

# Macrointerest Across Countries

November 10, 2024

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## Abstract

The extent to which the public takes an interest in politics has long been argued to be foundational to democracy, but the want of appropriate data has prevented cross-national and longitudinal analysis. This letter takes advantage of recent advances in latent-variable modeling of aggregate survey responses and a comprehensive collection of survey data to generate dynamic comparative estimates of macrointerest, that is, aggregate political interest, for over a hundred countries over the past four decades. These macrointerest scores are validated with other aggregate measures of political interest and of other types of political engagement. A cross-national and longitudinal analysis of macrointerest in advanced democracies reveals that along with election campaigns and inclusive institutions, it is good economic conditions, not bad times, that spur publics to greater interest in politics. //

**Keywords:** Political interest, dynamic comparative public opinion (DCPO), cross-national time-series analysis, public survey, democracy, OECD.

The public’s interest in politics has long been argued to be fundamental to democracy, the foundation for the widespread civic engagement needed to hold elected officials accountable to citizen demands (see, e.g., Almond and Verba 1963). More than just boosting engagement, political interest critically determines the quality of political decisions and behaviors, influencing factors like time spent, information collection and utilization, and critical assessment of partisan claims (see, e.g., Lane, Do, and Molina-Rogers 2022). In light of the growing threats to democracy seen in many countries, measuring the levels and trends of aggregate political interest—macrointerest—and understanding their sources is therefore crucially important (see, e.g., Foa and Mounk 2016, 10–11).

A recent contribution, Peterson et al. (2022), measures macrointerest over time in the United States, but similar data allowing for large-scale cross-sectional time-series assessments have as yet been unavailable. Although many surveys ask respondents across countries how interested they are in politics, differences in question wording and in response categories have limited scholars’ ability to pool the data together, and even in the absence of these issues, in most countries the questions have not been asked sufficiently frequently to provide annual time series.

This letter takes advantage of recent advances in latent-variable modeling of cross-national aggregate survey responses and a comprehensive collection of survey data to generate dynamic comparative estimates of aggregate political interest for over a hundred countries over the past four decades. It shows that these cross-national macrointerest scores perform well in validation tests. Finally, as a demonstration of their utility, the letter presents a new test of theories on the circumstances that induce the publics of advanced democracies to take more interest in politics. The results support arguments that, in these countries, election campaigns, inclusive institutions, and good economic conditions, not bad times, spur greater political interest.

# Cross-National Macrointerest: The Source Data

National and cross-national surveys have asked questions on political interest often over the past four decades, but the resulting data are both sparse, that is, unavailable for many countries and years, and incomparable, generated by many different survey items. In all, 54 such survey items were asked in no fewer than five country-years in countries surveyed at least twice; these items were drawn from 396 different survey datasets (see online Appendix A).

Together, the survey items in the source data were asked in 127 different countries in at least three time points over the 41 years from 1982 to 2023, yielding a total of 2,738 country-year-item observations. Observations for every year in each country surveyed would number 5,207, and a complete set of country-year-items would encompass 281,178 observations. Compared to this hypothetical complete set of country-year-items, the available data are very, very sparse. More optimistically, there are 1,821 country-years in which there is at least *some* information about the public’s interest in politics, that is, some 57% of the 3,220 country-years spanned by these data. Still, the multitude of different survey items makes these data incomparable and difficult to use together.

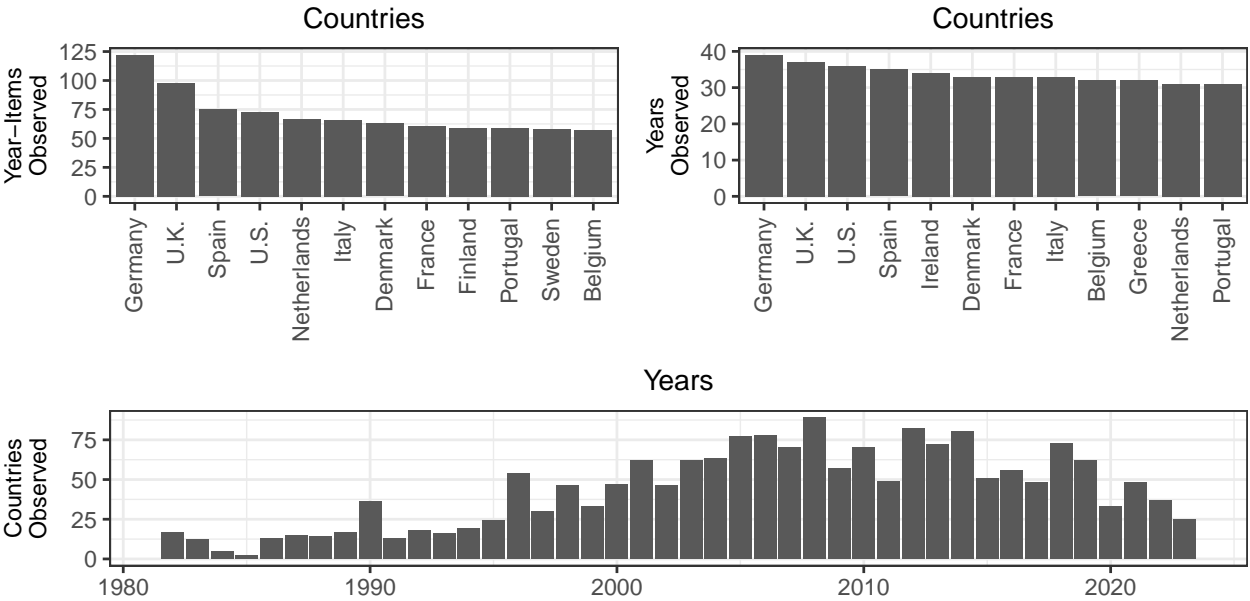


Figure 1: Countries and Years with the Most Observations in the Source Data

In the top left panel of Figure 1, the twelve countries with the most country-year-item observations are displayed. Germany, with 122 observations, is the best represented country in these source data, followed by the United Kingdom, Spain, the United States, and the Netherlands. At the other end of the scale, there are seven countries—Azerbaijan, Cambodia, Kosovo, Kyrgyzstan, Liberia, Myanmar (Burma), and Puerto Rico—that have only the bare minimum three observations needed to be included in the source dataset at all. In the top right panel are the dozen countries with the most observed years; this group is similar to that on the left, but with Ireland and Greece adding to the list and Finland and Sweden dropping off. The bottom panel shows the number of countries observed in each year. Coverage across countries reached its apex in 2008, when respondents in 89 countries were asked at least one item about their interest in politics. The next section describes how this sparse and incomparable survey data was used together with a latent variable model to generate complete time series of macrointerest scores that are comparable across countries.

### **Estimating Cross-National Macrointerest**

Several recent studies have developed latent variable models of aggregate survey responses based on cross-national survey data (see Claassen 2019; Caughey, O’Grady, and Warshaw 2019; McGann, Dellepiane-Avellaneda, and Bartle 2019; Kolczynska et al. 2020). To estimate the public’s interest in politics across countries and over time, this work employs the latest of these methods that is appropriate for data that are both incomparable and sparse, the Dynamic Comparative Public Opinion (DCPO) model elaborated in Solt (2020b). Solt (2020b) demonstrates that the DCPO model provides a better fit to survey data than the models put forward by Claassen (2019) or Caughey, O’Grady, and Warshaw (2019). The McGann, Dellepiane-Avellaneda, and Bartle (2019) model depends on dense survey data unlike the sparse data on interest in politics described in the preceding section. Kolczynska et al. (2020) is the very most recent of these five works and builds on each of the others, but the MRP approach developed in that piece is suitable not only when the available survey data are dense but also when ancillary data on population characteristics are available, so it

is similarly inappropriate to this application. The dyad ratio algorithm employed in Peterson et al. (2022), of course, leverages only over time variation within a single country and not variation across countries, making it a poor choice for generating cross-national estimates (see Caughey, O’Grady, and Warshaw 2019, 686).<sup>1</sup> The DCPO model is a population-level two-parameter ordinal logistic item response theory model with country-specific item-bias terms. For a comprehensive description of the DCPO model, see Appendix B and Solt (2020b, 3–8); the focus here is on how it deals with the two principal issues raised by the source data, incomparability and sparsity.

The DCPO model accounts for incomparability using three sets of parameters. First, it incorporates the *difficulty* of each question’s responses, that is, how much interest in politics is indicated by a given response. This is most evident with respect to response categories: to say that one is “very interested” in politics, for example, is to exhibit more interest than to say that one is “somewhat interested” or “not very interested.” Here, difficulty is permitted to vary with question wording and the survey project as well. Second, the DCPO model accounts for each question’s *dispersion*, its noisiness with regard to our latent trait. The lower the dispersion, the better that changes in responses to the question map onto changes in macrointerest. Third, to provide for the possibility that translation issues or cultural differences result in the same question being interpreted differently in different countries, the model estimates *country-specific bias* parameters that shift the difficulty of all responses for a particular question in a particular country. Together, the model’s difficulty, dispersion, and country-specific bias parameters work to generate comparable estimates of the latent variable of macrointerest from the available but incomparable source data.<sup>2</sup>

To address sparsity in the source data—unpolled or thinly surveyed years in each country—DCPO uses simple local-level dynamic linear models, i.e., random-walk priors, for each country. That is, within each country, each year’s value of macrointerest is modeled as the previous year’s estimate plus a random shock. These dynamic models smooth the

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<sup>1</sup>Appendix F compares our estimates for the United States with the estimates presented in Peterson et al. (2022).

<sup>2</sup>For how other data issues, such as sample representation, may affect the estimated outcome, see Appendix B.

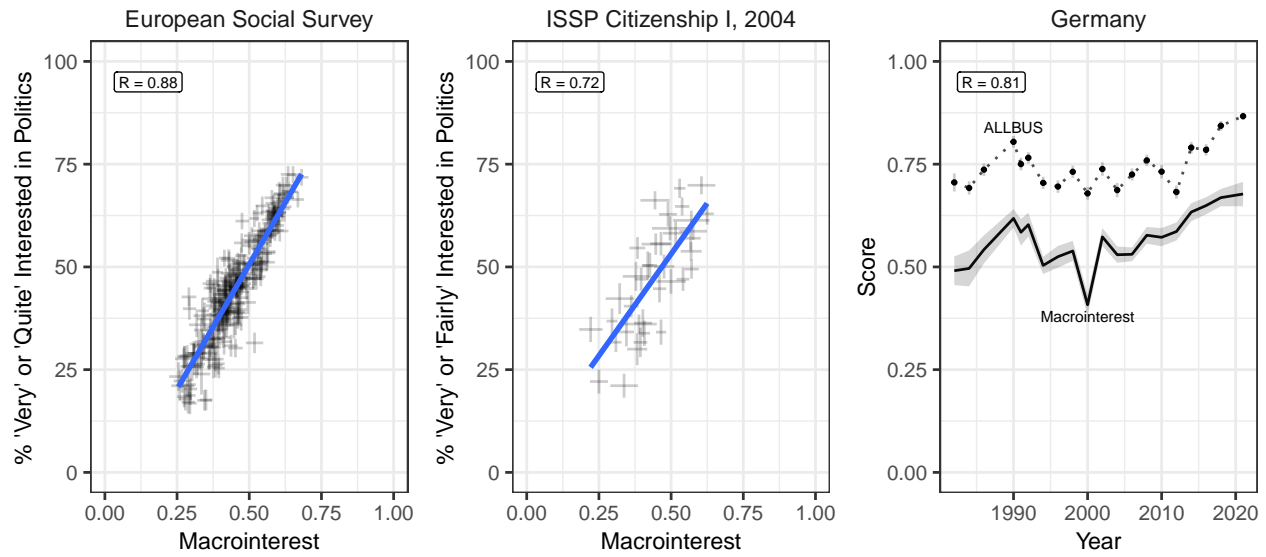
estimates of macrointerest over time and allow estimation even in years for which little or no survey data is available, albeit at the expense of greater measurement uncertainty.

