Online Appendix

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A. Data sources

Eurobarometer and ESS data. The cross-sectional pooled data set on European democracies combines estimates from Eurobarometer (EB) (1973-2002)[1] and the European Social Survey (ESS) (2002-2020).[2]

- Eurobarometer (EB) surveys are conducted twice a year in the member states of the European Union, so the country sample expands from nine (1973-1979), to ten (1980-1984), to twelve (1985-1994), and fifteen (1995-2002). Norway is polled in some years (1990-1995). We combine surveys conducted in the same year to minimize the likelihood of bias due to sample size. The series ceases to be useful from 2003 when Eurobarometer stopped polling vote intention. The European Social Survey (ESS) is conducted bi-annually and covers up to 39 European democracies and non-democracies. Country inclusion varies from wave to wave. During the years of interest to us Eurobarometer mostly used face-to-face or telephone interviews.

- The pooled EB-ESS dataset for this paper includes 865,564 respondents (524,199 in the EB; 341,365 in the ESS) who are at least 20 years old and who provided information about their vote intention (EB) or whether they voted in the prior national election (ESS); non-voters and those refusing to disclose their vote are included. This covers some 690 political parties in up to 29 European countries. Country coverage increases from eight European Union (EU) countries in 1975 to 26 EU member states plus Norway and Switzerland from 2002. Malta and Luxembourg are excluded due to patchy coverage. Until 2020, the European Social Survey used face-to-face interviews.

The unit of analysis is the individual political party with 30 or more voters in an EB/ESS survey-year. So respondent information from EB/ESS is aggregated to the individual political party. We impose a minimum threshold of 30 respondents per party to reduce the possibility of drawing a biased sample of voters.

Individual political parties are allocated in party families on the basis of their ideology, European party memberships, and self-description. Appendix B explains how we code GAL, TAN, Left and Right parties.

This paper uses information for the subset of European countries for which we have commensurate longitudinal data on the variables of interest. For Figures 1-3, eight countries meet the criterion: Belgium, Denmark, France, Germany, Ireland, Italy, Netherlands, and the UK. Tables 4-5 summarize six countries: Austria, Belgium, Denmark, France, Germany, and the Netherlands.

Historical national election surveys. We use some of the earliest national election data available for West European countries.

- The **Norwegian** Election Study for the Storting election of 7 October 1957 is a single-wave survey conducted by Stein Rokkan and Henry Valen. N=1,308 respondents for whom we have information on their vote and occupational status (Rokkan and Valen 2010).[3]

[1] Available from the Data Archive of GESIS—Leibniz Institute for the Social Sciences: https://www.gesis.org/

[2] Available from the European Social Survey: https://www.europeansocialsurvey.org/

[3] Available from the ICPSR archives: https://doi.org/10.3886/ICPSR07288.v2.

- The **German** Election Study for the Bundestag election of 15 September 1957, a four-wave panel survey conducted by the Institut für Demoskopie Allensbach. N=1,953 respondents for whom we have information on vote intention and occupational status and who responded in the third wave fielded about a week before the election.[4] The post-election survey did not ask respondents which party they voted for.
- The **British** Election Study for the House of Parliament elections of 15 October 1964, 13 March 1966, and 18 June 1970 is a four-wave crosssectional and panel study conducted by David Butler and Donald Stokes between 1963 and 1970. N=1,602 respondents for whom we have information on their vote and occupational status and who responded in the post-election survey fielded immediately *after* the 1964 elections.[5]

American National Election Data (ANES). ANES is the longest time series of political data on US public opinion, with data from every U.S. presidential election since 1948, congressional elections until 2004. Originally established at the University of Michigan, ANES is now a collaboration of Duke University, University of Michigan, The University of Texas at Austin, and Stanford University, with funding by the National Science Foundation. We use the ANES cumulative data file (1952-2020). For some sub-analyses, we also use the 2022 congressional election wave (at the time of writing, the 2024 wave was not yet released). ANES implements stratified probability sampling to obtain a population-representative sample of the US population with samples ranging between 1,000 and 2,500 respondents. Recent waves have fielded larger samples to test the validity of alternative modes of data collection, including online questionnaires alongside face-to-face interviews, telephone surveys, and mail surveys. ANES typically collects data over a period that includes pre-election, election day, and post-election phases to capture changes over time. N= 67,562 respondents for the cumulative file and N=1,585 for the 2022 sample.[6]

