Summary of Synthetic Variables Estimation

EES 2019 Voter Study (Belgian, Bulgarian, Cypriot, and Italian samples)

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1 Cyprus

Synthetic variables have been estimated for the full set of Cypriot parties available in the original 2019 EES Cypriot voter study selected according to the criteria stated in the EES 2019 SDM codebook (for the criteria see Sect. XXX; for the relevant parties see Table 1.1).

Table 1.1: Cypriot relevant parties

Dep. Var.	Party	Party name (eng)
stack_501	501	Progressive Party of the Working People
stack_502	502	Democratic Rally
stack_503	503	Democratic Party
stack_504	504	United Democratic Union of Centre
stack_505	505	Ecological and Environmental Movement (Cyprus Green Party)
stack_507	507	National Popular Front

Full OLS models converge and coefficients do not show any particular issue (see Table 1.11). In terms of model fit, the adjusted coefficient of determination (R^2) values vary between a minimum value of -0.007 for party 504 (United Democratic Union of Centre) and a maximum of 0.079 for party 502 (Democratic Rally). Moreover, the difference between Akaike Information Criterion (AIC) values for full OLS models and null models shows that in 4 cases out of 6 null models perform better than full ones (see Table 1.2).

Table 1.2: Akaike Information Criterion values for OLS full and null models

Dep. Var.	Party	Full Mod.	Null Mod.	Diff. (Full-Null)
stack_501	501	343.229	362.833	-19.603
stack_502	502	398.664	423.119	-24.454
stack_503	503	263.353	256.408	6.945
stack_504	504	146.189	132.322	13.867
stack_505	505	114.659	107.763	6.896
stack_507	507	205.547	199.847	5.700

On the contrary, three out of six logistic regression models (see Table 1.12) show inflated standard errors for some of the coefficients of interest, in particular:

- Model 9: D7_rec (only for category 2);
- Model 11a: D8_rec, D5_rec, EDU_rec, D7_rec (only for category 2), D6_une;
- Model 12: D6_une.

Nevertheless, models 9 and 12 constant terms and other regression coefficients are not affected by said inflated standard errors, whereas model 5a presents a more problematic profile.

Model 5a inflated standard errors are due to separation issues. In short, no respondents from rural areas or small cities, single, low educated, with high subjective socioeconomic status (SES), members of trade unions, and unemployed did vote for party 505 (see Tables 1.5, 1.6, 1.7, 1.8, 1.9, 1.10).

As a consequence, a constrained version of model 11 (namely, Model 11b) without said variables was estimated and contrasted with the original (Model 11a), full model. Likelihood-ratio test results show that H_0 (namely, that the constrained model fits better than the full model) cannot be rejected (see Table 1.3). Consequently, synthetic variables for respondents' vote choice for party 505 have been predicted relying on the constrained model (Model 11b).

Table 1.3: Likelihood-ratio Test between Model 5a (Unconstrained) and Model 5b (Constrained)

Model	Resid. Df	Resid. Dev	Df	Deviance	Pr(>Chi)
Constrained	390	52.23925			
Unconstrained	382	39.43782	8	12.80143	0.1188668

In terms of model fit, adjusted McFadden's pseudo R^2 values for the logistic full models vary between a minimum value of -0.183 for party 505 (Ecological and Environmental Movement (Cyprus Green Party)) and a maximum of 0.068 for party 501 (Progressive Party of the Working People). Moreover, the difference between Akaike Information Criterion (AIC) values for logistic full models and null models shows that in 3 cases out of 6 null models perform better than full ones. According to AIC values the related null model appears to have a better fit than Model 11b (see Table 1.4).

