82.8                    82.8       0.00296   -1
36 0       82.8                    82.6       0.17058    0
37 1       88.8                    83.0       5.81489    1
38 2       88.8                    82.9       5.87432    2
39 3       88.8                    82.2       6.62671    3
40 4       84.8                    82.5       2.27770    4
41 5       84.8                    80.3       4.48069    5
42 6       84.8                    82.8       1.98062    6
43 7       77.0                    81.7      -4.68531    7
44 8       77.0                    82.3      -5.29144    8
45 9       77.0                    83.0      -6.04371    9
46 10      77.0                    80.8      -3.78501   10
47 11      77.0                    81.3      -4.30163   11
48 12      77.0                    82.3      -5.30964   12
49 13      75.1                    81.0      -5.89873   13
50 14      75.1                    80.3      -5.20983   14
51 15      75.1                    79.0      -3.85225   15
52 16      69.6                    79.7     -10.14626   16
53 17      69.6                    83.0     -13.39305   17
54 18      69.6                    82.5     -12.93330   18
55 19      70.9                    83.1     -12.18334   19
56 20      70.9                    85.1     -14.23223   20
57 21      70.9                    85.7     -14.77358   21
58 22      72.9                    87.1     -14.24029   22
59
60 # Mean result over the treated period: -4.96
```

R output; *logit.govright* model output

```
1      observed estimated_counterfactual estimated_ATT time
2  -34   19.865                    9.99         9.872  -34
3  -33   19.865                    9.38        10.481  -33
4  -32   19.865                   14.06         5.806  -32
5  -31   19.865                   19.63         0.234  -31
6  -30   19.865                   21.98        -2.112  -30
7  -29   19.865                   21.74        -1.875  -29
8  -28   19.865                   23.15        -3.289  -28
9  -27   19.865                   23.82        -3.958  -27
10 -26   19.865                   22.24        -2.375  -26
11 -25   19.865                   18.89         0.978  -25
12 -24   19.865                   15.25         4.617  -24
13 -23    2.656                    7.24        -4.588  -23
14 -22  -20.042                   -7.92       -12.117  -22
15 -21  -20.042                   -6.06       -13.985  -21
```

A.2.3 Model 3. Government composition: cabinet posts of right-wing parties in the percentage of total cabinet posts: *govright*

```
16 -20   -2.848                    5.66        -8.503  -20
17 -19   19.865                   17.05         2.818  -19
18 -18   19.865                   19.31         0.558  -18
19 -17   19.865                   20.04        -0.171  -17
20 -16   19.865                   12.81         7.050  -16
21 -15   19.865                   10.76         9.108  -15
22 -14   19.865                   13.82         6.045  -14
23 -13   19.865                   14.29         5.573  -13
24 -12   19.865                   11.36         8.508  -12
25 -11    0.264                   -3.42         3.688  -11
26 -10  -20.042                  -16.02        -4.026  -10
27 -9   -20.042                  -13.00        -7.039   -9
28 -8   -20.042                  -14.17        -5.873   -8
29 -7   -20.042                   -9.96       -10.085   -7
30 -6   -20.042                   -3.40       -16.642   -6
31 -5    -1.626                    1.98        -3.608   -5
32 -4    19.865                    9.06        10.803   -4
33 -3    19.865                    9.70        10.166   -3
34 -2    19.865                   14.84         5.025   -2
35 -1    19.865                   20.35        -0.482   -1
36 0     19.865                   20.06        -0.194    0
37 1     19.865                   29.54        -9.675    1
38 2     19.865                   35.03       -15.169    2
39 3      3.960                   39.24       -35.275    3
40 4      2.040                   39.47       -37.428    4
41 5    -20.042                   38.61       -58.656    5
42 6    -20.042                   38.39       -58.436    6
43 7    -20.042                   38.41       -58.453    7
44 8    -20.042                   38.70       -58.746    8
45 9    -20.042                   38.41       -58.452    9
46 10   -20.042                   38.73       -58.776   10
47 11   -20.042                   32.62       -52.662   11
48 12   -20.042                   21.07       -41.107   12
49 13    -2.016                   13.66       -15.672   13
50 14    19.865                   18.06         1.806   14
51 15    19.865                   14.54         5.322   15
52 16    19.865                   11.53         8.339   16
53 17    19.865                   16.47         3.393   17
54 18    19.865                   25.69        -5.825   18
55 19    19.865                   34.48       -14.615   19
56 20    19.865                   41.86       -21.992   20
57 21    19.865                   49.14       -29.277   21
58 22     1.760                   50.75       -48.987   22
59
60 # Mean result over the treated period: -30
```

A.2.4 Model 4. Share of seats of the largest party classified as conservative: *sconserv*

R output; *sconserv* model output

```
1
2 ### sconserv ###
3
4     observed estimated_counterfactual estimated_ATT time
5 -34     57.5                    52.2         5.303  -34
6 -33     57.5                    55.3         2.195  -33
7 -32     56.3                    54.6         1.692  -32
8 -31     56.3                    54.5         1.797  -31
```