[4] Available from GESIS: https://doi.org/10.4232/1.11991
[5] Available from the ICPSR archives: https://www.icpsr.umich.edu/web/ICPSR/studies/7250
[6] Available from the Election Studies website: https://electionstudies.org/data-center/anes-time-series-cumulative-data-file/ and https://electionstudies.org/data-center/2022-pilot-study/

B. Coding GAL, TAN, Left and Right parties

Individual political parties are allocated in party families on the basis of their ideology (Langsæther 2023), European and international party memberships, and self-description (Kitschelt 2018; Marks and Wilson 2000), and in dialogue with existing categorizations, including von Beyme (1985), Hix and Lord (1997), the CHES expert data set (Hooghe et al. 2024; Jolly et al. 2022; Polk et al. 2017; Bakker et al. 2015; Steenbergen and Marks 2007), the Comparative Manifesto Project (CMP-MARPOR Budge et al., 2001; Klingemann et al. 2006; Volkens et al. 2020), the Eurobarometer trend file (Schmitt et al. 2005), Knutsen (2018), and ParlGov (Döring & Manow 2021).

Our baseline is the party family categorization available in the CHES waves since 1999. We extend this backwards to 1975 for the eight EU countries covered continuously by Eurobarometer, making use of the ZEUS categorization developed for the "Mannheim Eurobarometer Trend File" (GESIS study ZA3521) (Rabier et al. 2008).[7]

We regroup parties into four larger ideological blocs:

- The **GAL party bloc** encompasses Green parties (family=7); social-liberal parties; and new left parties. Social-liberal parties are liberal parties (family=3) that score on average less than 2.5 on the 0-10 GAL/TAN dimension over the years available in CHES (1999-2023); liberal parties that score on average equal or higher than 2.5 on GAL/TAN are categorized as economic liberal. New left parties are radical left parties (family=6) that score on average less than 2.5 on the 0-10 GAL/TAN dimension over the years available in CHES; radical left parties that score on average equal or higher than 2.5 on GAL/TAN are categorized as traditional radical left. For Eurobarometer, we hand-code social-liberal and new left parties using the sources listed above and complemented with online research.
- The **TAN party bloc** consists of TAN or radical nationalist parties (family=1). For Eurobarometer, we code parties as TAN when they are categorized as nationalist in the Eurobarometer classification.
- The **Left party bloc** consists of socialist/social-democratic (family=1) and traditional radical left parties (family=6 and an average of >=2.5 on GAL/TAN).
- The **Right party bloc** consists of conservative (family=3), Christian-democratic (family=4), and economic liberal parties (family=3 and average of >=2.5 on GAL/TAN).

Table B.1 lists by country and wave the political parties categorized as GAL or TAN that were presented as an option to respondents in the Eurobarometer or ESS survey.

[7] Available from GESIS: https://search.gesis.org/research_data/ZA3521

Table B.1 GAL and TAN parties by country and data source

Country	PARTY FAMILY	Eurobarometer (1975-2000)	ESS (2002-2020)
Austria[2]	TAN	Freiheitliche Partei Österreichs	FPÖ, BZÖ
	GAL	Grüne	Grüne, NEOS, PILZ
Belgium[1,2]	TAN	UDRT/RAD, Vlaams Blok, Front National	Vlaams Blok/Belang, FN
	GAL	Ecolo, Agalev	Ecolo, AGALEV/Groen!
Denmark[1,2]	TAN	Fremskridtspartiet, Danske Folkepartiet	Danske Folkepartiet, Fremskridtspartiet
	GAL	Enhedslisten – De Red-Gronne, Gronne	Rene Venstre, Socialisk Folkepartiet, Enhedslisten, Alternativet
Germany[1,2]	TAN	NPD, Republikaner, DVU	Republikaner, DVU, NDP, AFD
	GAL	Grüne, GAZ, Bunte Liste, Grüne Liste, Alternative Liste	Alliance 90/Grunen
France[1,2]	TAN	Front National	Front National/RN, MNR, MPF, RPF, Debout la France
	GAL	Ecologistes, Les Verts, Génération Ecologie	Les Verts/EELV, autres écologistes
Ireland[1]	TAN	*No option*	*No option*
	GAL	The Green Alliance/Green Party, Ecology Party	Green Party
Italy[1]	TAN	MSI, PDIUM, DN, Alleanza Nazionale	Alleanza Nazionale, Lega (Nord), Fratelli d'Italia
	GAL	Partito Radicale, Verdi, Verdi Europeano, Verdi Arcobaleno	Verdi e Sdi, CI, Sinistra Ecologia, LEU, Potere al Popolo
Netherlands[1,2]	TAN	Centrum Democraten, Centrum Partij	List Pim Fortuyn, PVV, Forum v Demokratie
	GAL	Groenlinks (CPN, PSP, PPR, EVP), D66	Groenlinks, D66, PvdD, Volt
UK[1]	TAN	*No option*	UKIP, Brexit party
	GAL	Green, SLD	Green Party, LibDem