The model was estimated using the `DCP0tools` package for R (Solt, Hu, and Tai 2019), running four chains for 1,000 iterations each and discarding the first half as warmup, leaving 2,000 samples. The  $\hat{R}$  diagnostic had a maximum value of 1.01, indicating that the model converged. The dispersion parameters of the survey items indicate that all of them load well on the latent variable (see Appendix A). The result is estimates, in all 3,220 country-years spanned by the source data, of the mean political interest of the public, that is, macrointerest.

## Validating Cross-National Macrointerest

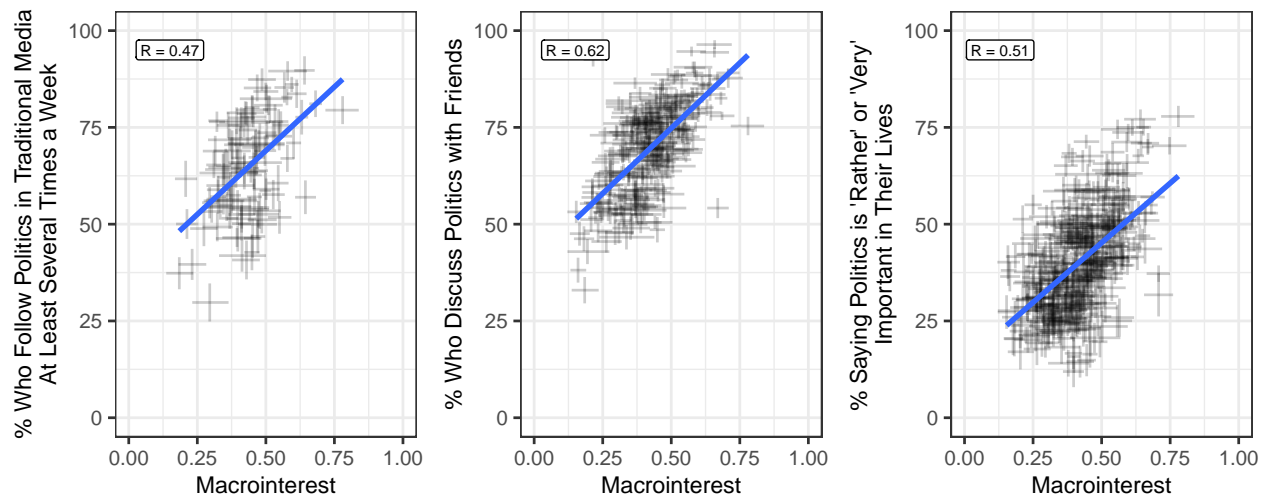
That we can generate estimates of macrointerest does not automatically mean that they are suitable for analysis. As is the case for any new measure, validation tests of cross-national latent variables are crucially important (see, e.g., Hu et al. 2023). Figures 2 and 3 provide evidence of this measure’s validity with tests of convergent validation and construct validation. Convergent validation refers to tests of whether a measure is empirically associated with alternative indicators of the same concept (Adcock and Collier 2001, 540). In Figure 2, the macrointerest scores are compared to responses to individual source-data survey items that were used to generate them; this provides an ‘internal’ convergent validation test (for an example in a similar context, see Caughey, O’Grady, and Warshaw 2019, 686).

On the left, macrointerest scores are plotted against the percentage of respondents across all country-years who offered the two most interested responses on the European Social Survey’s four-point item, “How interested are you in politics?” The middle panel shows responses to the question with the most data-rich cross-section, “How interested would you say you personally are in politics?” in the ISSP’s 2004 Citizenship module. Finally, the right panel evaluates how well the macrointerest scores capture change over time by focusing on the item with the largest number of observations for a single country in the source data, which asked respondents to Germany’s ALLBUS, “How interested in politics are you?” In all three cases, the correlations, estimated taking into account the uncertainty in the measures,



Note: Gray whiskers and shading represent 80% credible intervals.

Figure 2: Internal Convergent Validation: Correlations Between Macrointerest and Individual Source-Data Survey Items



Note: Gray whiskers and shading represent 80% credible intervals. Survey items sourced from World Values Study and European Values Study.

Figure 3: Construct Validation: Correlations Between Macrointerest and Other Aspects of Political Engagement



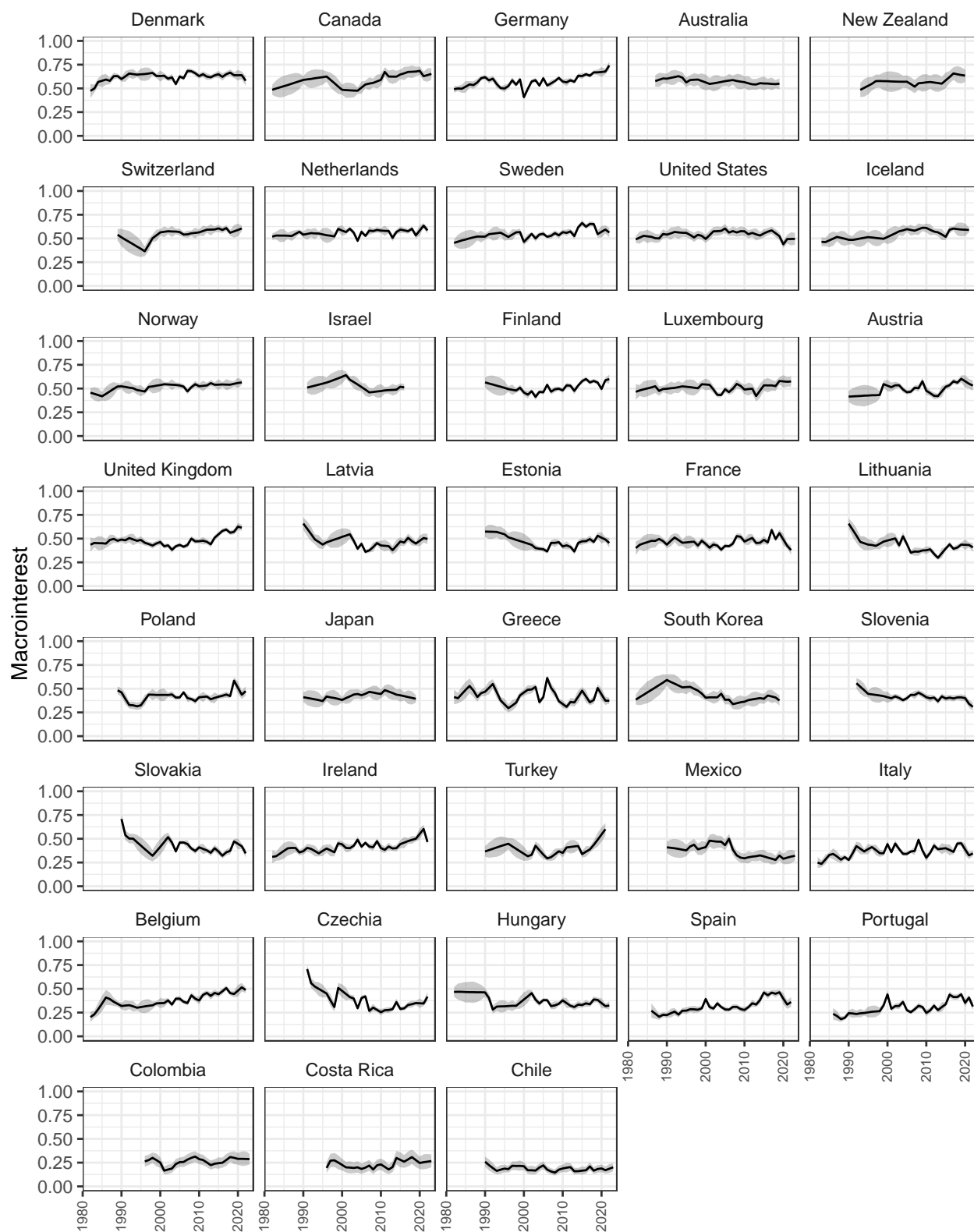
are strong.

Construct validation refers to demonstrating, for some *other* concept believed causally related to the concept a measure seeks to represent, that the measure is empirically associated with measures of that other concept (Adcock and Collier 2001, 542). Figure 3 depicts the relationships between macrointerest and three survey items from the WVS and EVS on other aspects of political engagement that are expected to have causal relationships with political interest (see Kittilson and Schwindt-Bayer 2010, 995): in the left panel, following political news on television, radio, and newspapers; in the center panel, discussing politics with friends; and on the right, feeling politics is important to one's life. These relationships are all positive and are moderate to strong. This cross-national latent variable of macrointerest performs well in validation tests.

### **Testing Theories of Macrointerest Cross-Nationally**

The best developed theories of macrointerest concern the advanced democracies, and even among these relatively similar countries, macrointerest varies greatly. Figure 4 examines levels and trends in macrointerest in advanced democratic countries by displaying the changes of the public's expressed interest in politics over time in the thirty-seven democracies of the OECD (Appendix D presents these macrointerest data for all available countries). While macrointerest scores approach and often exceed .6 in countries such as Denmark and Canada, in Chile they scarcely cross .25. And although the public's political interest has held fairly steady over decades in many countries, in Czechia it dropped nearly half of the variable's entire theoretical range over the 1990s and 2000s before rebounding slightly since 2010, and increases of roughly a quarter of that range can be seen in, among others, Germany. There are considerable differences in the extent to which the public professes interest in politics both across countries and over time.

What accounts for these differences? The literature offers a range of arguments for how the political context may influence the public's interest in politics. Perhaps the most straightforward is that publics grow more interested in politics at election time. Campaigns



Note: Countries are ordered by their median macrointerest score; gray shading represents 80% credible intervals.

Figure 4: Macrointerest Scores Over Time Within OECD Democracies

and elections attract media coverage and increase the information available to the public on the issues being contested, leading to increased interest in politics (see, e.g., Larsen 2022). Macrointerest within a country should be expected to be higher, therefore, in years in which national elections take place than in years without elections.

A second argument is that political institutions that share power, rather than concentrate it, yield politics that are more interesting and engaging. Building on Lijphart (1999) and Powell (2000), Kittilson and Schwindt-Bayer (2010, 992) argues that power-sharing institutions—parliamentarism, federalism, and proportional electoral rules—“send signals of inclusiveness to citizens, generating greater political engagement” while power-concentrating institutions “may generate perceptions of exclusion and deter involvement.” Macrointerest should be higher in countries with parliamentary and federal systems than in those without those features, and it should decline as the disproportionality between votes cast and seats won increases.

A third claim deals with the public’s demand for accountability. Peterson et al. (2022, 203) argues “when there is information that something has gone wrong...then voters should be more likely to attend to the actions of elected officials,” but when “there is evidence of success...voters should not waste their energies.” If democracy is a principal-agent problem with elected officials acting as self-interested agents and the public as their lazy but vengeful principal, then macrointerest should rise when times are bad and decline as conditions improve.

A final set of theories—each well established—contradicts the third. Modernization theory holds that the public’s interest will increase as the national economy grows and household incomes expand (see, e.g., Inglehart and Welzel 2005). Unemployment has long been argued to not to motivate but to depress political interest (see, e.g., Rosenstone 1982, 26). And the relative power theory holds that greater income inequality, by increasingly concentrating political power in the hands of the wealthy, allows them greater power to shape the political agenda in ways that discourage the broader public from taking interest (see, e.g., Solt 2008). In each of these circumstances, macrointerest is argued to increase in good, not bad,

economic conditions (see also Stimson 2015; Peterson et al. 2022, 206).

Data to test these hypotheses are drawn from several sources. The Democratic Electoral Systems (DES) dataset updated in Bormann and Golder (2022) provides information about the timing of elections, yielding a dichotomous variable coded one in election years and zero when no election was held. The three institutional variables are measured as in Kittilson and Schwindt-Bayer (2010). Data on parliamentarism, a dichotomous variable coded one in pure parliamentary systems and zero otherwise, is sourced from the DES. Federalism is likewise dichotomous, coded one in countries with strong federal systems (see Lijphart 1999) and zero in all others. Proportionality in the electoral system is measured using the Gallagher least-squares index of disproportionality, which measures the disparity between parties' vote shares and their seat shares (Gallagher 1991, 40–41; 2023). The context of good and bad economic conditions was measured with data on GDP per capita, national GDP growth, and unemployment from OECD.Stat (OECD 2023) and on the Gini index of disposable income inequality from the Standardized World Income Inequality Database (Solt 2020a).