```
-30     56.3                    52.8          3.475  -30
-29     55.0                    51.7          3.269  -29
-28     55.0                    59.8         -4.791  -28
-27     55.0                    58.7         -3.688  -27
-26     53.6                    51.3          2.305  -26
-25     53.6                    53.2          0.441  -25
-24     53.6                    52.5          1.137  -24
-23     36.8                    48.0        -11.206  -23
-22     36.8                    46.4         -9.608  -22
-21     36.8                    47.2        -10.419  -21
-20     63.2                    57.3          5.883  -20
-19     63.2                    55.3          7.858  -19
-18     63.2                    58.0          5.182  -18
-17     55.4                    53.4          2.044  -17
-16     55.4                    51.0          4.411  -16
-15     55.4                    50.6          4.807  -15
-14     51.1                    48.5          2.641  -14
-13     51.1                    50.7          0.411  -13
-12     51.1                    48.0          3.060  -12
-11     37.9                    43.0         -5.136  -11
-10     37.9                    44.6         -6.738  -10
-9      37.9                    45.9         -8.035   -9
-8      41.2                    42.4         -1.170   -8
-7      41.2                    43.7         -2.522   -7
-6      41.2                    54.3        -13.149   -6
-5      70.1                    59.7         10.375   -5
-4      70.1                    61.9          8.191   -4
-3      70.1                    59.9         10.229   -3
-2      50.5                    54.1         -3.591   -2
-1      50.5                    52.9         -2.380   -1
0       50.5                    54.9         -4.364    0
1       36.7                    55.9        -19.237    1
2       36.7                    58.0        -21.348    2
3       36.7                    59.2        -22.534    3
4       32.5                    56.2        -23.701    4
5       32.5                    58.6        -26.119    5
6       32.5                    60.0        -27.509    6
7       29.2                    56.7        -27.456    7
8       29.2                    57.1        -27.890    8
9       29.2                    55.6        -26.382    9
10      42.2                    55.6        -13.433   10
11      42.2                    54.7        -12.530   11
12      42.2                    53.8        -11.646   12
13      47.5                    56.7         -9.216   13
14      47.5                    58.9        -11.427   14
15      47.5                    57.9        -10.382   15
16      48.8                    57.3         -8.476   16
17      48.8                    54.6         -5.755   17
18      48.8                    55.3         -6.453   18
19      49.6                    54.0         -4.429   19
20      49.6                    54.4         -4.762   20
21      49.6                    53.6         -4.000   21
22      46.7                    52.4         -5.702   22

# Mean result over the treated period: -15


### log(sconserv/(1-sconserv)) ###

```

	observed	estimated_counterfactual	estimated_ATT	time
-34	1.353	1.157	0.1960771	-34
-33	1.353	1.263	0.0898046	-33
-32	1.288	1.288	0.0000171	-32
-31	1.288	1.234	0.0538928	-31
-30	1.288	1.214	0.0740200	-30
-29	1.222	1.152	0.0699027	-29
-28	1.222	1.395	-0.1723862	-28
-27	1.222	1.313	-0.0908579	-27
-26	1.155	1.049	0.1059796	-26
-25	1.155	1.096	0.0587259	-25
-24	1.155	1.099	0.0557295	-24
-23	0.582	0.810	-0.2279336	-23
-22	0.582	0.797	-0.2146605	-22
-21	0.582	0.764	-0.1813783	-21
-20	1.717	1.562	0.1552304	-20
-19	1.717	1.607	0.1107228	-19
-18	1.717	1.652	0.0651867	-18
-17	1.242	1.327	-0.0849264	-17
-16	1.242	1.290	-0.0479950	-16
-15	1.242	1.144	0.0985959	-15
-14	1.045	0.996	0.0494035	-14
-13	1.045	1.037	0.0082024	-13
-12	1.045	1.096	-0.0505717	-12
-11	0.610	0.782	-0.1712308	-11
-10	0.610	0.776	-0.1653422	-10
-9	0.610	0.651	-0.0403838	-9
-8	0.701	0.579	0.1212912	-8
-7	0.701	0.605	0.0952458	-7
-6	0.701	1.159	-0.4579300	-6
-5	2.344	2.122	0.2228254	-5
-4	2.344	2.178	0.1664157	-4
-3	2.344	2.132	0.2120556	-3
-2	1.020	1.064	-0.0436100	-2
-1	1.020	1.044	-0.0237314	-1
0	1.020	1.069	-0.0484390	0
1	0.580	-0.571	1.1503007	1
2	0.580	0.272	0.3078691	2
3	0.580	0.300	0.2799198	3
4	0.481	0.157	0.3243416	4
5	0.481	2.405	-1.9234435	5
6	0.481	2.494	-2.0123163	6
7	0.412	2.303	-1.8900876	7
8	0.412	2.390	-1.9773560	8
9	0.412	2.356	-1.9436118	9
10	0.730	1.829	-1.0988712	10
11	0.730	1.748	-1.0177313	11
12	0.730	1.693	-0.9627548	12
13	0.905	1.788	-0.8834007	13
14	0.905	2.967	-2.0626759	14
15	0.905	2.865	-1.9605526	15
16	0.953	2.883	-1.9301821	16
17	0.953	1.733	-0.7797504	17
18	0.953	1.736	-0.7824517	18
19	0.984	1.677	-0.6923747	19
20	0.984	1.649	-0.6650146	20
21	0.984	1.569	-0.5844016	21
22	0.876	0.701	0.1748842	22

```
# Mean result over the treated period: -0.951
```

A.2.5 Model 5. Relative redistribution: *relred*

R output; *relred* model output

```
    observed estimated_counterfactual estimated_ATT time
-14     35.0                      35.2      -0.22318  -14
-13     35.4                      35.4       0.04066  -13
-12     35.8                      35.6       0.18435  -12
-11     36.1                      36.1       0.02302  -11
-10     36.7                      36.4       0.27139  -10
-9      35.5                      35.5      -0.02646   -9
-8      34.0                      33.9       0.05460   -8
-7      31.9                      32.0      -0.13275   -7
-6      30.0                      30.0      -0.00597   -6
-5      27.9                      28.1      -0.22668   -5
-4      28.2                      28.3      -0.07804   -4
-3      28.0                      28.0      -0.04110   -3
-2      27.8                      27.6       0.15757   -2
-1      27.2                      27.2       0.02815   -1
0       26.8                      26.8      -0.03981    0
1       27.2                      25.4       1.82623    1
2       27.9                      24.9       3.01778    2
3       28.2                      24.0       4.15243    3
4       28.8                      25.6       3.21920    4
5       29.1                      25.5       3.63994    5
6       29.5                      25.3       4.23886    6
7       29.9                      25.0       4.90445    7
8       29.9                      25.7       4.18695    8
9       30.2                      26.4       3.79583    9
10      30.6                      27.3       3.31941   10
11      30.8                      27.7       3.13475   11
12      31.0                      27.8       3.23226   12
13      31.4                      27.0       4.35075   13
14      31.5                      27.3       4.22638   14
15      31.3                      26.6       4.66494   15
16      31.3                      26.1       5.22121   16
17      30.8                      26.6       4.23699   17
18      30.3                      25.7       4.61653   18
19      30.3                      25.2       5.10503   19
20      30.2                      25.2       5.03205   20
21      30.2                      25.0       5.21717   21