Note: [1] included in Figures 1-3 (1975-2020); [2] included in Tables 4 and 5 (1990-2020).

C. Operationalization of variables by data source

Eurobarometer	
Vote	"If there were a general election tomorrow, which party would you support?" (VOTEINT). VOTEINT is recoded using the ZEUS coding for party families provided with the EB trend file and manually complemented with standard party family sources (see Appendix xx). Non-voters are a separate category.
Occupation	"What is your current occupation?" (OCCUP) This variable is refined from a 10-category to 18-category variable. Manual worker" was a single undivided category until 1988. Later surveys break this down into skilled manual worker, supervisor, other (unskilled) manual worker. EB has a separate category for service workers, including employees \working mainly at desk" such as white collar office worker, shop assistants, salesmen, nurses, restaurant workers, police etc. Hence, EB's manual worker category can be plausibly interpreted as composed primarily of industrial workers. Our variable takes on a value of 1 if the respondent is a manual worker and zero otherwise.[8]
Gender	"Sex": 1=male, 2=female (tiny number of missing is ignored).
Education	"How old were you when you finished/stopped your full-time education?" (Q EDUCREC) A four-category variable whereby 1=up to 15 years, 2=16-19 years, 3=20+ years, 4=still studying. A respondent is assumed to have completed post-secondary education if 20 years or older when completing education or if still studying and at least 20 years old.
Higher education	Takes on a value of 1 if the respondent studied full-time until 20 years old or more (EDUCREC=3) or still studying at the time of the survey (EDUCREC=4) and at least 20 years old, and zero otherwise.
N=524,199 eligible voters older than 20, including 8.8% non-voters.[9]	
European Social Survey	
Vote	"Some people don't vote nowadays for one reason or another. Did you vote in the last [country] national election in [month/year]?" (Q VOTE) Which party did you vote for in that election?" [Country-specific (question and) codes]. Vote choice is recoded into the party family to which the party belongs; there are separate categories for "other parties, refuse to disclose" and "did not vote."
Occupation	We adopt the Oesch (2006) classification schema that uses detailed occupational information from the ISCO classification, which is extracted from multiple questions in the survey; we use Simon Kaiser's stata command oesch (https://github.com/sikaiser/oesch). Occupation takes on the value of 1 if class8 takes on the value of 4 (production workers"), the closest equivalent to industrial worker.
Gender	Sex – male or female (assessed by the interviewer).
Education	"What is the highest level of education you have achieved?" (Q EDULVLA, Q EISCED) Country-specific categorizations recoded into a harmonized ESS variable using the five-point ES-ISCED-97 scale and, phased in from 2010, the seven-point ES-ISCED scale. The five-point scale minimizes loss of respondents in the earlier waves where edulvla and eisced are not

[8] An alternative operationalization uses—for homemakers, pensioners and students—the occupational score of their last occupation when available, but this information is not collected for all waves or countries.

[9] For a sizeable number of respondents (appr. 18.5%), party choice is coded as "don't know or not available." We exclude these here because the reasons for why voting information is not given are unclear. Including these respondents in the analysis do not affect the results.

	commensurate for a subset of respondents. Higher Education takes on a value of 1 if EDULVLA=4 (post-secondary non-tertiary education completed) or 5 (tertiary education completed) or EISCED=5, 6, or 7.
Higher educated	Takes on a value of 1 if EDULVLA=4 (post-secondary non-tertiary education completed) or EDULVLA= 5 (tertiary education completed), and zero otherwise.
N=341,365 eligible voters older than 20, including 25.0% non-voters.	