The resulting dataset comprises the thirty-seven OECD democracies, each observed in twenty-one (Mexico) to forty (Ireland, Italy, the United Kingdom, and the United States) consecutive years (mean: 33.7 years, median: 33 years). Even among these relatively data-rich countries, our measure of macrointerest provides much more data than would otherwise be available: the richest single survey for these cases, the European Social Survey, covers only 18% of these country-years, does not provide annual data, and of course excludes entirely the nine OECD members in the Americas and around the Pacific Rim (see Appendix C).

Shor et al. (2007) demonstrates that such pooled time series are best analyzed using a Bayesian multilevel model including varying intercepts for each country and each year. The former help account for heteroskedasticity across space due to, e.g., omitted variable bias, while permitting the inclusion of time-invariant predictors such as parliamentarism and federalism. The latter take into account 'time shocks' that operate on all countries simultaneously (Shor et al. 2007, 171–72). Further, the 'within-between random effects' specification is employed, meaning each of the time-varying predictors is decomposed into

its time-invariant country mean and the difference between each country-year value and this country mean; this specification is superior to fixed effects and other commonly used TSCS specifications for addressing omitted variable bias and endogeneity (Bell and Jones 2015). The time-varying difference variables capture the short-term effects of the predictors, while the time-invariant country-mean variables reflect their—often different—long-run, “historical” effects (Bell and Jones 2015, 137). Moreover, as we employ a Bayesian analysis, it is straightforward to incorporate the measurement uncertainty in the data for both macrointerest and income inequality directly into the model, with the estimated values of these variables treated as random draws from distributions with unknown true means but known standard deviations (McElreath 2016, 425–31; see also Kurz 2023, 15.1.2). The model was estimated using the `brms` R package (Bürkner 2017).

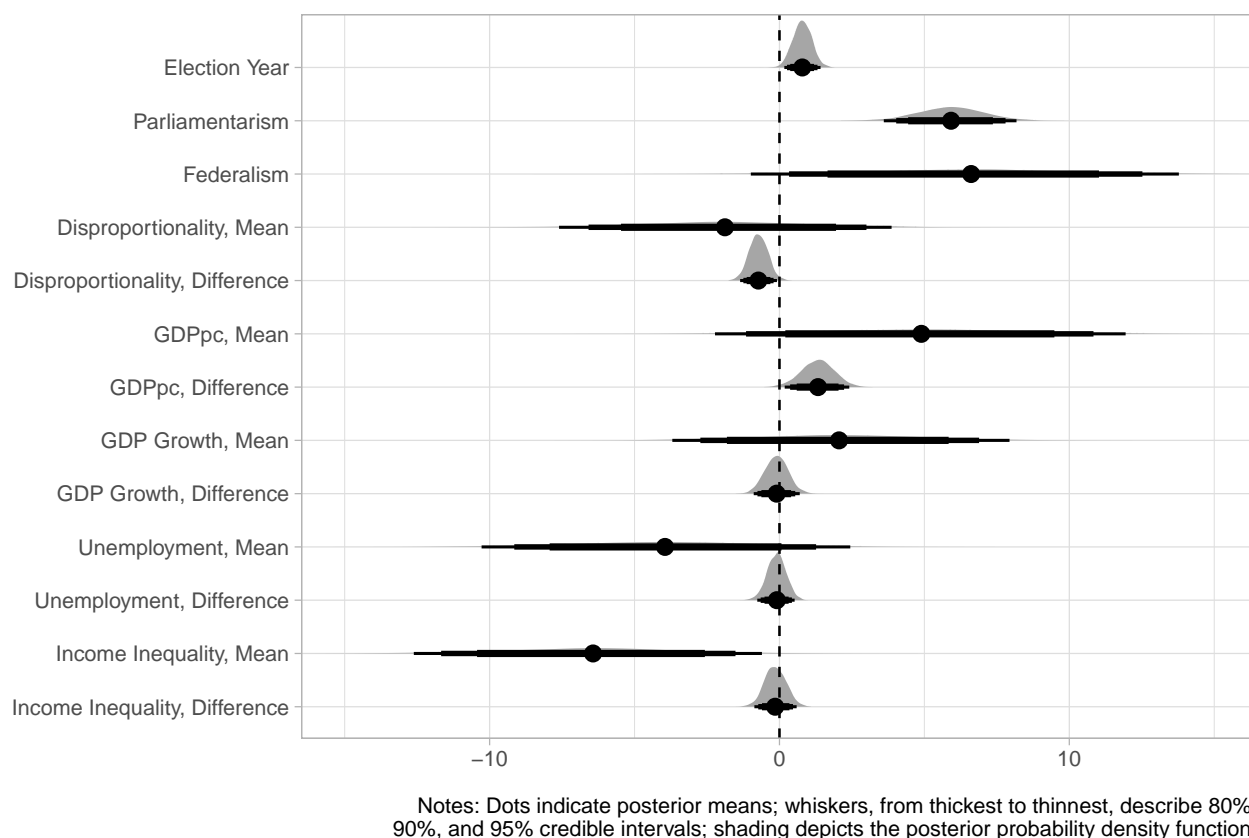


Figure 5: Predicting Macroeconomic Interest in OECD Democracies

Figure 5 displays the results.<sup>3</sup> Consistent with the argument that campaigns bring attention-grabbing information to the public, macrointerest in election years is found to be 0.8 points (95% credible interval: 0.2 to 1.4 points) higher than in years without elections. This accords with previous research finding small but well-estimated increases in political interest in election years (see, e.g., Larsen 2022).

The hypothesis that power-sharing institutions yield more public interest in politics is also supported. Macrointerest is estimated to be 5.9 (95% c.i.: 3.6 to 8.2) points higher in countries with parliamentary systems. The point estimate for the difference in macrointerest between countries with and without federalism is estimated be 6.6 points, with 95.8% of the posterior distribution greater than zero. And although disproportionality is not estimated to have long-run effects that consistently distinguish countries with more or less proportional electoral results, *changes* in disproportionality appear to have an immediate negative effect: a two-standard-deviation increase in the Gallagher index yields 0.7 points less macrointerest (95% c.i.: -1.4 to -0.1).

Regarding the debate on whether macrointerest is invigorated or instead discouraged by bad times, the evidence of our cross-national analysis of the impact of economic conditions falls on the side of the latter. Supporting modernization theory, increases in per capita GDP have a positive short-term effect on aggregate political interest, with a two-standard-deviation increase associated with 1.3 (95% c.i.: 0.2 to 2.4) points more macrointerest. The point estimate for the long-term, historical effect as evidenced by differences in mean levels across countries is found to be 4.9 points, albeit with only 90.6% of the posterior distribution greater than zero. As predicted by relative power theory, the long-term effects of income inequality are strongly negative, with a two-standard-deviation difference across countries associated with 6.4 points less macrointerest (95% c.i.: -12.6 to -0.6 points). Year-to-year changes in income inequality are found to make little difference—it would seem that, from one perspective, the influence of the wealthy over the political agenda does not change on such a short time scale, and from the other, that the public does not react to worsening conditions in the distribution of income with greater interest in its agents’ actions. The

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<sup>3</sup>Appendix E provides a tabular version.

results with regard to growth in the national economy and with regard to unemployment similarly do not provide strong evidence of either negative or positive effects. Still, taken as a whole, this evidence indicates that at least with regard to economic conditions, it is good times, not bad ones, that yield more macrointerest.

## Conclusions

Macrointerest, despite its theoretical importance, has as yet drawn only limited empirical attention. This oversight largely reflects the paucity of available data to measure this important concept. The cross-national macrointerest dataset presented here addresses this issue, providing annual time series across more than a hundred countries and allowing more and better tests of the wide range of theories that implicate the public's interest in politics. For example, while the cross-sectional analysis in Kittilson and Schwindt-Bayer (2010, 997–99) finds that, among the three inclusive institutions it considered, only the disproportionality of electoral results influenced political interest and engagement, the pooled time-series analysis presented here indicates parliamentarism, federalism, and proportionality all yield greater macrointerest as that work theorizes. And although the single-country study in Peterson et al. (2022, 219) concludes that bad times prompt increased macrointerest, this evidence shows the opposite, that at least with regard to economy it is *good* conditions that lead the public to take interest in politics. By drawing on information about *both* differences across countries *and* change over time, it appears these data on cross-national macrointerest provide a firmer basis for drawing sound conclusions. The cross-national macrointerest dataset is available on the Harvard Dataverse for use in the further investigation of these and other theories on the causes and consequences of aggregate political interest as well as its relationships with other aspects of political engagement.

## References

- Adcock, Robert, and David Collier. 2001. "Measurement Validity: A Shared Standard for Qualitative and Quantitative Research." *American Political Science Review* 95 (3): 529–46.
- Almond, Gabriel A., and Sidney Verba. 1963. *The Civic Culture: Political Attitudes and Democracy in Five Nations*. Princeton: Princeton University Press.
- Bell, Andrew, and Kelvyn Jones. 2015. "Explaining Fixed Effects: Random Effects Modeling of Time-Series Cross-Sectional and Panel Data." *Political Science Research and Methods* 3 (1): 133–53.
- Bormann, Nils-Christian, and Matt Golder. 2022. "Democratic Electoral Systems Around the World, 1946–2020." *Electoral Studies* 78: 102487.
- Bürkner, Paul-Christian. 2017. "brms: An R Package for Bayesian Multilevel Models Using Stan." *Journal of Statistical Software* 80: 1–28.
- Caughey, Devin, Tom O'Grady, and Christopher Warshaw. 2019. "Policy Ideology in European Mass Publics, 1981–2016." *American Political Science Review* 113 (3): 674–93.
- Claassen, Christopher. 2019. "Estimating Smooth Country–Year Panels of Public Opinion." *Political Analysis* 27 (1): 1–20.
- Foa, Roberto Stefan, and Yascha Mounk. 2016. "The Danger of Deconsolidation: The Democratic Disconnect." *Journal of Democracy* 27 (3): 5–17.
- Gallagher, Michael. 1991. "Proportionality, Disproportionality and Electoral Systems." *Electoral Studies* 10 (1): 33–51.
- . 2023. "Election Indices Dataset."
- Hu, Yue, Yuehong Cassandra Tai, Hyein Ko, Byung-Deuk Woo, and Frederick Solt. 2023. "Support for Democracy Is Multidimensional: Why Unidimensional Latent Variable Measures of Democratic Support Are Invalid." SocArXiv. <https://osf.io/preprints/socarxiv/rym8g/>.
- Hu, Yue, Yuehong Cassandra Tai, and Frederick Solt. 2022. "On Data 'Janitor Work' in Political Science: The Case of Thermostatic Support for Democracy." SocArXiv.



<https://doi.org/10.31235/osf.io/kd7mu>.

- Inglehart, Ronald, and Christian Welzel. 2005. *Modernization, Cultural Change, and Democracy*. Cambridge: Cambridge University Press.
- Kittilson, Miki Caul, and Leslie Schwindt-Bayer. 2010. “Engaging Citizens: The Role of Power-Sharing Institutions.” *Journal of Politics* 72 (4): 990–1002.
- Kolczynska, Marta, Paul-Christian Bürkner, Lauren Kennedy, and Aki Vehtari. 2020. “Trust in State Institutions in Europe, 1989-2019.” SocArXiv. <https://osf.io/preprints/socarxiv/3v5g7/>.
- Kurz, A. Solomon. 2023. *Statistical Rethinking with brms, ggplot2, and the tidyverse: Second Edition*. Version 0.4.0.
- Lane, Daniel S., Kevin Do, and Nancy Molina-Rogers. 2022. “Testing Inequality and Identity Accounts of Racial Gaps in Political Expression on Social Media.” *Political Communication* 39 (1): 79–97.
- Larsen, Erik Gahner. 2022. “Dynamic Political Interest: How Personality Differences and the Political Environment Shape Political Interest.” *British Journal of Political Science* 52 (1): 467–74.
- Lijphart, Arend. 1999. *Patterns of Democracy: Government Forms and Performance in Thirty-Six Countries*. New Haven: Yale University Press.
- McElreath, Richard. 2016. *Statistical Rethinking: A Bayesian Course with Examples in r and Stan*. Chapman & Hall/CRC Texts in Statistical Science Series.
- McGann, Anthony, Sabastian Dellepiane-Avellaneda, and John Bartle. 2019. “Parallel Lines? Policy Mood in a Plurinational Democracy.” *Electoral Studies* 58: 48–57.
- OECD. 2023. “OECD.stat.” <https://doi.org/10.1787/data-00285-en>.
- Peterson, David A. M., Joanne M. Miller, Kyle L. Saunders, and Scott D. McClurg. 2022. “Macrointerest.” *British Journal of Political Science* 52 (1): 200–220.
- Powell, Jr., G. Bingham. 2000. *Elections as Instruments of Democracy*. New Haven: Yale University Press.
- Rosenstone, Steven J. 1982. “Economic Adversity and Voter Turnout.” *American Journal*

*of Political Science* 26 (1): 25–46.