Table 1.4: Akaike Information Criterion values for logistic full and null models

Dep. Var.	Party	Full Mod.	Null Mod.	Diff. (Full-Null)
stack_501	501	264.62700	285.99700	-21.370000
stack_502	502	358.88900	382.63700	-23.749000
stack_503	503	233.62800	228.82500	4.803000
stack_504	504	151.57100	135.86200	15.709000
stack_505	505	63.43800	55.60500	7.832000
stack_505*	505	60.23925	55.60541	4.633845
stack_507	507	115.46200	116.26300	-0.800000

* AIC value refers to Model 11b (constrained).

Table 1.5: Cross tabulation between vote choice for party 505 and respondents' area of residency

stack_505/D8_rec	0	1	Total
0	84	354	438
1	0	5	5
NA	10	48	58
Total	94	407	501

Table 1.6: Cross tabulation between vote choice for party 505 and respondents' marital status

stack_505/D5_rec	0	1	Total
0	104	334	438
1	0	5	5
NA	14	44	58
Total	118	383	501

Table 1.7: Cross tabulation between vote choice for party 505 and respondents' education

stack_505/EDU_rec	1	2	3	NA	Total
0	92	175	154	17	438
1	0	2	3	0	5
NA	5	20	33	0	58
Total	97	197	190	17	501

Table 1.8: Cross tabulation between vote choice for party 505 and respondents' subjective SES

stack_505/D7_rec	0	1	2	NA	Total
0	161	246	25	6	438
1	2	3	0	0	5
NA	24	30	2	2	58
Total	187	279	27	8	501

Table 1.9: Cross tabulation between vote choice for party 505 and respondents' trade union membership

stack_505/D1_rec	0	1	NA	Total
0	339	84	15	438
1	5	0	0	5
NA	47	8	3	58
Total	391	92	18	501

Table 1.10: Cross tabulation between vote choice for party 505 and respondents' employment status

stack_505/D6_une	0	1	NA	Total
0	398	39	1	438
1	5	0	0	5
NA	55	3	0	58
Total	458	42	1	501

Table 1.11: Propensity to vote for a relevant party according to respondents' socio-demographic characteristics (OLS regression models)

	501	**502**	**503**	**504**	**505**	**507**
	Model 1	**Model 2**	**Model 3**	**Model 4**	**Model 5**	**Model 6**
D3_rec2	0.095**	−0.057	0.047	0.012	0.054	−0.086**
	(0.036)	(0.038)	(0.032)	(0.029)	(0.027)	(0.030)
D8_rec1	0.023	−0.039	0.010	0.012	0.007	0.017
	(0.046)	(0.049)	(0.041)	(0.036)	(0.035)	(0.039)
D5_rec1	0.041	−0.022	0.036	0.021	0.025	−0.015
	(0.043)	(0.046)	(0.039)	(0.034)	(0.033)	(0.036)
EDU_rec2	−0.106*	0.111*	0.069	0.037	0.015	0.027
	(0.050)	(0.053)	(0.045)	(0.040)	(0.038)	(0.042)
EDU_rec3	−0.091	0.152**	0.087	0.056	0.062	0.002
	(0.055)	(0.059)	(0.050)	(0.044)	(0.042)	(0.046)
D1_rec1	0.022	0.126**	0.026	−0.020	−0.009	0.059
	(0.044)	(0.047)	(0.040)	(0.035)	(0.034)	(0.037)
D7_rec1	−0.135***	0.099*	0.006	−0.003	0.019	−0.006
	(0.037)	(0.040)	(0.034)	(0.030)	(0.029)	(0.032)
D7_rec2	−0.015	0.166	0.063	0.110	0.068	−0.073
	(0.083)	(0.089)	(0.076)	(0.066)	(0.064)	(0.071)
D6_une1	0.141*	0.004	0.048	0.025	0.014	−0.029
	(0.062)	(0.066)	(0.056)	(0.049)	(0.049)	(0.054)
D4_age	0.0002	0.002*	0.002*	−0.0002	−0.001	−0.002
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
D10_rec	−0.027*	0.043***	−0.002	0.010	0.002	0.007
	(0.012)	(0.012)	(0.011)	(0.009)	(0.009)	(0.010)
Constant	0.436***	−0.012	0.071	0.118	0.122	0.267***
	(0.086)	(0.093)	(0.079)	(0.069)	(0.067)	(0.074)
N	429	429	430	426	426	427
R-squared	0.092	0.103	0.034	0.019	0.035	0.037
Adj. R-squared	0.068	0.079	0.009	−0.007	0.009	0.012