1957 German Election Study	
Vote	"If the Bundestagswahl took place tomorrow, for which party would you then vote – can you tell me from this list which party that would be? You only need to give me the relevant number" (Q v100)
Occupation	Takes on a value of 1 if "Worker" (V19=1), and zero otherwise. Farm workers (V19=2) or salaried employees (V19=4) are not considered as worker. Asked of the respondent; for the respondent-spouse without an occupational code this is asked of the breadwinner; for pensioners this is asked with respect to their former job position.
N=1,953 eligible voters, including 27.3% non-voters.	
1957 Norwegian Election Study	
Vote	"Which party did you vote for in the election?" (v019)
Occupation	Takes on a value of 1 if "workers, industry" (v245=1); "craftspeople" (v245=2); "other workers, not primary industry" (v245=3); "workers in primary industry" (v245=4), and zero otherwise. This does not include smallholders or fishermen (v245=5) or public or private functionaries (v245=6, 7). Asked for "the main respondent's occupation" or the "occupation of secondary respondent when the main respondent's occupation is not stated."
N=1,308 eligible voters, including 10.5% non-voters.	
1964 British National Election Study	
Vote	"Which party did you vote for in the 1964 elections?" (v363)
Occupation	Takes on a value of 1 if skilled manual worker (v980=5) or unskilled manual worker (v980=6), and zero otherwise. Spouses without occupational code and pensioners receive the code from the breadwinner (v964). for eligible voters (nonvoters included). N=1,602.
N=1,813 eligible voters, including 11.6% non-voters.	

American National Election Survey	
Vote	"Did you vote in the last national/congressional election?" (VCF0736) [wording differs across waves] "1=Democrat; 2=Republican; 3=Other; 0=Did not vote, NA
Gender	1=male, 2=female, 3=other (VCF0104)
Ethnicity/race	"What racial or ethnic group best describes you?" (VCF0105b) [wording differs across waves] 1= White, non-Hispanic, 2=Black non-Hispanic, 3=Hispanic, 4=Other or multiple races, non-Hispanic
Education	"What is the highest level of school you have completed or the highest degree you have received?" (VCF0110) [wording differs across waves]

	1=grade school or less (0-8 grades), 2=high school (12 grades or fewer, including non-college training), 3=some college (13 grades or more but no degree), 4= college or advanced degree
Lower-educated White	Takes on a value of 1 if Education<4 and Ethnicity/race=1, and zero otherwise
College-educated woman	Takes on a value of 1 if Gender=2 and Education=4, and zero otherwise
N=68,002 of eligible voters, including 44.3% non-voters. We use unweighted frequencies because ANES does not provide weights that are consistent over time. Separate analyses that compare weighted and unweighted results for the subset of elections for which there are commensurate weights reveal that unweighted calculations slightly underestimate the slope of *P*.	

D. Calculation of the *Party Cleavage Index (PCI)* and its components

This section demonstrates how we calculate the Party Cleavage Index ***PCI*** and its components ***C, A, S*** and ***V***. We use a representative survey that contains data for each respondent on the social characteristic of interest and their vote in the election of interest. Group properties S, C, A, and V can be derived from aggregating these two pieces of information. Our calculations take into account all eligible voters, which includes those who abstain or do not turn up to vote. Consequently, estimates for party vote size (V) tend to be lower than in official election results which typically calculate a party's vote as a proportion of total votes cast rather than a proportion of eligible voters.

Example 1 - Table 1: Workers in the German SPD in 1957

We compare the extent to which the German social democratic party is cleavaged on occupation. That is, we assess to what extent workers are (over)represented in the party's voter constituency.

	1957	2020
PCI	**27.4**	**1.9**
% workers in society (S)	47.4	14.7
% workers in SPD (C)	74.8	16.6
% workers voting for SPD (A)	34.3	29.0
% SPD vote (V)	21.7	25.6

Sources: Allensbach survey, which covers the November 1957 election (part III) (column 2); ESS round 10 (2020), which has voting in the 2017 Bundestag election (column 3).