Shor, Boris, Joseph Bafumi, Luke Keele, and David Park. 2007. “A Bayesian Multilevel Modeling Approach to Time-Series Cross-Sectional Data.” *Political Analysis* 15 (2): 165–81.

Solt, Frederick. 2008. “Economic Inequality and Democratic Political Engagement.” *American Journal of Political Science* 52 (1): 48–60.

———. 2020a. “Measuring Income Inequality Across Countries and over Time: The Standardized World Income Inequality Database.” *Social Science Quarterly* 101 (3): 1183–99.

———. 2020b. “Modeling Dynamic Comparative Public Opinion.” SocArXiv. <https://osf.io/preprints/socarxiv/d5n9p>.

Solt, Frederick, Yue Hu, and Yuehong Tai. 2019. “DCPOtools: Tools for Dynamic Comparative Public Opinion.” <https://github.com/fsolt/DCPOtools>.

Stimson, James A. 2015. *Tides of Consent: How Public Opinion Shapes American Politics*. Second edition. New York: Cambridge University Press.

# Macrointerest Across Countries

November 10, 2024  
Supplementary material

## A Survey Items Used to Estimate Macrointerest

National and cross-national surveys have often included questions tapping interest in politics over the past four decades, but the resulting data are both sparse, that is, unavailable for many countries and years, and incomparable, generated by many different survey items. In all, we identified 54 such survey items that were asked in no fewer than five country-years in countries surveyed at least twice; these items were drawn from 396 different survey datasets. These items are listed in Table A1 below, along with the dispersion ( $\alpha$ ) and difficulty ( $\beta$ ) scores estimated for each from the DCPO model. Lower values of dispersion indicate questions that better identify publics with a higher level of trust from those with lower. Items have one less difficulty score than the number of response categories.

In accordance with the advice offered by Hu, Tai, and Solt (2022) to avoid data-entry errors by automating data collection, the `DCPOtools` R package (Solt, Hu, and Tai 2019) was used to compile the responses to these questions. The current version of the software facilitates the entire practical data generation process: from facilitating the acquisition of original survey datasets and converting them into R standard format for quicker loading; through standardizing country names, identifying survey years, and extracting the desired survey items; to restructuring the resulting data for analysis with the DCPO model. The primary objective is to limit manual interventions, thereby maximizing reproducibility and reducing the error potential inherent in human-operated data preparation tasks. The survey dataset codes listed in Table A1 correspond to those used in that package; Table ?? lists the codes of each individual survey with the citation of each dataset.

Together, the survey items in the source data were asked in 127 different countries in at least two time points over 41 years, from 1982 to 2023, yielding a total of 2,738 country-year-item observations.<sup>1</sup> The number of items observed in the source data for each country-year is plotted in Figures A1 and A2 below. The macrointerest scores of country-years with more observed items are likely to be estimated more precisely. The estimates for country-years with fewer (or no) observed items rely more heavily (or entirely) on the random-walk prior and are therefore less certain.

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<sup>1</sup>A few surveys—`ees1989`, `issp1990`, and `evs_combo`—include Northern Ireland but do not provide a sampling weight to include those respondents in the United Kingdom as a whole. For clarity, we removed them from the estimation. The estimated trends and conclusions do not change by including or excluding the small amount of data on Northern Ireland.

Table A1: Survey Items Used to Estimate Macrointerest

Survey Item Code	Country-Years	Question Text	Response Categories	Dispersion	Difficulties	Survey Dataset Codes*
int4\_wvs	282	How interested would you say you are in politics?	1 Very interested / 2 Somewhat interested / 3 Not very interested / 4 Not at all interested	0.70	-0.57, 0.83, 2.64	wvs
int4\_lb	263	How interested are you in politics?	1 Very interested / 2 Fairly interested / 3 A little interested / 4 Not at all interested	1.02	-0.75, 1.15, 3.13	lb
int4\_ess	256	How interested are you in politics?	1 Very interested / 2 Quite interested / 3 Hardly interested / 4 Not at all interested	0.63	-0.39, 1.00, 2.62	ess, ress
int4\_amb	190	How interested are you in politics?	1 A lot / 2 Some / 3 Little / 4 None	1.09	-1.04, 0.96, 2.95	amb
eu4\_eb	168	Would you say that you are very interested, fairly interested, not very interested or not at all interested in European affairs?	1 Very interested / 2 Fairly interested / 3 Not very interested / 4 Not at all interested	0.70	-0.81, 0.76, 2.85	eb
int4\_evs	130	How interested would you say you are in politics?	1 Very interested / 2 Somewhat interested / 3 Not very interested / 4 Not at all interested	0.99	-0.76, 0.93, 3.18	evs
int3\_eb	126	Let us talk about those issues in the news which interest you. For each issue I read out, tell me if you are very interested, moderately interested or not at all interested in it. Politics	1 Very interesting / 2 Moderately interesting / 3 Not at all interesting	0.81	-0.36, 1.98	eb
int4\_ees	116	To what extent would you say you are interested in politics?	1 A great deal / 2 To some extent / 3 Not much / 4 Not at all	0.45	-0.41, 0.78, 2.10	ees
int4\_issp	106	How interested would you say you personally are in politics?	1 Very interested / 2 Fairly interested / 3 Not very interested / 4 Not at all interested	0.62	-0.54, 0.90, 2.63	issp
int5\_issp	101	How interested would you say you personally are in politics?	1 Very interested / 2 Fairly interested / 3 Somewhat interested / 4 Not very interested / 5 Not at all interested	0.70	-0.89, 0.35, 1.61, 3.02	issp
int4\_afrob	100	How interested are you in politics and government?	1 Very interested / 2 Somewhat interested / 3 Now and then / 4 Not interested	0.58	-0.84, 0.35, 1.98	afrob
int4\_eb	74	To what extent would you say you are interested in politics?	1 A great deal / 2 To some extent / 3 Not much / 4 Not at all	0.76	-0.61, 0.94, 2.74	eb
int4\_asianb	63	How interested would you say you are in politics?	1 Not at all interested / 2 A little interested / 3 Somewhat interested / 4 Very interested	0.76	-0.57, 0.96, 2.93	asianb, sasianb
int2\_eb	59	What sort of things in life interest you a lot? I am going to show you a list of things. which of these really interest you? Politics in [country]	1 Mentioned / 2 Not mentioned	1.32	2.46	eb

Table A1: Survey Items Used to Estimate Macroiinterest (*continued*)

Survey Item Code	Country-Years	Question Text	Response Categories	Dispersion	Difficulties	Survey Dataset Codes*
int2c\_eb	52	For each of the following propositions, please tell me if it rather corresponds or rather does not correspond to your attitude or your opinion. You are very interested in politics	1 Yes, rather / 2 No, rather does not	1.36	1.05	eb, feb
int4\_cnep	49	Would you say that you are very, somewhat, not very or not at all interested in politics?	0 Not at all interested / 1 Not very interested / 2 Somewhat interested / 3 Very interested	0.59	-0.61, 0.77, 2.38	cnep
int4\_arabb	35	Generally speaking, how interested would you say you are in politics?	1 Very interested / 2 Interested / 3 Little interested / 4 Not interested	0.58	-0.06, 1.29, 2.75	arabb
int4\_neb	31	How interested are you in politics?	1 Very interested / 2 Somewhat interested / 3 Not very interested / 4 Not at all interested	1.03	-0.57, 1.24, 3.60	neb
int5\_bsa	30	How much interest do you have in politics?	1 A great deal / 2 Quite a lot / 3 Some / 4 Not very much / 5 Not at all	1.21	-1.93, -0.02, 1.87, 3.88	bsa
dom4\_eb	29	Would you say that you are very interested, fairly interested, not very interested or not at all interested in domestic affairs?	1 Very interested / 2 Fairly interested / 3 Not very interested / 4 Not at all interested	0.47	-0.93, 0.25, 1.80	eb
int2a\_eb	28	Please tell me if you are fairly interested or not in each of the following topics? Politics	1 Interested / 2 Not interested	0.92	0.88	cceb, eb
int4a\_eb	28	To what extent do the following topics interest you? Would you say you are very interested, fairly interested, not very interested or not at all interested in ...? Politics and economics in	1 Very interested / 2 Fairly interested / 3 Not very interested / 4 Not at all interested	0.82	-1.36, 0.27, 2.19	cceb, eb
int2b\_eb	27	In which of the following news related issues are you most interested in...? Politics	0 Not mentioned / 1 Mentioned	0.90	1.37	eb
eu4a\_eb	27	Some people follow what's going on in European Union politics, whether there's an election going on or not. Others aren't that interested. Would you say you follow what's going on in European Union politics:	1 Most of the time / 2 From time to time / 3 Rarely / 4 Never or almost never	1.21	-1.86, 0.07, 2.71	eb
int5\_polit	26	How interested are you in politics?	1 Very strong / 2 Strong / 3 Somewhat / 4 Hardly / 5 Not at all	1.26	-2.65, -1.07, 1.63, 4.06	politbarometer

Table A1: Survey Items Used to Estimate Macrointerest (*continued*)

Survey Item Code	Country-Years	Question Text	Response Categories	Dispersion	Difficulties	Survey Dataset Codes*
int4b\_eb	25	For each of the following statements, please tell me if it applies to you often, sometimes, rarely or never. I am interested in what is going on in politics	1 Often / 2 Sometimes / 3 Rarely / 4 Never	0.64	-0.88, 0.17, 1.36	eb
int4\_uspew	24	Some people seem to follow what's going on in government and public affairs most of the time, whether there's an election or not. Others aren't that interested. Would you say you follow what's going on in government and public affairs	1 Most of the time / 2 Some of the time / 3 Only now and then / 4 Hardly at all	0.84	-1.56, -0.25, 1.28	uspew
int4a\_arabb	23	Generally speaking, how interested would you say you are in politics?	1 Very interested / 2 Interested / 3 Uninterested / 4 Very uninterested	1.12	0.26, 2.01, 3.97	arabb
int5\_allbus	20	How interested in politics are you?	1 Very strongly / 2 Strongly / 3 Middling / 4 Very little / 5 Not at all	1.10	-1.74, -0.01, 2.21, 3.90	allbus
int4a\_ases	18	How interested are you in politics?	1 Very interested / 2 Fairly interested / 3 Not very interested / 4 Not at all interested	0.50	-0.70, 0.66, 1.67	ases
int3a\_eb	16	In everyday life, we have to deal with many different problems and situations, where we feel more or less interested and confident. I am going to read you a number of statements. I am interested in what is going on in politics	1 Most of the time / 2 Some of the time / 3 Hardly any of the time	0.75	0.02, 1.53	eb
int3\_afrob	16	How interested are you in public affairs?	0 Not interested / 1 Somewhat interested / 2 Very interested	0.72	-0.80, 1.59	afrob
int5\_fsdeva	15	I am interested in politics and follow it actively	1 Strongly agree / 2 Agree to some extent / 3 Difficult to say / 4 Disagree to some extent / 5 Strongly disagree	0.69	-0.38, 0.67, 0.99, 2.32	fsdeva
int4\_aes	15	How much interest do you usually have in what's going on in politics?	1 A good deal / 2 Some / 3 Not much / 4 None	0.76	-1.63, 0.05, 1.91	aes, nsss
int4\_anes	13	Some people seem to follow	1 Hardly at all / 2 Now and then / 3 Some of the time / 4 Most of the time	0.97	-1.03, 0.54, 2.40	anes
int4\_cid	12	In general, how interested are you in politics?	1 Very interested / 2 Fairly interested / 3 Not very interested / 4 Not at all interested	0.54	-0.18, 1.09, 2.42	cid
int5\_icenes	12	Do you consider your interest in politics...	1 Very great / 2 Great / 3 Some / 4 Little / 5 None	0.80	-1.47, 0.32, 2.17, 3.54	icenes