***p < .001; **p < .01; *p < .05

Table 1.12: Vote choice for a relevant party according to respondents' socio-demographic characteristics (Logistic regression models)

	501	**502**	**503**	**504**	**505**	**505**	**507**
	Model 1	**Model 8**	**Model 9**	**Model 10**	**Model 11a**	**Model 11b**	**Model 12**
D3_rec2	0.831*	0.009	−0.026	−0.574	0.765	0.480	−0.710
	(0.376)	(0.289)	(0.396)	(0.535)	(1.003)	(0.948)	(0.666)
D8_rec1	−0.400	−0.590	−0.453	−0.126	17.416		0.650
	(0.405)	(0.342)	(0.458)	(0.695)	(4596.323)		(0.866)
D5_rec1	0.788	−0.058	0.178	−0.254	18.156		0.607
	(0.472)	(0.366)	(0.498)	(0.652)	(4131.731)		(0.859)
EDU_rec2	−0.578	0.084	0.412	−0.706	18.744		0.527
	(0.435)	(0.407)	(0.541)	(0.731)	(4353.602)		(0.830)
EDU_rec3	−0.558	0.567	0.841	−0.133	19.398		−2.071
	(0.552)	(0.474)	(0.657)	(0.748)	(4353.602)		(1.285)
D1_rec1	0.116	0.366	0.500	0.393	−18.666		1.438*
	(0.415)	(0.322)	(0.422)	(0.614)	(4622.859)		(0.629)
D7_rec1	−1.147**	0.862*	−0.585	1.074	−0.675		0.979
	(0.377)	(0.339)	(0.405)	(0.692)	(0.992)		(0.739)
D7_rec2	−1.344	0.869	−15.491	1.801	−19.230		0.864
	(1.081)	(0.677)	(846.929)	(0.990)	(9246.777)		(1.327)
D6_une1	0.740	−0.166	0.593	−0.022	−17.834		−16.117
	(0.517)	(0.577)	(0.610)	(1.079)	(6687.900)		(1678.260)
D4_age	0.031*	0.035***	0.035*	0.005	0.047	0.019	−0.024
	(0.012)	(0.010)	(0.014)	(0.016)	(0.039)	(0.026)	(0.020)
D10_rec	−0.136	0.252**	0.045	0.009	−0.328	−0.294	−0.251
	(0.113)	(0.098)	(0.127)	(0.167)	(0.303)	(0.286)	(0.222)
Constant	−3.008**	−4.667***	−4.409***	−3.456**	−58.902	−4.437**	−3.020*
	(0.979)	(0.799)	(1.124)	(1.269)	(7559.844)	(1.605)	(1.380)
N	394	394	394	394	394	394	394
Log Likelihood	−120.313	−167.444	−104.814	−63.785	−19.719	−26.120	−45.731
AIC	264.627	358.889	233.628	151.571	63.438	60.239	115.462

***p < .001; **p < .01; *p < .05

2 italy

Synthetic variables have been estimated for the full set of relevant parties available in the original 2019 EES ITalian voter study selected according to the criteria stated in the EES 2019 SDM codebook (for the criteria see Sect. XXX; for the relevant parties see Table 2.1).