Let's first calculate S, C, A, V, and the PCI for occupation in the 1957 election. All information can be derived from a single crosstabulation in the Allensbach survey, between a respondent's occupation and their vote. Respondents outside the formal labor market (mostly homemakers or pensioners) receive, where available, their spouse's value or their former occupation (Appendix C). We use absolute numbers for more accurate calculation.

occupation	CDU	SPD	FDP/DVP	GB/BHE	DP/FVP	BP	Zentrumsp	DRP	other	don't vot	Total
1.worker	251	317	27	45	11	2	3	2	1	266	925
	27.14	34.27	2.92	4.86	1.19	0.22	0.32	0.22	0.11	28.76	100.00
	36.27	74.76	20.61	45.00	25.00	18.18	75.00	18.18	33.33	49.91	47.36
2.farm worker	14	13	2	10	3	2	0	0	0	25	69
	20.29	18.84	2.90	14.49	4.35	2.90	0.00	0.00	0.00	36.23	100.00
	2.02	3.07	1.53	10.00	6.82	18.18	0.00	0.00	0.00	4.69	3.53
3.farmer	104	13	18	10	14	3	1	2	1	47	213
	48.83	6.10	8.45	4.69	6.57	1.41	0.47	0.94	0.47	22.07	100.00
	15.03	3.07	13.74	10.00	31.82	27.27	25.00	18.18	33.33	8.82	10.91
4.salaried employee	142	57	40	16	4	1	0	4	0	89	353
	40.23	16.15	11.33	4.53	1.13	0.28	0.00	1.13	0.00	25.21	100.00
	20.52	13.44	30.53	16.00	9.09	9.09	0.00	36.36	0.00	16.70	18.07
5.civil servant	60	11	11	7	5	0	0	0	0	37	131
	45.80	8.40	8.40	5.34	3.82	0.00	0.00	0.00	0.00	28.24	100.00
	8.67	2.59	8.40	7.00	11.36	0.00	0.00	0.00	0.00	6.94	6.71
6.self-employed	112	11	28	11	7	3	0	3	1	59	235
	47.66	4.68	11.91	4.68	2.98	1.28	0.00	1.28	0.43	25.11	100.00
	16.18	2.59	21.37	11.00	15.91	27.27	0.00	27.27	33.33	11.07	12.03
7.profession	9	2	5	1	0	0	0	0	0	10	27
	33.33	7.41	18.52	3.70	0.00	0.00	0.00	0.00	0.00	37.04	100.00
	1.30	0.47	3.82	1.00	0.00	0.00	0.00	0.00	0.00	1.88	1.38
Total	692	424	131	100	44	11	4	11	3	533	1,953
	35.43	21.71	6.71	5.12	2.25	0.56	0.20	0.56	0.15	27.29	100.00
	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

Group in society (S): 925 (cell 1,11) divided by 1,953 (cell 8,11) = 0.474

Party composition (C)=317 (cell 1,2) divided by 424 (cell 2,8) = 0.748

Group alignment (A)=317 (cell 1,2) divided by 925 (cell 1,11) = 0.343

Party vote (V)=424 (cell 8,2) divided by 1,953 (cell 8,11) = 0.217

PCI (C – S): 0.748 – 0.474 = 0.274 [or $\frac{S \cdot A}{V} - S$*: 0.474*0.343/0.217 – 0.474 = 0.274]*

Then multiply each outcome by 100 to obtain percentage points.

Now let's calculate S, C, A, V, and the PCI for the 2017 election, using the 2020 wave of the European Social Survey for Germany. Again, we can derive all information from a single crosstabulation between a respondent's occupation and their vote in the 2017 election. "Workers" are production workers, using Kaiser's stata command oesch to project scores to non-working spouses or pensioners where available (Appendix C); voting excludes those not eligible to vote or don't know (these options are not separable in ESS) but includes those who say they did not vote (under 'other'). Once again we use absolute numbers.