Table A1: Survey Items Used to Estimate Macroiinterest (*continued*)

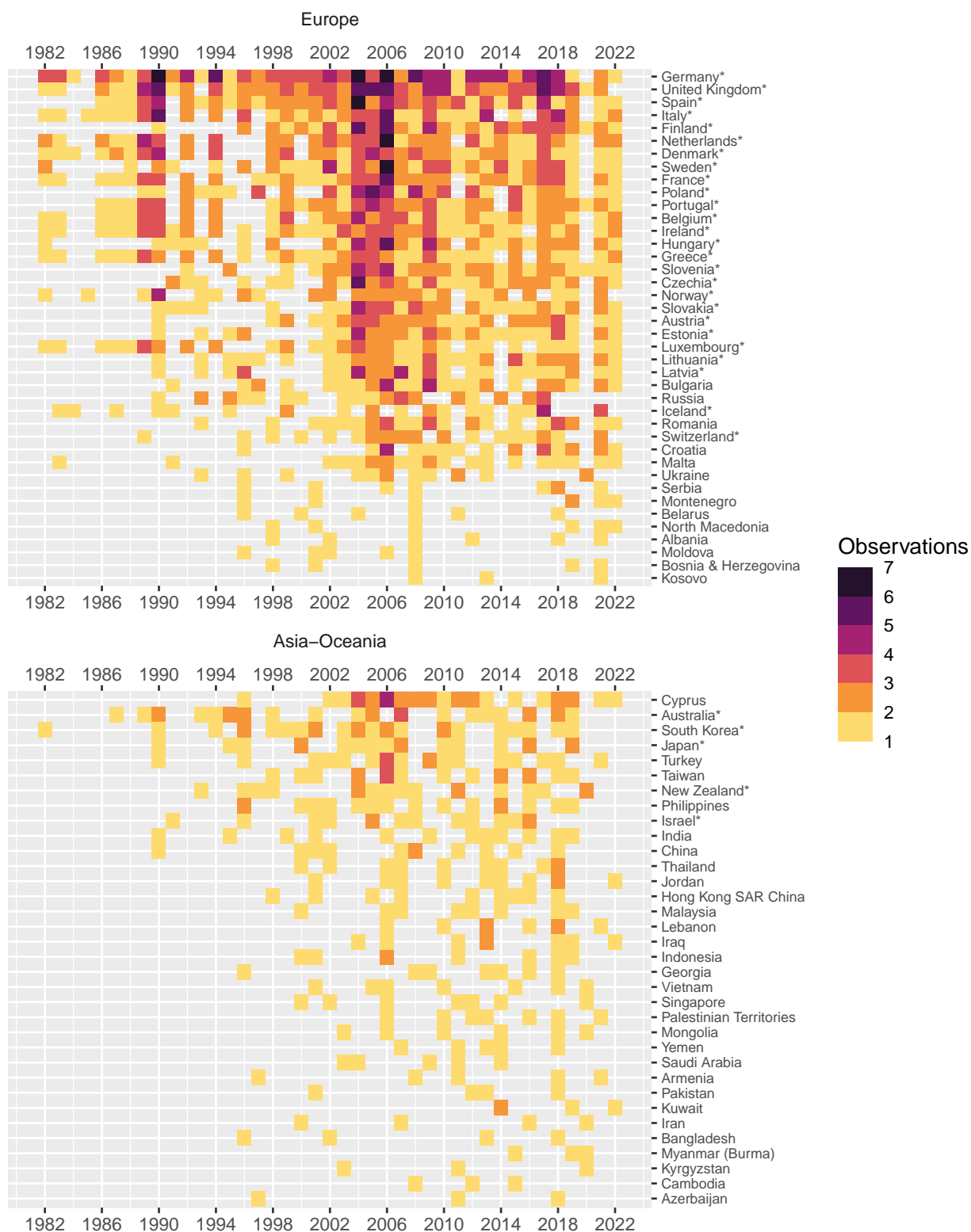
Survey Item Code	Country-Years	Question Text	Response Categories	Dispersion	Difficulties	Survey Dataset Codes*
int4\_cces	10	Some people seem to follow what's going on in government and public affairs most of the time, whether there's an election going on or not. Others aren't that interested. Would you say you follow what's going on in government and public affairs most of the time, some of the time, only now and then, or hardly at all?	1 Most of the time / 2 Some of the time / 3 Only now and then / 4 Hardly any of the time	1.00	-1.89, -0.54, 1.09	cces
int4\_itanes	10	How interested are you in politics?	1 Very much / 2 Somewhat / 3 A little / 4 Not at all	0.08	-0.16, 0.72, 1.76	itanes
int5\_pgss	10	How interested would you say you personally are in politics?	1 Extremely interested / 2 Very much interested / 3 Fairly interested / 4 A little interested / 5 Not at all interested	0.79	-0.93, 0.37, 2.31, 3.65	pgss
int4\_nes	9	How interested are you in politics?	1 Very interested / 2 Fairly interested / 3 Not very interested / 4 Not at all interested	0.51	-0.49, 0.88, 2.59	anes, autnes, bes, ptvs
int4\_dkes	9	How interested are you in politics?	1 Very / 2 Somewhat / 3 Only a little / 4 Not at all	0.56	-0.58, 1.01, 2.44	dkes
int4\_snes	9	How interested would you say you personally are in politics?	1 Very interested / 2 Fairly interested / 3 Not very interested / 4 Not at all interested	0.73	-0.80, 1.04, 2.94	snes
int4\_pew	8	Generally speaking, how much interest would you say you have in politics ...	1 No interest at all / 2 Only a little / 3 A fair amount / 4 A great deal	1.10	-1.18, 1.04, 3.13	pew
int3\_npes	8	How interested are you in politics?	1 Very interested / 2 Fairly interested / 3 Not interested	0.31	0.48, 2.04	npes
int4\_nores	8	In general, how interested are you in politics?	1 Very interested / 2 Fairly interested / 3 A little interested / 4 Not at all interested	0.60	-0.89, 0.81, 2.53	nores
int4\_nzes	8	How interested would you say you personally are in politics?	1 Very interested / 2 Somewhat interested / 3 Slightly / 4 Not at all	0.47	-0.95, 0.60, 1.97	nzes
int5\_gles	7	Generally speaking, you are interested in politics	1 Very strongly / 2 Fairly strongly / 3 Moderately / 4 Less strongly / 5 Not at all	0.54	-0.55, 0.50, 1.67, 2.82	gles, ges
int5\_nes	7	Some people are very interested in politics. Others are not interested at all. Are you very interested in politics, or are you not at all interested?	1 Very interested / 2 A lot / 3 More or less / 4 A little / 5 None	0.20	-0.82, 0.22, 1.23, 2.33	belgiumes, bes
int11\_ces	7	How interested are you in politics generally?	0 No interest at all / 123456789 / 10 A great deal of interest	1.01	-1.86, -1.46, -0.89, -0.35, 0.10, 0.87, 1.43, 2.26, 3.37, 4.14	canadianes
int4\_kobar	7	How interested are you in politics these days?	1 A lot / 2 Some / 3 Not much / 4 Not at all	0.71	-0.77, 0.70, 2.20	kobar
int4a\_evs	6	How interested would you say you are in politics?	1 I take an active interest in politics / 2 I am interested in politics but don't t / 3 My interest in politics is not greater / 4 I'm not interested in politics at all	0.76	-0.50, 0.93, 3.05	evs

Table A1: Survey Items Used to Estimate Macrointerest (*continued*)

Survey Item Code	Country-Years	Question Text	Response Categories	Dispersion	Difficulties	Survey Dataset Codes*
int3\_polit	5			0.72	0.35, 2.44	politbarometer
int4\_vpcpce	5	How interested are you in politics?	1 Very interested / 2 Quite interested / 3 Only a little interested / 4 Not at all interested	0.68	-0.68, 1.19, 2.85	vpcpce

\* Survey dataset codes correspond to those used in the DCPOtools R package (Solt, Hu, and Tai 2019).





Starred countries are OECD democracies, the sample employed in the analysis of macrointerest presented in the main text.

Figure A1: Source Data Observations by Country and Year



Starred countries are OECD democracies, the sample employed in the analysis of macrointerest presented in the main text.

Figure A2: Source Data Observations by Country and Year, cont.

## B The DCPO Model

A number of recent studies have developed latent variable models of aggregate survey responses based on cross-national survey data (see Claassen 2019; Caughey, O’Grady, and Warsaw 2019; McGann, Dellepiane-Avellaneda, and Bartle 2019; Kolczynska et al. 2020). To estimate macrointerest across countries and over time, we employ the latest of these methods that is appropriate for data that is not only incomparable but also sparse, the Dynamic Comparative Public Opinion (DCPO) model elaborated in Solt (2020b). The DCPO model is a population-level two-parameter ordinal logistic item response theory (IRT) model with country-specific item-bias terms.

DCPO models the total number of survey responses expressing at least as much macrointerest as response category  $r$  to each question  $q$  in country  $k$  at time  $t$ ,  $y_{ktqr}$ , out of the total number of respondents surveyed,  $n_{ktqr}$ , using the beta-binomial distribution:

$$a_{ktqr} = \phi \eta_{ktqr} \quad (1)$$

$$b_{ktqr} = \phi(1 - \eta_{ktqr}) \quad (2)$$

$$y_{ktqr} \sim \text{BetaBinomial}(n_{ktqr}, a_{ktqr}, b_{ktqr}) \quad (3)$$

where  $\phi$  represents an overall dispersion parameter to account for additional sources of survey error beyond sampling error and  $\eta_{ktqr}$  is the expected probability that a random person in country  $k$  at time  $t$  answers question  $q$  with a response at least as interested as response  $r$ .<sup>2</sup>

This expected probability,  $\eta_{ktqr}$ , is in turn estimated as follows:

$$\eta_{ktqr} = \text{logit}^{-1}\left(\frac{\bar{\theta}'_{kt} - (\beta_{qr} + \delta_{kq})}{\sqrt{\alpha_q^2 + (1.7 * \sigma_{kt})^2}}\right) \quad (4)$$

In this equation,  $\beta_{qr}$  represents the difficulty of response  $r$  to question  $q$ , that is, the degree of political the response expresses. The  $\delta_{kq}$  term represents country-specific item bias: the extent to which all responses to a particular question  $q$  may be more (or less) difficult in a given country  $k$  due to translation issues, cultural differences in response styles, or other idiosyncrasies that render the same survey item not equivalent across countries.<sup>3</sup> The dispersion of question  $q$ , its noisiness in relation to the latent variable, is  $\alpha_q$ . The mean and standard deviation of the unbounded latent trait of macrointerest are  $\bar{\theta}'_{kt}$  and  $\sigma_{kt}$ , respectively.

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<sup>2</sup>The ordinal responses to question  $q$  are coded to range from 1 (expressing the least political interest) to  $R$  (expressing the most political interest), and  $r$  takes on all values greater than 1 and less than or equal to  $R$ .

<sup>3</sup>Estimating  $\delta_{kq}$  requires repeated administrations of question  $q$  in country  $k$ , so when responses to question  $q$  are observed in country  $k$  in only a single year, the DCPO model sets  $\delta_{kq}$  to zero by assumption, increasing the error of the model by any country-item bias that is present. Questions that are asked repeatedly over time in only a single country pose no risk of country-specific item bias, so  $\delta_{kq}$  in such cases are also set to zero.