Table 2.1: Italian relevant parties

Dep. Var.	Party	Party name (eng)
stack_1501	1501	Democratic Party
stack_1502	1502	Go Italy
stack_1503	1503	Northern League
stack_1504	1504	Five Star Movement
stack_1505	1505	Italian Left
stack_1506	1506	More Europe (+Europa)
stack_1507	1507	Brothers of Italy - National Centre-right

Full OLS models converge and coefficients do not show any particular issue (see Table 2.4). In terms of model fit, the adjusted coefficient of determination (R^2) values vary between a minimum value of 0.026 for party 1507 (Brothers of Italy - National Centre-right) and a maximum of 0.079 for party 1506 (More Europe (+Europa)). Moreover, the difference between Akaike Information Criterion (AIC) values for full OLS models and null models shows in no cases the null models perform better than full ones (see Table 2.2).

Table 2.2: Akaike Information Criterion values for OLS full and null models

Dep. Var.	Party	Full Mod.	Null Mod.	Diff. (Full-Null)
stack_1501	1501	604.084	635.702	-31.618
stack_1502	1502	379.529	426.389	-46.861
stack_1503	1503	875.306	890.751	-15.445
stack_1504	1504	680.820	708.829	-28.009
stack_1505	1505	208.266	268.839	-60.573
stack_1506	1506	271.014	333.051	-62.037
stack_1507	1507	539.212	552.821	-13.609

Also considering logistic regression models no anomalies were detected. (see Table 2.5)

In terms of model fit, adjusted McFadden's pseudo R^2 values for the logistic full models vary between a minimum value of -0.032 for party 1507 (Brothers of Italy - National Centre-right) and a maximum of 0.005 for party 1501 (Democratic Party). The differences between Akaike Information Criterion (AIC) values for logistic full models and null models shows that in 5 cases out of 7 null models perform marginally better than full ones (see Table 2.3).

Table 2.3: Akaike Information Criterion values for logistic full and null models

Dep. Var.	Party	Full Mod.	Null Mod.	Diff. (Full-Null)
stack_1501	1501	790.955	796.676	-5.721
stack_1502	1502	323.098	320.684	2.414
stack_1503	1503	1013.665	1012.910	0.756
stack_1504	1504	795.498	796.676	-1.178
stack_1505	1505	203.427	200.042	3.384
stack_1506	1506	304.503	302.061	2.442
stack_1507	1507	322.427	314.532	7.895

* AIC value refers to Model 11b (constrained).

Table 2.4: Propensity to vote for a relevant party according to respondents' socio-demographic characteristics (OLS regression models)

	1501	**1502**	**1503**	**1504**	**1505**	**1507**	
	Model 1	**Model 2**	**Model 3**	**Model 4**	**Model 5**	**Model 6**	**Model 7**
D3_rec2	0.020	−0.024	0.006	−0.022	0.055**	0.067***	−0.017
	(0.022)	(0.020)	(0.026)	(0.023)	(0.018)	(0.019)	(0.022)
D8_rec1	0.052	0.014	0.003	0.015	−0.023	−0.012	0.009
	(0.032)	(0.028)	(0.037)	(0.034)	(0.026)	(0.028)	(0.031)
D5_rec1	0.007	−0.012	0.003	0.056*	0.031	0.003	0.008
	(0.025)	(0.022)	(0.029)	(0.026)	(0.020)	(0.021)	(0.024)
EDU_rec2	0.010	−0.020	−0.087	−0.064	−0.047	−0.048	0.028
	(0.039)	(0.035)	(0.045)	(0.041)	(0.032)	(0.033)	(0.038)
EDU_rec3	0.066	−0.045	−0.189***	−0.074	0.017	0.010	−0.021
	(0.041)	(0.036)	(0.047)	(0.042)	(0.033)	(0.034)	(0.039)
D1_rec1	0.182***	0.083**	−0.002	0.009	0.148***	0.136***	0.027
	(0.030)	(0.027)	(0.035)	(0.032)	(0.024)	(0.026)	(0.029)
D7_rec1	0.034	0.089***	0.005	−0.025	−0.018	0.037	0.060*
	(0.025)	(0.022)	(0.028)	(0.026)	(0.020)	(0.021)	(0.024)
D7_rec2	0.064	0.095**	0.014	−0.147***	0.018	0.103**	0.095*
	(0.040)	(0.035)	(0.047)	(0.042)	(0.032)	(0.034)	(0.039)
D4_age	0.0001	−0.002**	−0.001	−0.004***	−0.002***	−0.003***	−0.0005
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
D10_rec	0.002	0.020***	0.021***	0.016**	−0.009*	0.0004	0.019***
	(0.005)	(0.004)	(0.006)	(0.005)	(0.004)	(0.004)	(0.005)
Constant	0.177**	0.272***	0.530***	0.577***	0.319***	0.335***	0.219***
	(0.064)	(0.056)	(0.074)	(0.067)	(0.052)	(0.054)	(0.062)
N	902	903	904	904	896	872	899
R-squared	0.056	0.071	0.038	0.052	0.086	0.090	0.037
Adj. R-squared	0.045	0.061	0.028	0.041	0.076	0.079	0.026