command oesch	other	AfD	CDU	FDP	GRUNEN	LINKE	SPD	Total
Self-employed profess	12	5	50	43	53	8	32	203
	5.91	2.46	24.63	21.18	26.11	3.94	15.76	100.00
	1.52	1.81	4.11	5.83	4.50	2.66	2.07	3.36
Small business owners	53	18	95	58	63	13	67	367
	14.44	4.90	25.89	15.80	17.17	3.54	18.26	100.00
	6.71	6.50	7.81	7.87	5.34	4.32	4.33	6.07
Technical (semi-)prof	96	31	139	94	166	42	198	766
	12.53	4.05	18.15	12.27	21.67	5.48	25.85	100.00
	12.15	11.19	11.43	12.75	14.08	13.95	12.81	12.67
Production workers	164	99	166	74	87	39	257	886
	18.51	11.17	18.74	8.35	9.82	4.40	29.01	100.00
	20.76	35.74	13.65	10.04	7.38	12.96	16.62	14.65
(Associate) managers	104	28	278	207	260	38	325	1,240
	8.39	2.26	22.42	16.69	20.97	3.06	26.21	100.00
	13.16	10.11	22.86	28.09	22.05	12.62	21.02	20.51
Clerks	113	29	189	108	131	41	218	829
	13.63	3.50	22.80	13.03	15.80	4.95	26.30	100.00
	14.30	10.47	15.54	14.65	11.11	13.62	14.10	13.71
Socio-cultural (semi-	109	31	176	91	318	86	272	1,083
	10.06	2.86	16.25	8.40	29.36	7.94	25.12	100.00
	13.80	11.19	14.47	12.35	26.97	28.57	17.59	17.91
Service workers	139	36	123	62	101	34	177	672
	20.68	5.36	18.30	9.23	15.03	5.06	26.34	100.00
	17.59	13.00	10.12	8.41	8.57	11.30	11.45	11.11
Total	790	277	1,216	737	1,179	301	1,546	6,046
	13.07	4.58	20.11	12.19	19.50	4.98	25.57	100.00
	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

Group in society (S): 886 (cell 4,8) divided by 6,046 (cell 9,8) = 0.147

Party composition (C)=257 (cell 4,7) divided by 1,546 (cell 9,7) = 0.166

Group alignment (A)=257 (cell 4,7) divided by 886 (cell 4,8) = 0.290

Party vote (V)=1,546 (cell 9,7) divided by 6,046 (cell 9,8) = 0.256

PCI (C – S): 0.166 – 0.147 =0.019 [or $\frac{S \cdot A}{V} - S$*: 0.147*0.290/0.256 – 0.147=0.019]*

Then multiply each outcome by 100 to obtain percentage points.

Tables 2 and 3 are calculated in the same way.

Example 2 - Table 4: *PCI* and its components for higher educated in GAL parties in six countries

Table 4 compares the extent to which GAL parties are cleavaged on education in the early 1990s and the late 2010s. That is, we assess to what extent higher educated are (over)represented in the party's voter constituency.

Table 4. *PCI* and its components for higher educated in GAL parties in six countries

	1990-1994	2016-2020
PCI	**14.4**	**22.2**
% higher educated in society (S)	29.8	46.8
% higher educated in GAL party (C)	44.2	69.0
% higher educated voting GAL (A)	19.8	22.3
% GAL vote (V)	14.4	15.2

Note: Columns report *PCI* and its components for GAL parties averaged over two time periods for Austria, Belgium, Denmark, France, Germany, the Netherlands. Country averages are estimated across five Eurobarometer waves or across the three most recent ESS waves. For Austria, coverage starts in 1995, the first year that Eurobarometer surveys the country; for Denmark, we use 2014 and 2018 because ESS was not fielded in 2016 and 2020. Calculations are derived from survey estimates and include non-voters.

The outcomes in Table 4 are generated in the following steps:

1. We calculate **S, C, A, V,** and the **Party Cleavage Index (PCI)** for the early 1990s. We pool Eurobarometer data for the years 1990-1994 by country, and we do this for each of six countries: Belgium, Denmark, France, Germany, the Netherlands, and Austria. For Austria, the four years covered are 1995-2000; 1995 is the first year that Eurobarometer surveys the country.
2. Next, we calculate for each PCI-component the average across these six countries, and we multiply these scores by 100 to obtain percentage points.
3. We transport the aggregate scores **for PCI, S, C, A,** and **V** into Table 4.

This exercise is repeated for the late 2010s, for which we pool waves 8, 9, and 10 of the European Social Survey by country, for the same six countries. For Denmark, we use wave 7 and 9 because ESS was not fielded in wave 8 and 10.