# Mean result over the treated period: 4.06
```

A.2.6 Model 6. Welfare generosity index: *ueskgen*

R output; *ueskgen* model output

```
    observed estimated_counterfactual estimated_ATT time
-25     13.6                      13.7     -0.062258  -25
-24     13.9                      14.0     -0.075123  -24
-23     14.2                      14.1      0.081779  -23
-22     14.1                      14.0      0.115501  -22
-21     13.9                      13.9     -0.007881  -21
-20     14.1                      14.0      0.069959  -20
-19     14.4                      14.3      0.098007  -19
-18     14.3                      14.3      0.013028  -18
-17     14.1                      14.3     -0.197440  -17
```

```
-16     14.2                    14.1       0.055724  -16
-15     14.3                    14.2       0.106208  -15
-14     14.4                    14.2       0.189947  -14
-13     13.4                    13.6      -0.153176  -13
-12     13.2                    13.4      -0.217232  -12
-11     13.2                    13.5      -0.345643  -11
-10     13.5                    13.4       0.090925  -10
-9      13.6                    13.5       0.085620   -9
-8      13.4                    13.1       0.260498   -8
-7      13.2                    13.2      -0.002329   -7
-6      13.2                    13.2      -0.043423   -6
-5      12.8                    12.9      -0.118019   -5
-4      12.8                    12.9      -0.088125   -4
-3      12.8                    12.8      -0.000943   -3
-2      12.8                    12.7       0.106907   -2
-1      12.7                    12.7      -0.009170   -1
0       12.6                    12.5       0.050419    0
1       12.5                    12.5       0.012715    1
2       12.4                    12.5      -0.101773    2
3       13.9                    12.7       1.242154    3
4       13.8                    12.6       1.157762    4
5       13.9                    12.7       1.237497    5
6       13.7                    12.7       0.979496    6
7       13.7                    12.6       1.092493    7
8       13.8                    12.7       1.064903    8
9       13.8                    12.6       1.180173    9
10      13.6                    12.5       1.138192   10
11      13.6                    12.4       1.244445   11
12      13.6                    12.4       1.200302   12
13      13.4                    12.4       1.006634   13
14      13.4                    12.3       1.118870   14
15      13.4                    12.3       1.117851   15

# Mean result over the treated period: 0.979
```

A.2.7 Model 7. Total government spending, including interest government expenditures, as a share of national GDP: *govexp*

R output; *govexp* model output

```
    observed estimated_counterfactual estimated_ATT time
-26     27.6                    28.1       -0.4122  -26
-25     29.4                    29.2        0.2184  -25
-24     28.8                    29.0       -0.1987  -24
-23     29.4                    29.8       -0.4055  -23
-22     29.5                    29.6       -0.1093  -22
-21     32.3                    32.5       -0.2520  -21
-20     33.9                    33.4        0.4464  -20
-19     32.6                    32.5        0.0296  -19
-18     39.7                    39.9       -0.1483  -18
-17     41.9                    41.0        0.9109  -17
-16     41.9                    41.3        0.6105  -16
-15     43.0                    42.9        0.0441  -15
-14     44.2                    43.9        0.2688  -14
-13     46.1                    46.0        0.0744  -13
-12     46.5                    45.9        0.5279  -12
-11     40.2                    40.8       -0.5937  -11
-10     40.3                    41.0       -0.6791  -10
-9      40.3                    40.4       -0.1717   -9
```

```
-8      40.5                    41.3       -0.8313   -8
-7      42.5                    43.2       -0.7645   -7
-6      44.2                    44.2        0.0731   -6
-5      47.4                    46.6        0.7942   -5
-4      47.5                    46.3        1.1397   -4
-3      42.3                    42.2        0.1563   -3
-2      38.8                    38.7        0.0672   -2
-1      37.4                    37.7       -0.2594   -1
0       35.4                    36.0       -0.5747    0
1       34.4                    38.8       -4.3732    1
2       34.9                    37.6       -2.7166    2
3       33.8                    35.9       -2.1005    3
4       32.8                    34.9       -2.0753    4
5       31.8                    38.0       -6.1833    5
6       31.3                    37.3       -6.0249    6
7       31.1                    38.8       -7.6473    7
8       30.5                    39.2       -8.6996    8
9       31.3                    41.1       -9.7891    9
10      32.6                    40.8       -8.2367   10
11      32.4                    41.7       -9.2848   11
12      34.2                    42.9       -8.7609   12
13      35.7                    43.0       -7.2940   13
14      36.5                    45.6       -9.0899   14
15      35.5                    43.8       -8.3240   15