Random-walk priors are used to account for the dynamics in  $\bar{\theta}'_{kt}$  and  $\sigma_{kt}$ , and weakly informative priors are placed on the other parameters.<sup>4</sup> The dispersion parameters  $\alpha_q$  are constrained to be positive and all survey responses are coded with high values indicating more political interest to fix direction. The difficulty  $\beta$  of “to some extent” (the third response on the four-point, “not at all” to “a great deal” scale) to the European Social Survey’s question “To what extent would you say you are interested in politics?” is set to 1 to identify location, and for each question  $q$  the difficulties for increasing response categories  $r$  are constrained to be increasing. The sum of  $\delta_{kq}$  across all countries  $k$  is set to zero for each question  $q$ :

$$\sum_{k=1}^K \delta_{kq} = 0 \quad (5)$$

Finally, the logistic function is used to transform  $\bar{\theta}'_{kt}$  to the unit interval and so give the bounded mean of macrointerest,  $\bar{\theta}_{kt}$ , which is our parameter of interest here (see Solt 2020b, 3–8).<sup>5</sup>

The DCPO model accounts for the incomparability of different survey questions with two parameters. First, it incorporates the *difficulty* of each question’s responses, that is, how much political interest is indicated by a given response. That each response evinces more or less of our latent trait is most easily seen with regard to the ordinal responses to the same question: indicating that one is “strongly interested” exhibits more political interest than stating one is “fairly interested,” which is a more interested response than “not very interested,” which in turn is more interested than “not at all.” But this is also true across questions. For example, indicating that politics is among “the sort of things in life interest you a lot” likely expresses even more interest than agreeing that one is interested in politics “most of the time.” Second, the DCPO model accounts for each question’s *dispersion*, its noisiness with regard to our latent trait. The lower a question’s dispersion, the better that changes in responses to the question map onto changes in macrointerest. Together, the model’s difficulty and dispersion estimates work to generate comparable estimates of the latent variable of macrointerest from the available but incomparable source data.

To address the sparsity of the source data—the fact that there are gaps in the time

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<sup>4</sup>The dispersion parameters  $\alpha_q$  are drawn from standard half-normal prior distributions, that is, the positive half of  $N(0, 1)$ . The first difficulty parameters for each question,  $\beta_{q1}$ , are drawn from standard normal prior distributions, and the differences between  $\beta$ s for each  $r$  for the same question  $q$  are drawn from standard half-normal prior distributions. The item-bias parameters  $\delta_{kq}$  receive normally-distributed hierarchical priors with mean 0 and standard deviations drawn from standard half-normal prior distributions. The initial value of the mean unbounded latent trait for each country,  $\bar{\theta}'_{k1}$ , is assigned a standard normal prior, as are the transition variances  $\sigma_{\theta'}^2$  and  $\sigma_{\sigma}^2$ ; the initial value of the standard deviation of the unbounded latent trait for each country,  $\sigma_{k1}$ , is drawn from a standard lognormal prior distribution. The overall dispersion,  $\phi$ , receives a somewhat more informative prior drawn from a gamma(4, 0.1) distribution that yields values that are well scaled for that parameter.

<sup>5</sup>Alternative approaches exist for transforming data to the unit interval. For example, a probit transformation, that is, the cumulative distribution function (CDF) of the normal distribution is one option, one that facilitates the interpretation of the values of the resulting measure as percentiles. The advantage of the logistic transformation compared to the probit transformation is its heavier tails, which allow for differences among very low and among very high values to be distinguished more clearly.

series of each country, and even many observed country-years have only one or few observed items—DCPO uses simple local-level dynamic linear models, i.e., random-walk priors, for each country. That is, within each country, each year’s value of macrointerest is modeled as the previous year’s estimate plus a random shock. These dynamic models smooth the estimates of macrointerest over time and allow estimation even in years for which little or no survey data is available, albeit at the expense of greater measurement uncertainty.

It is worth noting that not all sources of incomparability are likely to be fully addressed by the DCPO model. To the extent that survey sample representation issues—such as from variations in population definitions (such as age range, minority inclusion, and territorial exclusions) and sample designs (like probability versus non-probability samples, and older surveys’ reliance on quota or random route samples without enumeration)—vary across years for a single country and item (as is typically the case, as more recent surveys are more likely to be fully representative), the country-specific item bias terms will not remedy this problem. And although survey weights are easily incorporated in the source data (and indeed the `DCPOtools` package does so automatically), not all available weights yield fully representative samples, and some surveys lack weights entirely. Unlike the model employed by Caughey, O’Grady, and Warshaw (2019), the DCPO model does not incorporate poststratification to correct for these issues. While this does increase computational tractability and decrease data demands, the downside is clearly greater measurement uncertainty in the estimates in country-years where the data are relatively rich (via  $\phi$ ) and potential bias in the estimates where data are more sparse.

## C Comparing Coverage of the Macrointerest Data and the ESS

After creating the cross-sectional time-series of macrointerest, we tested theories of macrointerest formation in the thirty-seven advanced democracies of the OECD. Figure A3 visualizes the advantages of our macrointerest data over one of the largest and most-used datasets for studying political attitudes in the advanced democracies, the European Social Survey (ESS). The observations covered by ESS are marked with the light rectangles, and the additional country-years the DCPO macrointerest data provide are marked dark. By taking advantage of all of the available survey data on political interest, our macrointerest estimates allow the comparison to extend to the nine OECD members in the Americas, East Asia, and the Antipodes, and it also provides continuous time series in Europe that extend well beyond the available ESS data. In all, the macrointerest data provide well over *five times* as many country-years for analysis than are available in the ESS.

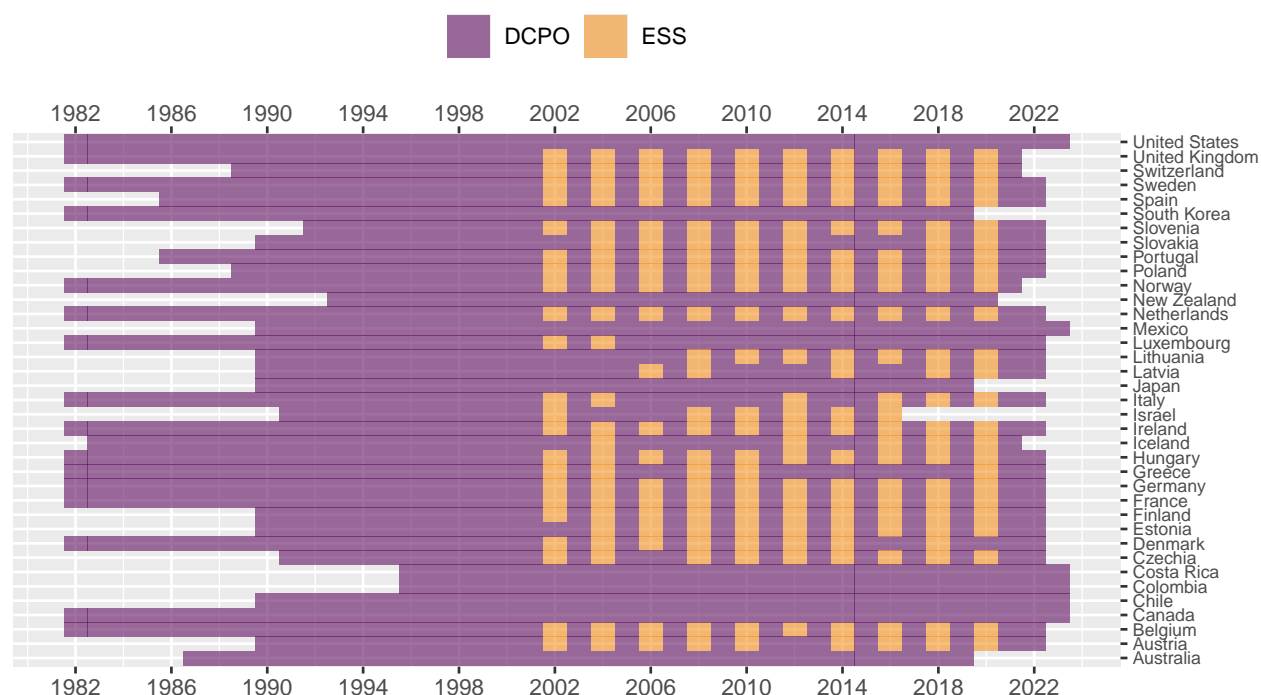
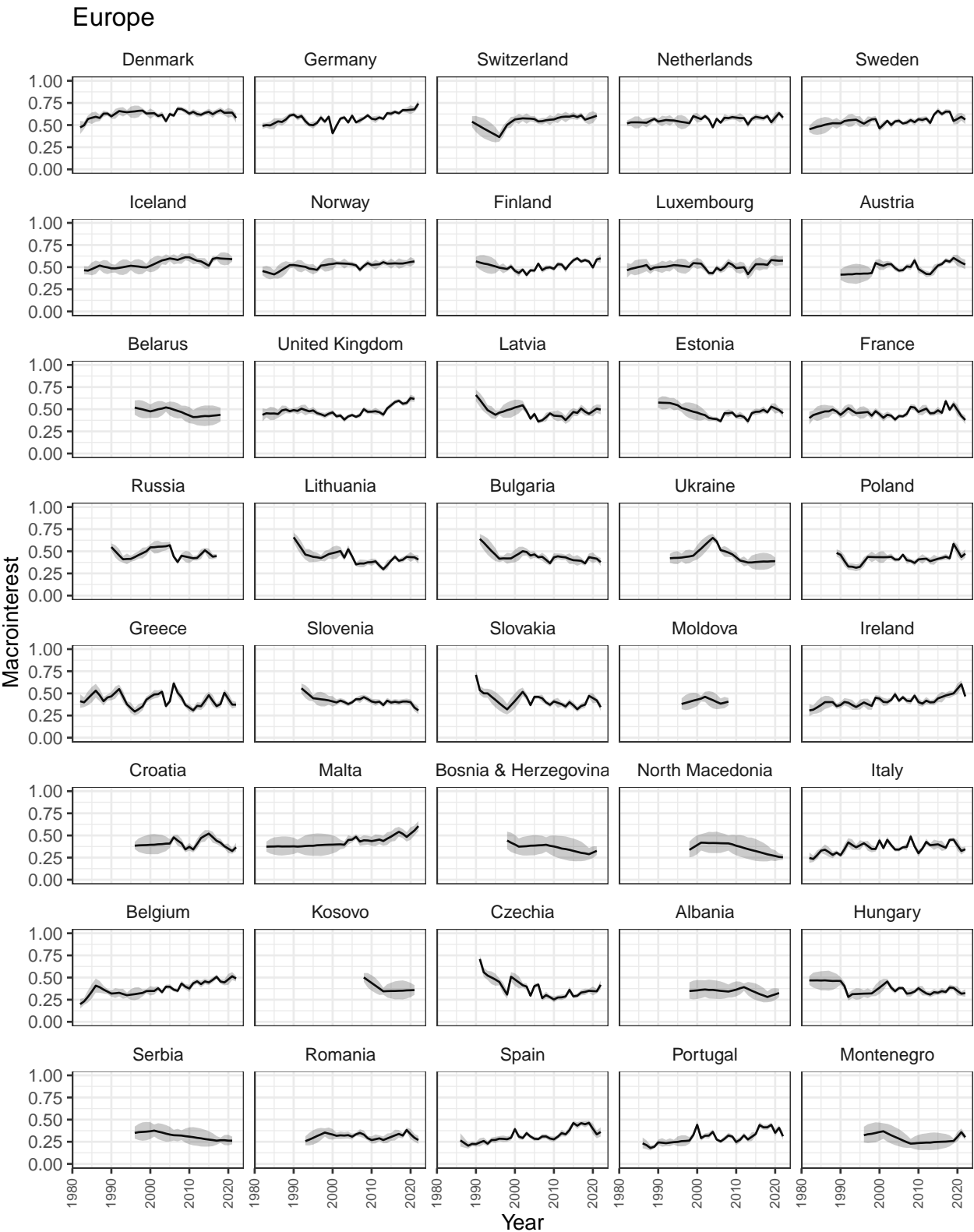