1. The first step follows the same protocol as for Example 1, except that the crosstabulation is between an education dichotomy (postsecondary education or not) and party choice.
2. The second and third step produce the table below:

	1990-1994					2016-2020				
	PCI	% higher educated *in society* (S)	% higher educated *in GAL party* (C)	% higher educated *voting for GAL* (A)	% *voting GAL* (V)	PCI	% higher educated *in society* (S)	% higher educated *in GAL party* (C)	% higher educated *voting for GAL* (A)	% *voting GAL* (V)
Germany	13.830	22.580	36.410	15.380	9.540	18.040	55.090	73.130	24.610	18.540
Netherlands	10.850	33.940	44.790	36.150	27.390	19.530	46.820	66.350	40.780	28.780
Austria	19.420	18.370	37.790	22.780	11.070	29.200	37.220	66.420	22.780	12.760
Belgium	17.930	33.160	51.090	20.050	13.010	18.590	53.700	72.290	15.920	11.820
France	7.360	29.150	36.510	15.580	12.440	26.020	41.340	67.360	11.300	6.940
Denmark	17.070	41.370	58.440	8.900	6.300	21.620	46.650	68.270	18.150	12.400
MEAN	**14.410**	**29.762**	**44.172**	**19.807**	**13.292**	**22.167**	**46.803**	**68.970**	**22.257**	**15.207**

Sources: Eurobarometer survey for earlier period; European Social Survey for later period.

Table 5 is calculated the same way to measure the cleavagedness of TAN parties in those six countries. We assess to what extent lower educated are (over)represented in TAN parties' voter constituency. TAN parties emerged later than Green parties so we move the time line forward by half a decade: we use Eurobarometer surveys of 1995-2000 for the earlier period and European Social Survey waves for the later period (2016-2020). Again, for Denmark we use 2014 and 2018.

The input-table for Table 5 looks as follows:

	1995-2000					2016-2020				
	PCI	% lower educated *in society* (S)	% lower educated *in TAN party* (C)	% lower educated *voting for TAN* (A)	% *voting TAN* (V)	PCI	% lower educated *in society* (S)	% lower educated *in TAN party* (C)	% lower educated *voting for TAN* (A)	% *voting TAN* (V)
Germany	9.100	74.780	83.880	2.140	1.910	17.320	44.910	62.230	6.830	4.930
Netherlands	9.100	74.780	83.880	2.140	1.910	25.360	53.180	78.540	11.820	8.000
Belgium	12.770	64.930	77.700	10.220	8.540	7.670	46.130	53.800	6.000	5.140
France	18.800	65.770	84.570	6.850	5.320	19.370	58.660	78.030	10.660	8.020
Austria	3.600	81.630	85.230	18.270	17.500	16.250	62.780	79.030	14.760	11.720
Denmark	11.690	51.890	63.580	8.390	5.890	26.060	53.350	79.410	17.850	11.990
MEAN	**10.843**	**68.963**	**79.807**	**8.002**	**6.845**	**18.672**	**53.168**	**71.840**	**11.320**	**8.300**

Sources: Eurobarometer survey for earlier period; European Social Survey for later period.

E. Replication

Harvard Dataverse: https://doi.org/10.7910/DVN/UF9873
Liesbet's homepage: https://hooghe.web.unc.edu
Gary's homepage: https://garymarks.web.unc.edu

F. References

ANES Time Series Cumulative Data File [dataset and documentation]. September 16, 2022 version: www.electionstudies.org

Bakker, Ryan, Erica Edwards, Liesbet Hooghe, Seth Jolly, Gary Marks, Jonathan Polk, Jan Rovny, Marco Steenbergen, and Milada Vachudova (2015). 'Measuring Party Positions in Europe: The Chapel Hill Expert Survey Trend File, 1999-2010', *Party Politics* 21 (1): 143-153.

Beyme, Klaus von (1985). *Political Parties in Western Democracies*. London: St. Martin's Press.

Budge, Ian, Hans-Dieter Klingemann, Andrea Volkens, Judith Bara, and Erik Tanenbaum (2001). *Mapping Policy Preferences: Estimates for Parties, Electors, and Governments, 1945-1998*. Oxford University Press.

Butler, David and Donald E. Stokes. 1979. *Political Change in Britain, 1963-1970*. ICPSR 7250.

Döring, Holger and Philip Manow (2016/2019/2021). *Parliaments and Governments database (ParlGov): Information on Parties, Elections and Cabinets in Modern Democracies*. Development version (available https://parlgov.org).