# Mean result over the treated period: -6.71
```

A.3 Factor loadings for DM-LF models

The figures below show the posterior distribution of the square root of prior variance for factor loading. If the posterior distribution is bimodal, we have evidence that there is variation among factor loadings; it suggests that the factor should be included to control for unobserved heterogeneity.

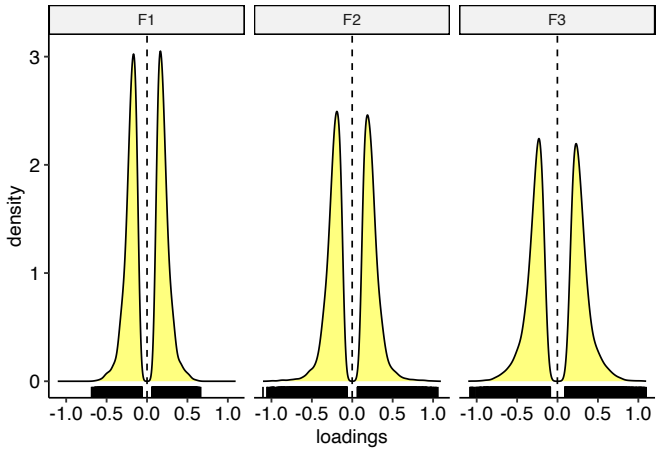


Figure 10: effparleg: The posterior distribution of the square root of prior variance for factor loadings.

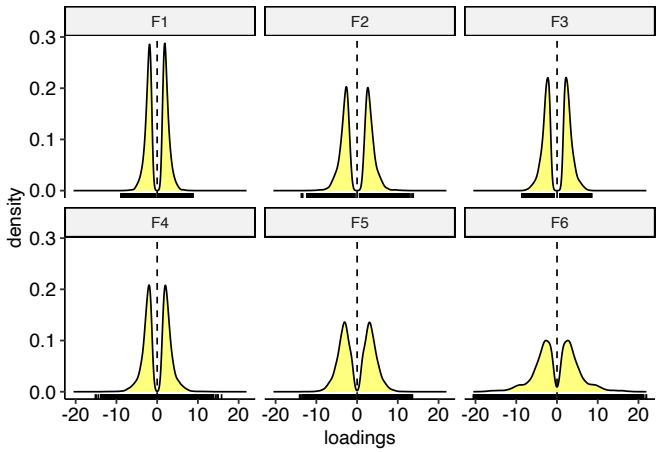


Figure 11: vturn: The posterior distribution of the square root of prior variance for factor loadings.

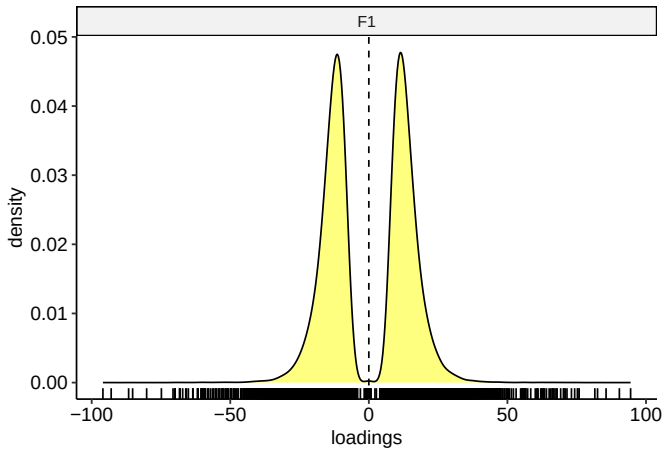


Figure 12: logit.govright: The posterior distribution of the square root of prior variance for factor loadings.

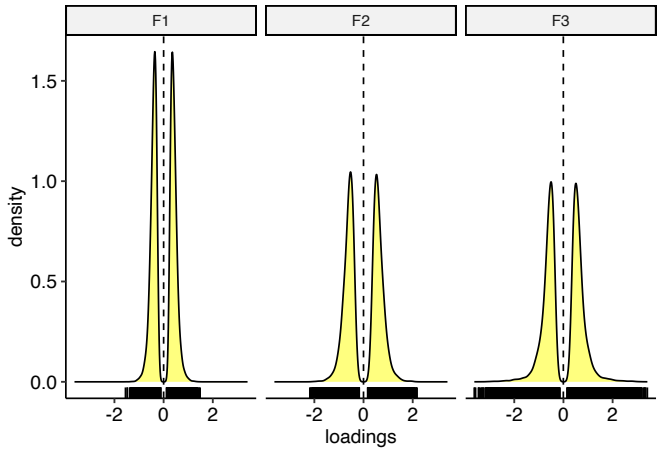


Figure 13: logit.sconserv: The posterior distribution of the square root of prior variance for factor loadings.

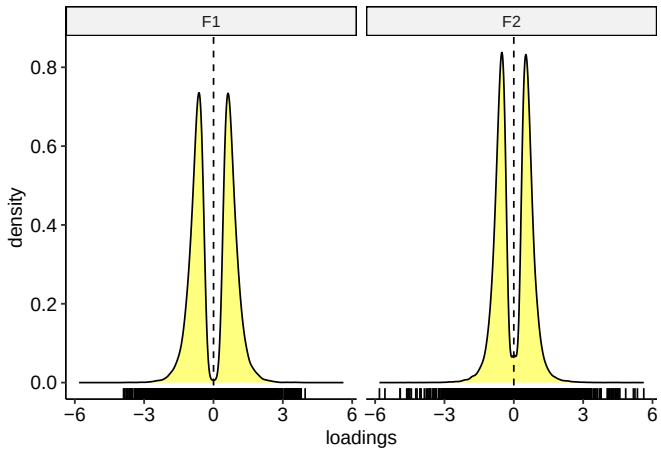


Figure 14: relred: The posterior distribution of the square root of prior variance for factor loadings.

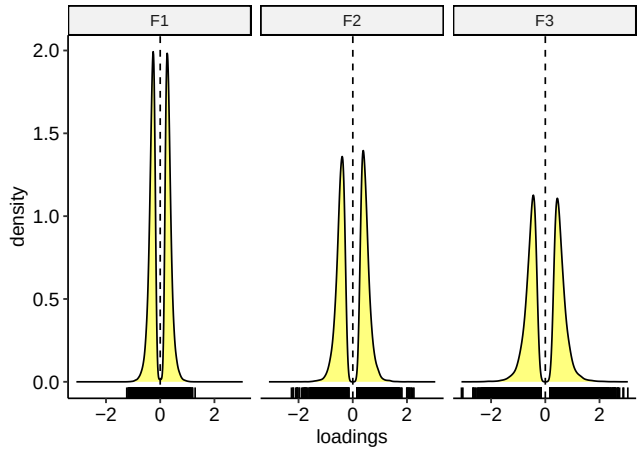


Figure 15: ueskgen: The posterior distribution of the square root of prior variance for factor loadings.

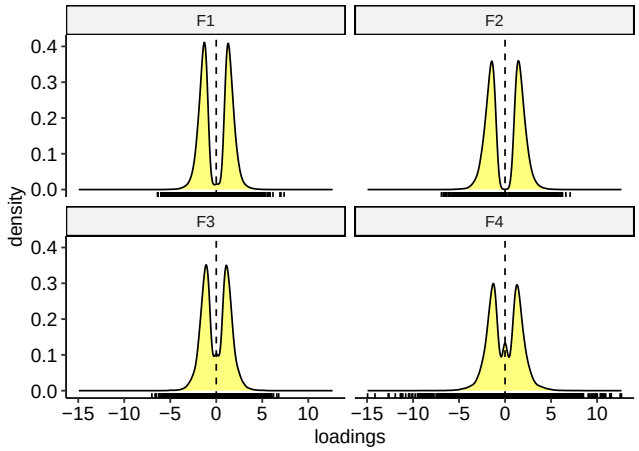


Figure 16: govexp: The posterior distribution of the square root of prior variance for factor loadings.

A.4 Convergence diagnostics for MCMC

A.4.1 Trace plots

The figures show the trace plot corresponding to the Markov Chain of the ATT (averaged over time; in the post-treatment period).

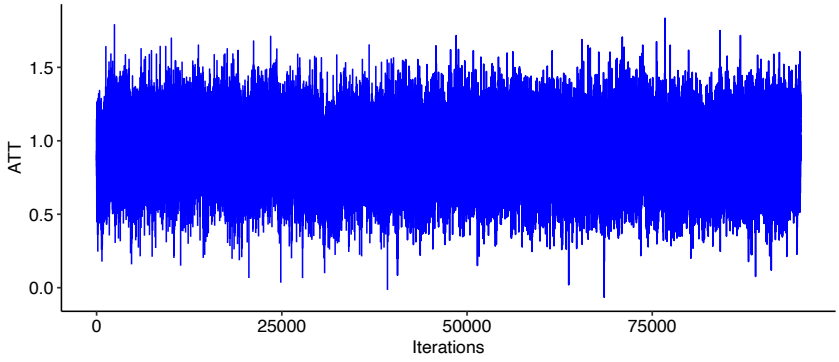


Figure 17: effparleg: The trace-plots corresponding to the Markov Chains of the treatment effect estimates. The first 5000 (of 300000) iterations (the burn-in period) are dropped.

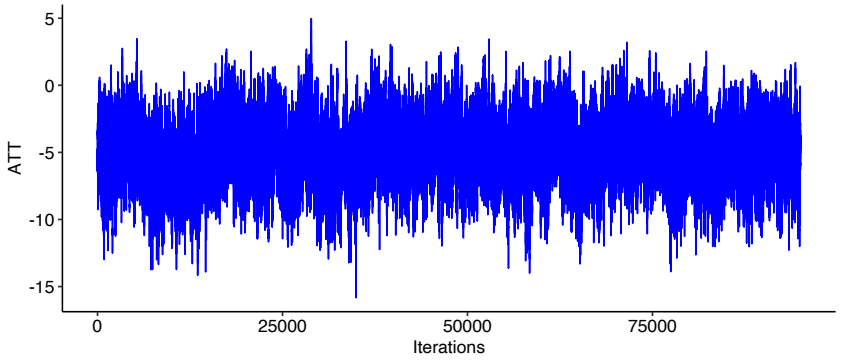


Figure 18: vturn: The trace-plots corresponding to the Markov Chains of the treatment effect estimates. The first 5000 (of 300000) iterations (the burn-in period) are dropped.