Figure A3: Data Availability: DCPO Macrointerest vs. ESS



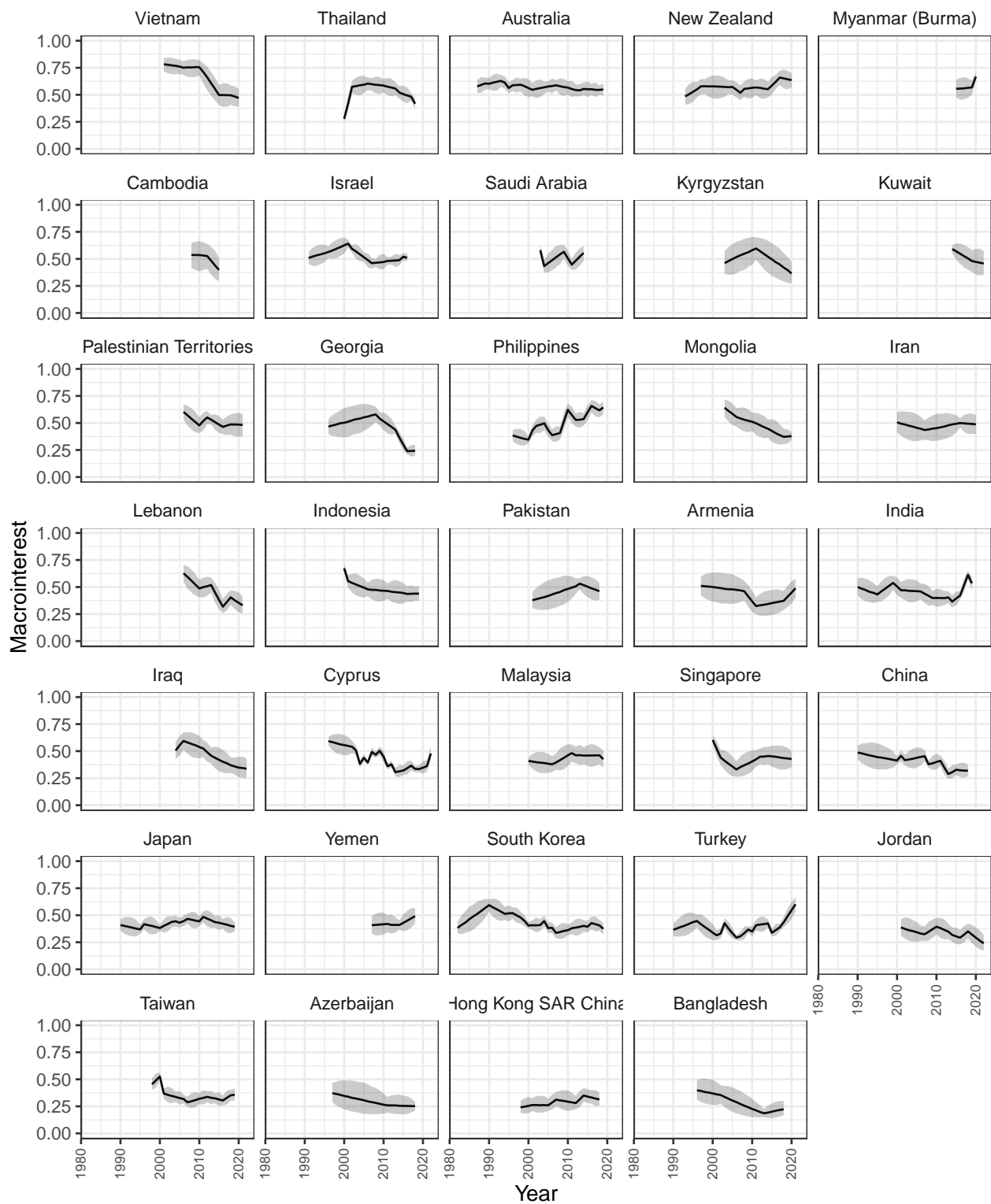
D Macroiinterest Scores Over Time



Note: Countries are ordered by their median macroiinterest score; gray shading represents 80% credible intervals.

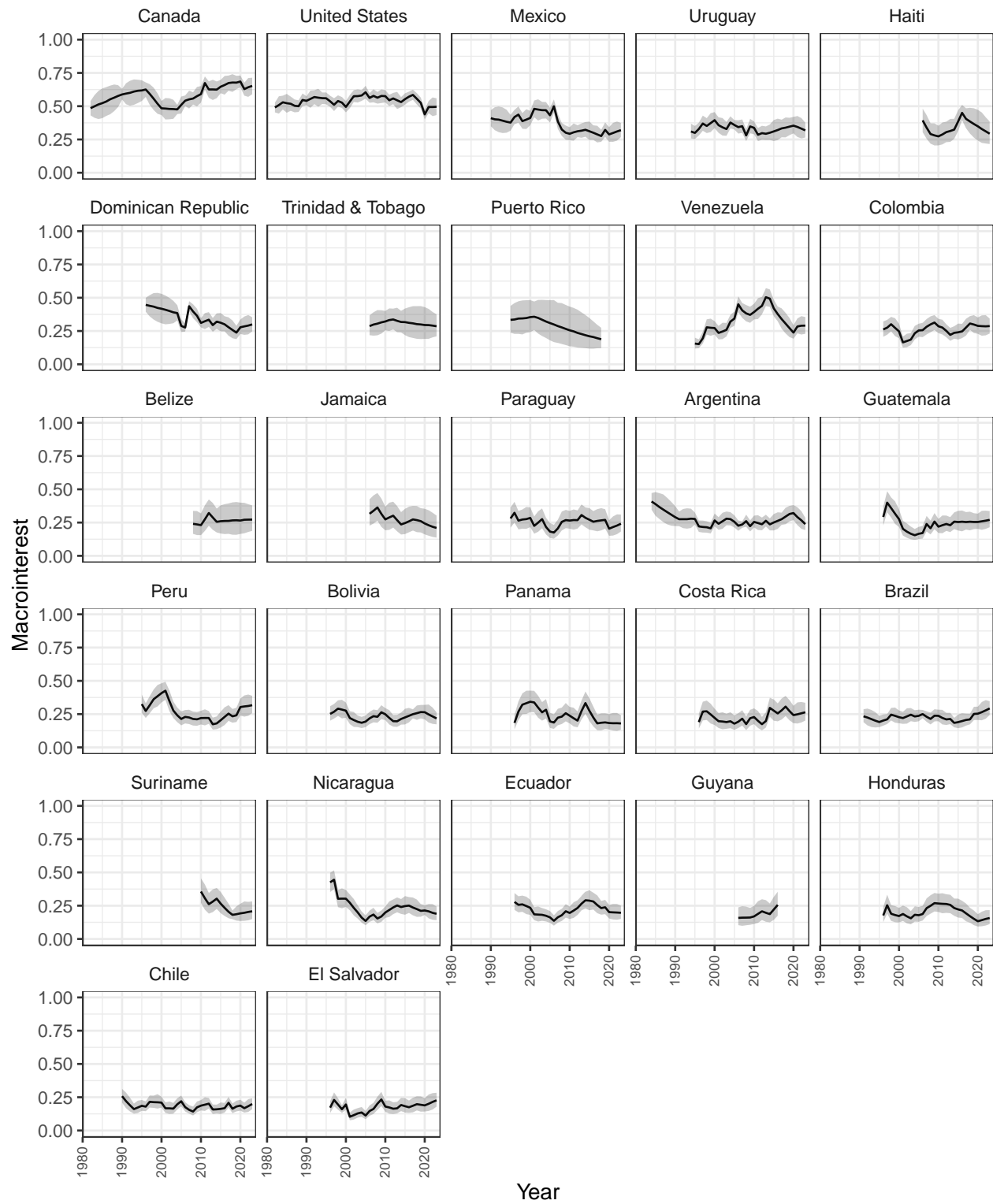


## Asia–Oceania



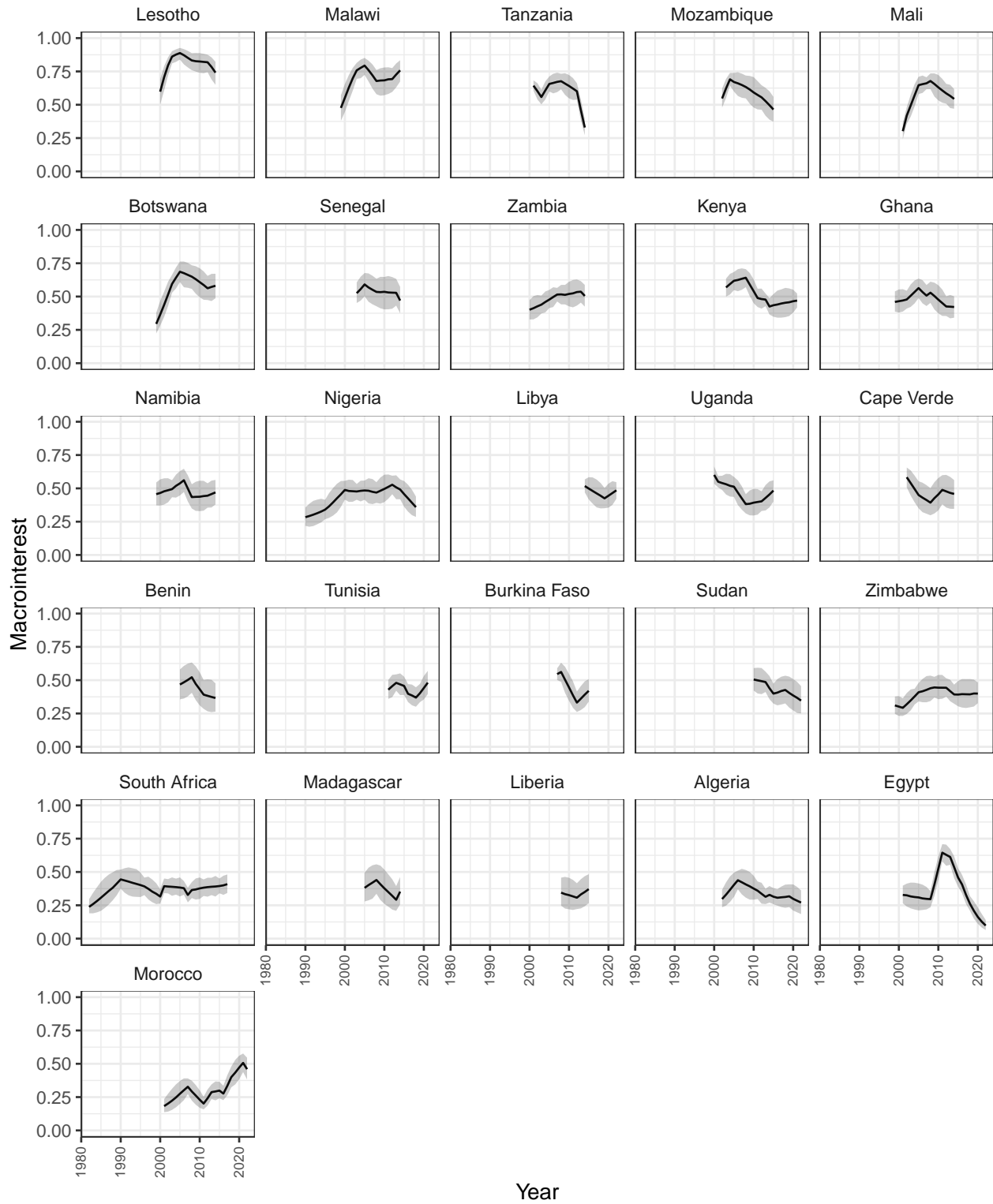
Note: Countries are ordered by their median macrointerest score; gray shading represents 80% credible intervals.

## Americas



Note: Countries are ordered by their median macrointerest score; gray shading represents 80% credible intervals.

## Africa



Note: Countries are ordered by their median macrointerest score; gray shading represents 80% credible intervals.