ESS Rounds 1-10: European Social Surveys. Sikt - Norwegian Agency for Shared Services in Education and Research, Norway – Data Archive and distributor of ESS data for ESS ERIC. https://ess.sikt.no/en/data-builder/?tab=round_country.

Hix, Simon and Christopher Lord (1997). *Political Parties in the European Union*. Oxford: Oxford University Press.

Hooghe, Liesbet, Gary Marks, Ryan Bakker, Seth Jolly, Jon Polk, Jan Rovny, Marco Steenbergen, Milada Vachudova. 2024. 'The Russian Threat and the Consolidation of the West: How Populism and EU-skepticism shape party support for Ukraine', *European Union Politics* 25(3), 459-482.

Institut für Demoskopie Allensbach 2015. *Election Study 1957*. GESIS Data Archive, Cologne. ZA3272 Data file Version 2.0.0, https://doi.org/10.4232/1.11991

Jolly, Seth, Ryan Bakker, Liesbet Hooghe, Gary Marks, Jonathan Polk, Jan Rovny, Marco Steenbergen, and Milada Vachudova (2022). 'Chapel Hill Expert Survey Trend File, 1999-2019', *Electoral Studies* 75, 102420 https://doi.org/10.1016/j.electstud.2021.102420.

Kitschelt, Herbert (2018). 'Party Families and Political Ideologies', *Oxford Research Encyclopedia of Politics*. Oxford University Press.

Klingemann, Hans-Dieter, Andrea Volkens, Judith Bara, Ian Budge, Michael McDonald (2006). *Mapping Policy Preferences II: Estimates for Parties, Electors, and Governments in Eastern Europe, European Union, and OECD 1990-2003*. Oxford: Oxford University Press.

Knutsen, Oddbjørn (2018). *Social Structure, Value Orientations and Party Choice in Western Europe*. London: Palgrave.

Langsæther, Peter Egge (2023). *Party Families in Western Europe*. London: Routledge.

Marks, Gary, and Carole Wilson (2000). 'The Past in the Present: A Theory of Party Response to European Integration', *British Journal of Political Science* 30(3): 433–59.

Marks, Gary, David Attewell, Liesbet Hooghe, Jan Rovny, and Marco Steenbergen (2023). 'The Social Bases of Political Parties: A New Measure and Survey', *British Journal of Political Science* 53(1): 249 – 260.

Oesch, Daniel. (2006). 'Coming to Grips with a Changing Class Structure', *International Sociology* 21(2): 263-288.

Polk, Jonathan, Jan Rovny, Ryan Bakker, Jelle Koedam, Seth Jolly, Liesbet Hooghe, Gary Marks, Marco Steenbergen, and Milada Vachudova (2017). 'Explaining the Salience of Anti–Elitism and Reducing Political Corruption for Political Parties in Europe with the 2014 Chapel Hill Expert Survey Data', *Research &* Politics 1 (January–March): 1–9.

Rabier, Jacques-René, Karlheinz Reif, and Anna Melich (2008). *The Mannheim Eurobarometer Trend File 1970-2002 (ed. 2.00)*. GESIS Data Archive, Cologne. ZA3521 Data file Version 2.0.1, https://doi.org/10.4232/1.10074

Rokkan, Stein, and Henry Valen. 2010. *Norwegian Election Study 1957*. Inter-university Consortium for Political and Social Research [distributor], 2010-11-30. https://doi.org/10.3886/ICPSR07288.v2

Schmitt, Hermann, Evi Scholz, with Iris Leim and Meinhard Moscher (2005). '*The Mannheim Eurobarometer Trend File 1970–2002*', Mannheim: MZES [ZA3521].

Steenbergen, Marco and Gary Marks (2007). 'Evaluating Expert Judgments', *European Journal of Political Research* 46(3): 347-366.

Volkens, Andrea, Tobias Burst, Werner Krause, Pola Lehmann, Theres Matthieß, Nicolas Merz, Sven Regel, Bernhard Weßels, and Lisa Zehnter (2020). '*The Manifesto Data Collection. Manifesto Project (MRG/CMP/MARPOR). Version 2020*', Berlin: Wissenschaftszentrum Berlin für Sozialforschung (WZB). https://doi.org/10.25522/manifesto.mpds.2020a.