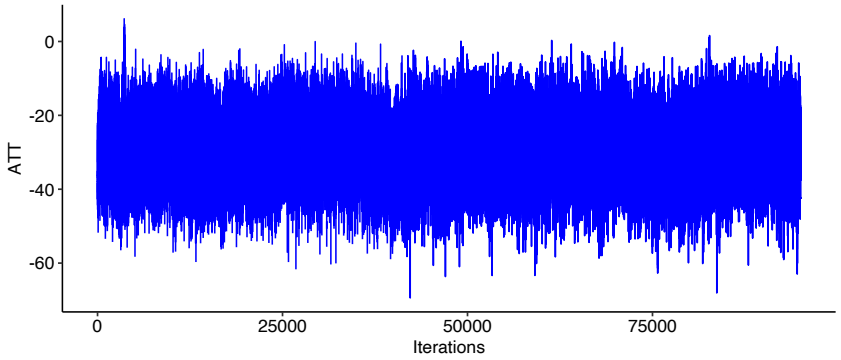


Figure 19: logit.govright: The trace-plots corresponding to the Markov Chains of the treatment effect estimates. The first 5000 (of 100000) iterations (the burn-in period) are dropped.

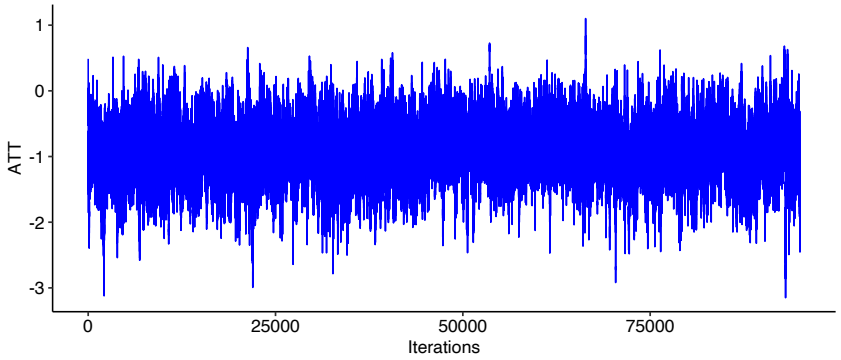


Figure 20: logit.sconserv: The trace-plots corresponding to the Markov Chains of the treatment effect estimates. The first 5000 (of 100000) iterations (the burn-in period) are dropped.

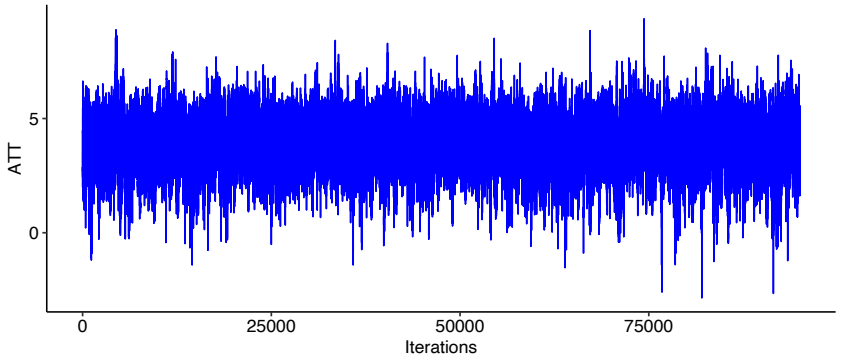


Figure 21: relred: The trace-plots corresponding to the Markov Chains of the treatment effect estimates. The first 5000 (of 100000) iterations (the burn-in period) are dropped.

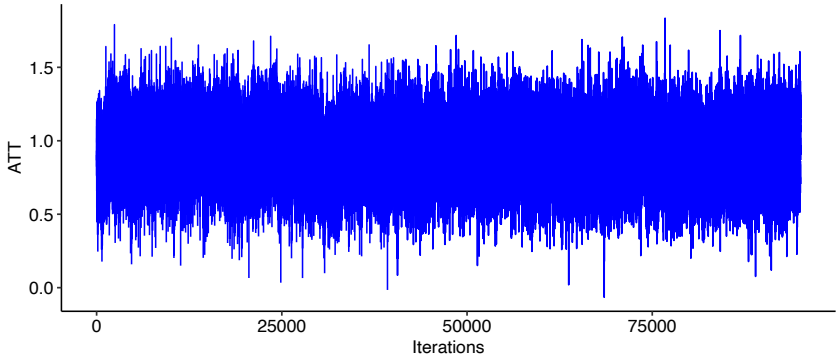


Figure 22: ueskgen: The trace-plots corresponding to the Markov Chains of the treatment effect estimates. The first 5000 (of 100000) iterations (the burn-in period) are dropped.

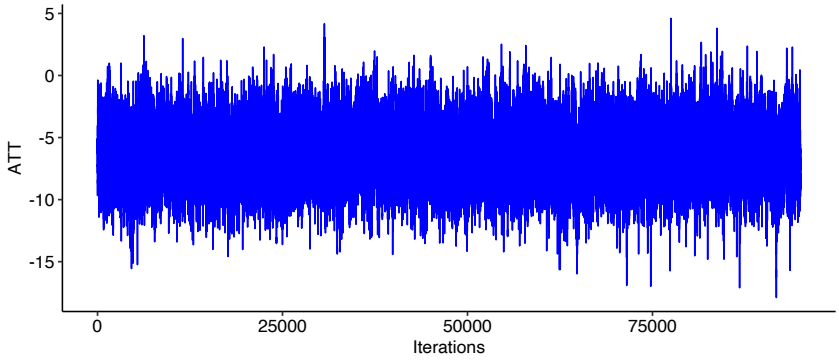


Figure 23: govexp: The trace-plots corresponding to the Markov Chains of the treatment effect estimates. The first 5000 (of 100000) iterations (the burn-in period) are dropped.

A.4.2 Gelman-Rubin-Brooks convergence diagnostic

In this section, we provide additional checks of convergence; specifically, we employ the Gelman–Rubin diagnostic test (the "potential scale reduction factor" a.k.a. PSRF) to evaluate MCMC convergence by analyzing the difference between multiple Markov chains. Approximate convergence is diagnosed when the upper limit is close to 1; the recommended score is to achieve $PSRF < 1.1$. See Gelman and Rubin (1992) and Brooks and Gelman (1997) for a detailed description of the method.

[effparleg] The PSRF (for five parallel chains with random seeds = 0, 10, 50, 1234, 5678):

- Point estimate: 1.03
- Upper C.I. limit: 1.07

This plot shows the evolution of Gelman and Rubin's shrink factor [Gelman-Rubin-Brooks plot] as the number of iterations increases.

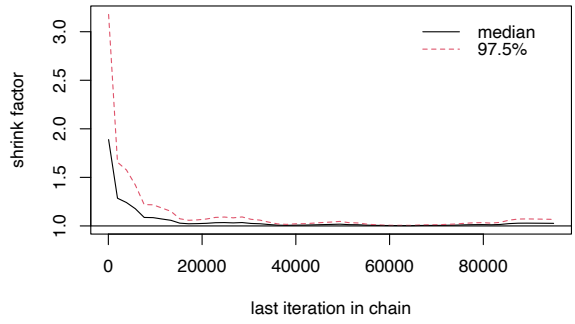


Figure 24: effparleg: Gelman and Rubin's shrink factor

[vturn] The PSRF (for five parallel chains with random seeds = 0, 10, 50, 1234, 5678):

