

Mapping Public Opinion onto Political Axes Using Language Models

Ho Yan IP

School of Physical and Mathematical Sciences, Nanyang Technological University, Singapore

Keywords: spatial voting, manifesto project, language models, political dimensions, European Social Survey

Extended Abstract

Motivation. In the 2017 Bundestag election, the Alternative for Germany (AfD) entered parliament with 12.6% of the vote after the European refugee crisis; Austria’s 2017 election saw a parallel shift under Kurz’s immigration-centred campaign. These outcomes suggest that the traditional economic and socio-cultural dimensions may not always explain electoral competition, immigration can become the salient dimension. Did the dominant dimension of competition actually rotate, shifted, or scaled temporarily? To test this and form a microscopic model requires placing voters and parties in the same multi-dimensional policy space over time. Existing methods rely on indirect external anchors, for example voters’ perceptions of parties or voters’ stated party preferences. This does not measure voters and parties with the same instrument. We propose a direct, apples-to-apples comparison using a generative large language model (LLM) and a manifesto classifier to map voters and parties into a shared space derived from the Comparative Manifesto Project (CMP) framework [3].

Approach and Methodology. We analyse the European Social Survey (ESS), a cross-national attitudinal survey conducted biennially since 2002, rounds 1–11 [2] across eight countries, focusing on Germany (6 rounds, ~2,800 respondents each) and Austria (5 rounds, ~2,300 each), matched to national elections via the Manifesto Project Dataset. For each Likert-scale question, we extract high/low endpoint statements and paraphrase each 4,000 times using an LLM (Llama 3.1, 8B parameters, fixed seeds). Paraphrases are segmented into quasi-sentences and classified into 56 CMP policy categories by ManifestoBERTa [1], the same classifier used for party manifestos. Three axes (economic, social, immigration) are constructed from CMP category groupings following O’Grady & Abou-Chadi [4], giving right- and left-side counts per axis for each question’s high and low anchors. A respondent’s Likert response interpolates between these anchor counts; the interpolated counts are summed across all questions and converted to a relative score per axis, placing each respondent in the three-axis space. Parties are scored identically from manifesto data. Bootstrap resampling (1,000 iterations over both respondents and paraphrases) generate a population density in the same CMP space as parties (Fig. 1). Vote shares are predicted by a parameter-free Borda proximity model and evaluated by Spearman ρ (Table 1).

Results. In early rounds, the economic×social axis dominates election prediction (Germany 2005, $\rho = +0.90$; 2009, $+1.00$; Table 1). The immigration dimension gains predictive power at ESS6 (2013, $\rho = +0.64$), when AfD first entered parliament. At the refugee crisis (ESS8, 2016–17), economic×social collapses in Germany ($\rho = -0.37$) and Austria (-0.77), while economic×immigration rises sharply (Germany $+0.89$, Austria $+0.83$). Post-crisis, economic×social partially recovers in Germany ($+0.82$ for the 2021 election). Countries where immigration was already salient (Netherlands) or irrelevant (Portugal) show no shift.

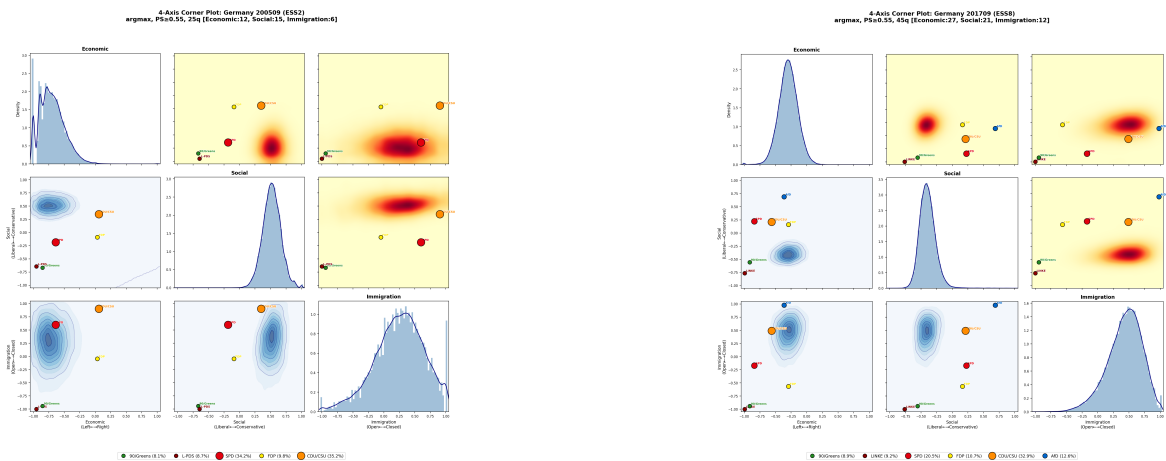
Conclusions and Outlook. By combining a generative LLM with a manifesto classifier, we position voters and parties in a shared policy space without external anchoring, and find that the dominant dimension of competition rotated to immigration during the refugee crisis. The framework can be applied to any attitudinal survey to measure where the electorate stands on policy axes, without requiring election-specific questions. The heatmaps also reveal that population and party positions do not fully overlap; whether this reflects LLM paraphrasing bias or genuine manifesto–voter divergence is left to future work.

References

- [1] T. Burst, P. Lehmann, S. Franzmann, D. Al-Gaddooa, C. Ivanusch, S. Regel, F. Riethmüller, B. Weßels, and L. Zehnter. manifestoberta. version 56topics.context.2024.1.1, 2024.
- [2] European Social Survey European Research Infrastructure (ESS ERIC). ESS rounds 1–11, 2002–2025. DOIs: 10.21338/NSD-ESS1-2002 through 10.21338/ESS11-2023.
- [3] P. Lehmann, S. Franzmann, D. Al-Gaddooa, T. Burst, C. Ivanusch, S. Regel, F. Riethmüller, A. Volkens, B. Weßels, and L. Zehnter. The manifesto data collection. manifesto project (mrg/cmp/marpor). version 2025a, 2025.
- [4] T. O’Grady and T. Abou-Chadi. Not so responsive after all: European parties do not respond to public opinion shifts across multiple issue dimensions. *American Journal of Political Science*, 2019.

Table 1: Dimension rotation in Germany. Spearman ρ between Borda-predicted and actual vote shares. Bold marks the refugee crisis round.

Round	Election	E×S	E×I	S×I	E×S×I	Best
ESS2	2005	+0.90	+0.60	+0.60	+0.60	E×S
ESS4	2009	+1.00	+0.80	+1.00	+0.90	E×S
ESS6	2013	+0.46	+0.64	+0.18	+0.46	E×I
ESS8	2017	−0.37	+0.89	+0.89	+0.89	E×I
ESS9	2021	+0.82	+0.71	+0.57	+0.57	E×S



(a) ESS2 → 2005 election (5 parties)

(b) ESS8 → 2017 election (6 parties)

Figure 1: Population heatmaps for Germany. Bivariate density of respondent positions with party markers scaled by actual vote share. In (b), AfD (12.6%) appears on the immigration-closed pole.