***p < .001; **p < .01; *p < .05

Table 2.5: Vote choice for a relevant party according to respondents' socio-demographic characteristics (Logistic regression models)

	1501	**1502**	**1503**	**1504**	**1505**	**1507**	
	Model 1	**Model 2**	**Model 3**	**Model 4**	**Model 5**	**Model 6**	**Model 7**
D3_rec2	0.050	−0.239	−0.228	−0.111	−0.337	0.161	−0.113
	(0.184)	(0.336)	(0.156)	(0.184)	(0.457)	(0.347)	(0.336)
D8_rec1	0.613*	1.094	0.087	−0.110	−0.586	−0.176	−0.374
	(0.304)	(0.740)	(0.225)	(0.257)	(0.510)	(0.469)	(0.438)
D5_rec1	0.263	0.022	0.063	0.330	0.020	−0.660	0.303
	(0.210)	(0.369)	(0.173)	(0.209)	(0.486)	(0.355)	(0.395)
EDU_rec2	0.147	−0.639	−0.548*	0.515	−0.286	−0.387	0.662
	(0.345)	(0.540)	(0.247)	(0.351)	(0.688)	(0.670)	(0.761)
EDU_rec3	0.504	−0.456	−0.857**	0.439	−0.065	0.646	0.966
	(0.350)	(0.545)	(0.262)	(0.365)	(0.718)	(0.640)	(0.770)
D1_rec1	0.286	0.204	−0.091	−0.214	1.031*	−0.299	−1.007
	(0.238)	(0.406)	(0.210)	(0.253)	(0.492)	(0.507)	(0.616)
D7_rec1	0.219	0.870*	0.151	−0.292	−1.082*	−0.152	0.132
	(0.210)	(0.418)	(0.172)	(0.192)	(0.515)	(0.387)	(0.377)
D7_rec2	0.752*	0.466	0.388	−1.563**	−0.471	0.614	−0.013
	(0.301)	(0.638)	(0.269)	(0.485)	(0.788)	(0.527)	(0.605)
D4_age	0.016**	−0.015	0.004	−0.002	0.016	−0.008	0.010
	(0.006)	(0.011)	(0.005)	(0.006)	(0.015)	(0.011)	(0.011)
D10_rec	−0.052	0.157*	0.049	0.055	−0.202	−0.120	0.142
	(0.040)	(0.073)	(0.034)	(0.040)	(0.108)	(0.079)	(0.073)
Constant	−3.572***	−3.875***	−0.893*	−1.885***	−3.041*	−2.118*	−4.594***
	(0.581)	(1.056)	(0.431)	(0.551)	(1.196)	(0.955)	(1.111)
N	873	873	873	873	873	873	873
Log Likelihood	−384.478	−150.549	−495.833	−386.749	−90.713	−141.251	−150.214
AIC	790.955	323.098	1013.665	795.498	203.427	304.503	322.427

***p < .001; **p < .01; *p < .05