- Point estimate: 1.02
- Upper C.I. limit: 1.04

This plot shows the evolution of Gelman and Rubin's shrink factor [Gelman-Rubin-Brooks plot] as the number of iterations increases.

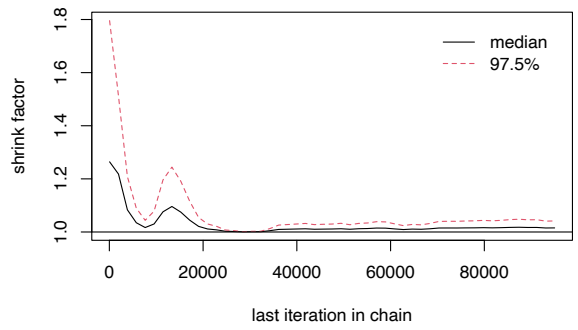


Figure 25: vturn: Gelman and Rubin's shrink factor

[logit.govright] The PSRF (for five parallel chains with random seeds = 0, 10, 50, 1234, 5678):

- Point estimate: 1
- Upper C.I. limit: 1

This plot shows the evolution of Gelman and Rubin's shrink factor [Gelman-Rubin-Brooks plot] as the number of iterations increases.

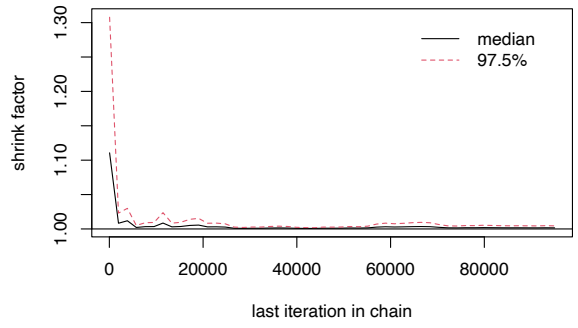


Figure 26: logit.govright: Gelman and Rubin's shrink factor

[logit.sconserv] The PSRF (for five parallel chains with random seeds = 0, 10, 50, 1234, 5678):

- Point estimate: 1.02
- Upper C.I. limit: 1.03

This plot shows the evolution of Gelman and Rubin's shrink factor [Gelman-Rubin-Brooks plot] as the number of iterations increases.

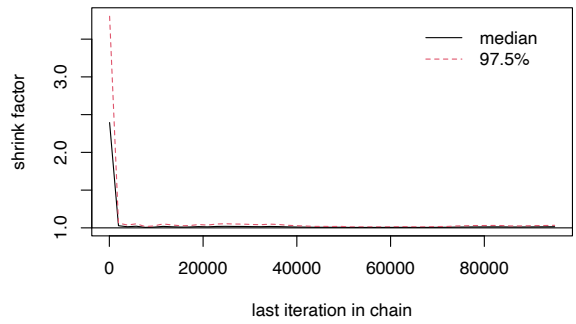


Figure 27: logit.sconserv: Gelman and Rubin's shrink factor

[relred] The PSRF (for five parallel chains with random seeds = 0, 10, 50, 1234, 5678):

- Point estimate: 1.01
- Upper C.I. limit: 1.03

This plot shows the evolution of Gelman and Rubin's shrink factor [Gelman-Rubin-Brooks plot] as the number of iterations increases.

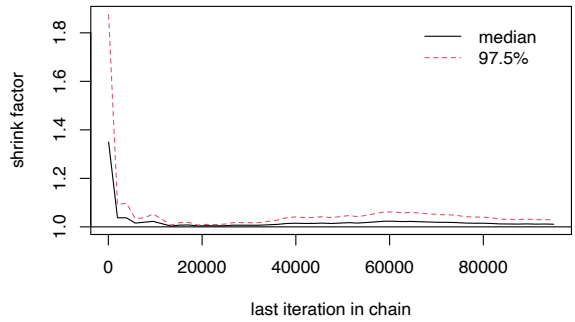


Figure 28: relred: Gelman and Rubin's shrink factor

[ueskgen] The PSRF (for five parallel chains with random seeds = 0, 10, 50, 1234, 5678):

- Point estimate: 1
- Upper C.I. limit: 1

This plot shows the evolution of Gelman and Rubin's shrink factor [Gelman-Rubin-Brooks plot] as the number of iterations increases.

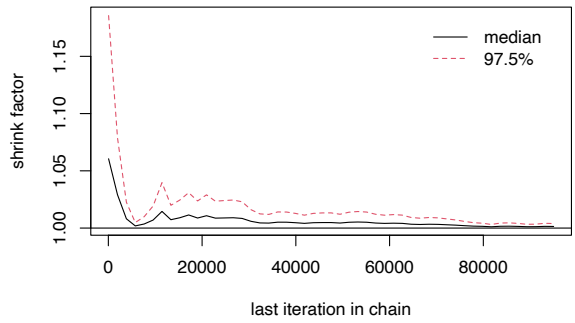


Figure 29: ueskgen: Gelman and Rubin's shrink factor

[govexp] The PSRF (for five parallel chains with random seeds = 0, 10, 50, 1234, 5678):

- Point estimate: 1
- Upper C.I. limit: 1

This plot shows the evolution of Gelman and Rubin's shrink factor [Gelman-Rubin-Brooks plot] as the number of iterations increases.