## E Tabular Version of Results Presented in Figure 5

Table A2: Tabular Version of Results Presented Graphically in Figure 5

	(1)
Election Year	0.788 [0.168, 1.417]
Parliamentarism	5.921 [3.600, 8.178]
Federalism	6.612 [-0.988, 13.779]
Disproportionality, Mean	-0.231 [-0.935, 0.475]
Disproportionality, Difference	-0.158 [-0.296, -0.019]
GDPpc, Mean	0.169 [-0.077, 0.412]
GDPpc, Difference	0.083 [0.011, 0.149]
GDP Growth, Mean	0.889 [-1.599, 3.433]
GDP Growth, Difference	-0.016 [-0.146, 0.115]
Unemployment, Mean	-0.633 [-1.649, 0.392]
Unemployment, Difference	-0.016 [-0.139, 0.095]
Income Inequality, Mean	-0.511 [-1.003, -0.048]
Income Inequality, Difference	-0.051 [-0.296, 0.203]
Num.Obs.	1246
RMSE	4.94

95-percent credible intervals are in brackets.

## F Comparison with Peterson et al. (2022)

This study extends the pivotal concept of “macrointerest” from Peterson et al. (2022), but it is not intended to replicate that paper: both the method and data employed diverge considerably between the two projects. Still, a comparison of the macrointerest estimates generated for the United States in both projects is valuable.

Our work diverges methodologically by employing the Dynamic Comparative Public Opinion (DCPO) model instead of the dyad ratio algorithm, commonly referred to as “Wcalc,” used by Peterson et al. (2022, 208). Apart from the primary rationale stated in the main text—that Wcalc is inherently tailored for generating public opinion time series within a single country rather than for cross-national comparison—there are also methodological and operational distinctions between these two approaches.

The dynamic ratio algorithm primarily seeks to uncover shared variance over time among various survey items. Its process involves initially pairing these items, subsequently calculating the ratio for each unique pair, and then analyzing the distribution of these ratios. DCPO instead directly models the relationship between the latent variable and survey item responses using a Bayesian Item Response Theory (IRT) approach (for more on the differences between dyad ratios and IRT, see McGann (2014), which finds that a single-country IRT model provides a better fit to a collection of U.K. public opinion data meant to capture “policy mood” than the dyad ratio algorithm). The DCPO method provides a probabilistic framework, enabling the estimation of response probabilities contingent on both the level of the latent trait and specific characteristics of the survey items (for more details, see Appendix B).

Additionally, these methods adopt differing strategies for addressing missing data at certain time points. The dynamic ratio algorithm tackles this challenge by estimating values for unobserved series at each time point, basing these estimations on the calculated ratio of missing survey items to those observed in the corresponding period. For the same issue, DCPO, on the other hand, employs dynamic linear models at the local level for each country, leveraging random-walk priors. This approach not only smooths the estimates of macrointerest over time but also facilitates estimation in years characterized by limited or absent survey data and simultaneously provides specific uncertainty estimates.

As Peterson et al. (2022, 210) points out, to conduct the dyad ratio algorithm, researchers must first dichotomize each survey question by collapsing responses and (possibly, as in this case) excluding moderate opinions. DCPO, on the other hand, incorporates an ordered logistic model and so does require the transformation of any of the original item responses. It also produces credible intervals of the estimates from the Bayesian process, rather than relying on ex-post bootstrapping for uncertainty estimation. DCPO additionally implements a logistic function to confine the outcome estimates within the unit interval.

Finally, it is worth noting that the data employed in each paper differs. The estimates of Peterson et al. (2022) are based on sixteen series with observations in at least two quarters. The data on which our macrointerest estimates for the United States are based on eleven series with at least five country-year observations across all countries. These latter data are dated annually, and nearly all of them are drawn from cross-national surveys. Only

two series, drawn from the American National Election Survey and from surveys by the Pew Research Center, are included in both source-data datasets. This is due partly to the minimum of five country-year observations we use, partly to the shorter time span covered by this project (because of the paucity of data for other countries in earlier decades), partly to our practice of using only surveys for which the entire survey dataset rather than only survey marginals is available to ensure survey weights are applied, partly to the omission of cross-national surveys by Peterson et al. (2022), and partly to the combination of these factors.

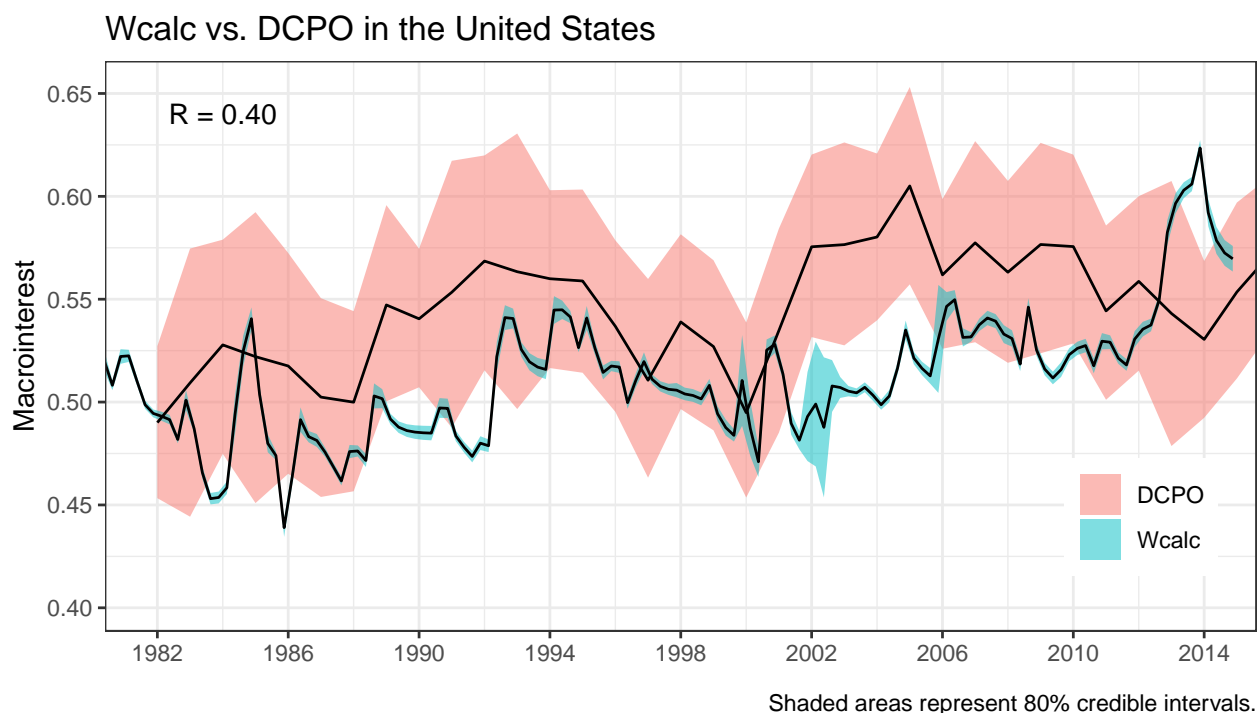


Figure A4: Comparison between DCPO and Wcalc

In Figure A4, we compare the outcomes from these two methods during the years they overlap, from 1982 to 2014. For the purpose of this comparison, the Wcalc scores of Peterson et al. (2022) are first divided by 100 to place them on the unit interval and then shifted nearly a quarter-point downward, which yields identical scores on both series in their first common year, 1982. Neither of these affect the shape of the Wcalc series; they work simply to overlay the two series for more straightforward comparison.

Two points stand out. First, the credible intervals of the DCPO series are considerably broader than the bootstrapped intervals for the Wcalc series. Whether these latter intervals are overconfident seems worth investigating by future users of this method, perhaps by cross-validation (cf. Solt 2020a, 11). Second, the two series are positively but not particularly strongly related; the bivariate correlation is just  $R = 0.40$ . The surge in macrointerest after the September 11, 2001 attacks documented in Peterson et al. (2022, 217), for example, is brief in the Wcalc series but longer-lasting in the DCPO series. Conversely, the sharp upturn

Table A3: Replication of Peterson et al. (2022), Table 2, 1983-2014

	Wcalc	Annual Wcalc	DCPO
Macrointerest (Lagged)	0.844*** (0.050)	0.655** (0.206)	0.777*** (0.185)
Trust (Lagged)	-0.097* (0.044)	-0.214 (0.145)	0.114 (0.126)
Trust (Difference)	-0.242* (0.100)	-0.333 (0.292)	-0.400 (0.306)
Presidential Approval (Lagged)	0.004 (0.013)	0.001 (0.043)	0.023 (0.044)
Presidential Approval (Difference)	-0.008 (0.020)	-0.018 (0.045)	0.078 (0.049)
Consumer Sentiment (Lagged)	0.001 (0.012)	-0.009 (0.039)	-0.043 (0.041)
Consumer Sentiment (Difference)	0.026 (0.026)	0.032 (0.052)	0.001 (0.059)
Presidential Election	0.440*** (0.100)	0.348 (0.342)	-0.075 (0.336)
September 11	2.228* (1.075)	2.215 (2.606)	5.094+ (2.837)
N	128	32	32
R2	0.846	0.730	0.636
RSME	1.26	1.54	1.62

+  $p < 0.1$ , \*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$

in the Wcalc macrointerest series that peaks in late 2013 does not appear in the DCPO series at all—it appears to be an artifact of the rather thin data in the Knowledge Networks series Peterson et al. (2022) employs (see also Peterson et al. (2022), Appendix C, which drops these observations as anomalous).

The two series are further compared in Table A3. The first column replicates the analysis of Peterson et al. (2022), Table 2, using only the years from 1983 to 2014, that is, the span for which DCPO estimates of macrointerest are also available. To preserve degrees of freedom, of the eight scandals and negative events, only the dummy variable for the attacks of September 11, 2001 (the only one to receive support in Peterson et al. (2022)) is included. The findings of Peterson et al. (2022) are reproduced in this truncated dataset.

In the second column, the Peterson et al. (2022) Wcalc macrointerest data are aggregated to the annual level over the same period, that is, each year's value is the mean of the values of that year's quarters, and the independent variables were similarly annualized. Over this time period and at this unit of analysis, macrointerest is predicted only by its lagged value: the coefficients for trust, presidential elections, and September 11 no longer reach statistical

significance. The DCPO macrointerest series for the United States yields similar results. It would appear that it is the unit of analysis—years as opposed to quarters—rather than the macrointerest series, that yields different conclusions in the Peterson et al. (2022) analysis.



## References

- Caughey, Devin, Tom O’Grady, and Christopher Warshaw. 2019. “Policy Ideology in European Mass Publics, 1981–2016.” *American Political Science Review* 113 (3): 674–93.
- Claassen, Christopher. 2019. “Estimating Smooth Country–Year Panels of Public Opinion.” *Political Analysis* 27 (1): 1–20.
- Hu, Yue, Yuehong Cassandra Tai, Hyein Ko, Byung-Deuk Woo, and Frederick Solt. 2023. “Support for Democracy Is Multidimensional: Why Unidimensional Latent Variable Measures of Democratic Support Are Invalid.” SocArXiv.
- Hu, Yue, Yuehong Cassandra Tai, and Frederick Solt. 2022. “On Data ‘Janitor Work’ in Political Science: The Case of Thermostatic Support for Democracy.” SocArXiv.
- Kolczynska, Marta, Paul-Christian Bürkner, Lauren Kennedy, and Aki Vehtari. 2020. “Trust in State Institutions in Europe, 1989–2019.” SocArXiv. <https://osf.io/preprints/socarxiv/3v5g7/>.
- McGann, Anthony. 2014. “Estimating the Political Center from Aggregate Data: An Item Response Theory Alternative to the Stimson Dyad Ratios Algorithm.” *Political Analysis* 22 (1): 115–29.
- McGann, Anthony, Sabastian Dellepiane-Avellaneda, and John Bartle. 2019. “Parallel Lines? Policy Mood in a Plurinational Democracy.” *Electoral Studies* 58: 48–57.
- Solt, Frederick. 2020. “Modeling Dynamic Comparative Public Opinion.” SocArXiv. <https://osf.io/preprints/socarxiv/d5n9p>.

## Data availability statement

Replication data for this paper can be found at <https://doi.org/10.7910/DVN/TWPM9X>.

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## Competing interests

None.