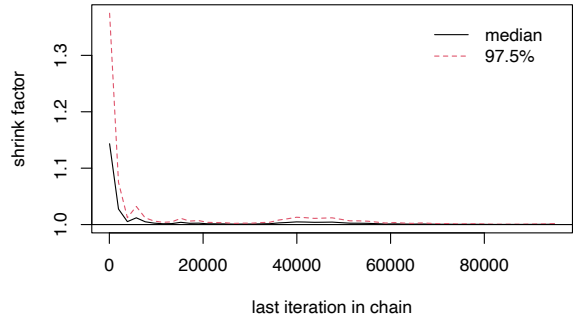


Figure 30: govexp: Gelman and Rubin's shrink factor

A.5 Estimation without latent factors

If we assume no factors, the estimates are overall closer to what we would obtain from the difference-in-differences method.

The models visualized below (Figure A.22) have been estimated without latent factors and, in addition, with the shrinkage disabled.

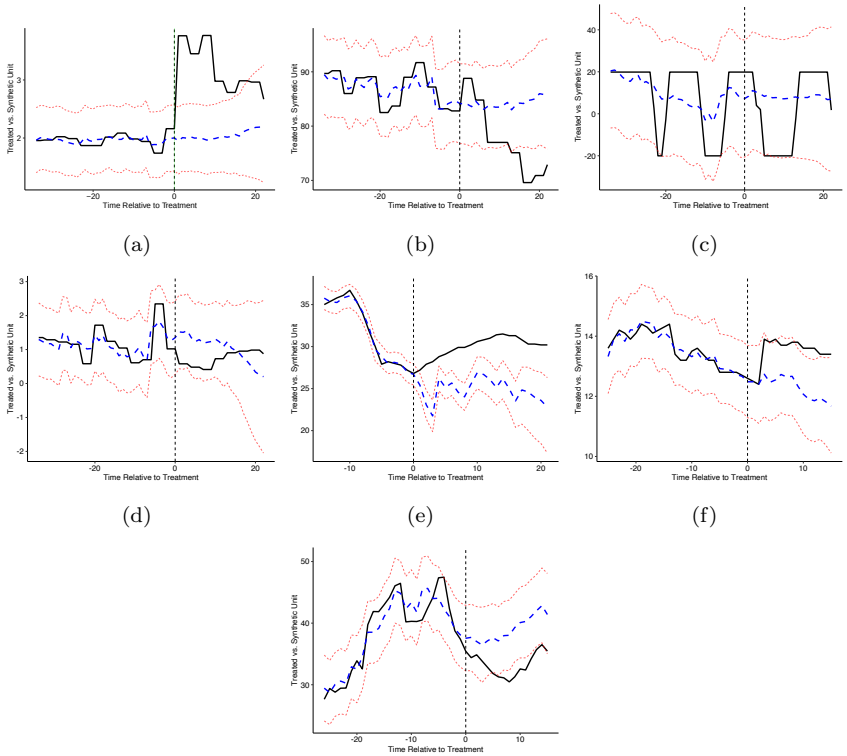


Figure 31: Estimation without latent factors and with no shrinkage: (a) effparleg (b) vturn (c) **logit.govright** (d) **logit.sconserv** (e) relred (f) ueskgen (g) govexp

B Data and replication materials

B.1 Data sources

The data employed in our study has been retrieved from:

CPDS Comparative Political Data Set (CPDS), https://www.cpds-data.org/

CWED The Comparative Welfare Entitlements Dataset (CWED), http://cwed2.org/

DES The Democratic Electoral Systems (DES) dataset, http://mattgolder.com/elections

DUV Replication data for: Rehabilitating Duverger's Theory: Testing the Mechanical and Strategic Modifying Effects of Electoral Laws, https://dataverse.harvard.edu/dataset.xhtml?persistentId=doi:10.7910/DVN/HGXPHP

IDEA International Institute for Democracy and Electoral Assistance (International IDEA), https://www.idea.int/data-tools/data/voter-turnout/compulsory-voting

INEQ The Standardized World Income Inequality Database, Versions 8-9, https://dataverse.harvard.edu/dataset.xhtml?persistentId=doi:10.7910/DVN/LM4OWF

OECD OECD.Stat, https://stats.oecd.org/

OWD Our World in Data. Total government spending, including interest government expenditures, as a share of national GDP. IMF Fiscal Affairs Departmental Data, based on Mauro et al. (2015): https://ourworldindata.org/government-spending

SWIID The Standardized World Income Inequality Database (SWIID), https://fsolt.org/swiid/

VP Replication Data for Constitutional Rigidity Matters: A Veto Players Approach, https://dataverse.harvard.edu/dataset.xhtml?persistentId=doi:10.7910/DVN/VSESCP

WB World Bank Open Data: https://data.worldbank.org/

WID The World Inequality Database: https://wid.world/data/

B.2 Control variables

A list of all covariates used in the analysis:

OECD "yngpop" – The youth population is defined as those people aged less than15;

OECD "popul" – Population is defined as all nationals present in, or temporarily absent from a country, and aliens permanently settled in a country.

CPDS "elderly" – Population over 65, as a percentage of population;

CPDS "rnetu" – $rnetu = \frac{netu_ipol}{ttl_labf}$, where $netu_ipol$ stands for the net union membership (gross minus independent workers, students, unemployed or retired members), in thousands; and ttl_lab stands for the total labour force, in thousands.

CPDS "interest" – Long-term interest rate on government bonds.

CPDS "realgdpgr" – Growth of real GDP, percent change from previous year.

CPDS "pres" – Executive-legislative relations according to Lijphart (2012: 108ff.). Coded: 0 = parliamentary system; 1 = semi-presidential dominated by parliament; 2 = hybrid system; 3 = semi-presidential dominated by president; 4 = presidential system;

CPDS "fed" – Federalism. Coded: 0 = no; 1 = weak; 2 = strong;

CPDS "bic" – Index of bicameralism according to Lijphart (2012). Coded 1 = unicameralism; 2 = weak bicameralism (asymmetrical and congruent chambers); 3 = medium strength bicameralism (asymmetrical and incongruent or symmetrical and congruent); 4 = strong bicameralism (symmetrical and incongruent);

DUV "eneg" – the effective number of ethnic groups;

IDEA "com_voting" – compulsory voting (binary variable);

VP "vp_rigidity" – veto player rigidity (for details, see Replication Data for: "Constitutional Rigidity Matters: A Veto Players Approach");

WB "inflation_cpi" – Inflation, consumer prices (annual %);

WID "topone" – Income inequality (Top 1% income share).

B.3 Supplemental material

Replication materials and R code can be found at Górecki, Maciej A. and Michał Pierzgalski, 2023, "Replication Data for: Electoral Systems, Partisan Politics, and Income Redistribution: A Critical Quasi-Experiment", https://doi.org/10.7910/DVN/YWBT2M, Harvard Dataverse.