



LETTER

## Macrointerest Across Countries

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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 modelling 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, for example, Almond and Verba 1963). More than just boosting engagement, political interest critically determines the quality of political decisions and behaviours, influencing factors like time spent, information collection and utilization, and critical assessment of partisan claims (see, for example, 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, for example, Foa and Mounk 2016, 10–11).

A recent contribution, Peterson et al. (2022), measures macrointerest over time in the USA, 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 modelling 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, this 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, fifty-four 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 supplementary [appendix](#)).

Together, the survey items in the source data were asked in 127 different countries in at least three time points over the forty-one 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 per cent 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.

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 UK, Spain, the USA, 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 of 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 eighty-nine 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 a 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

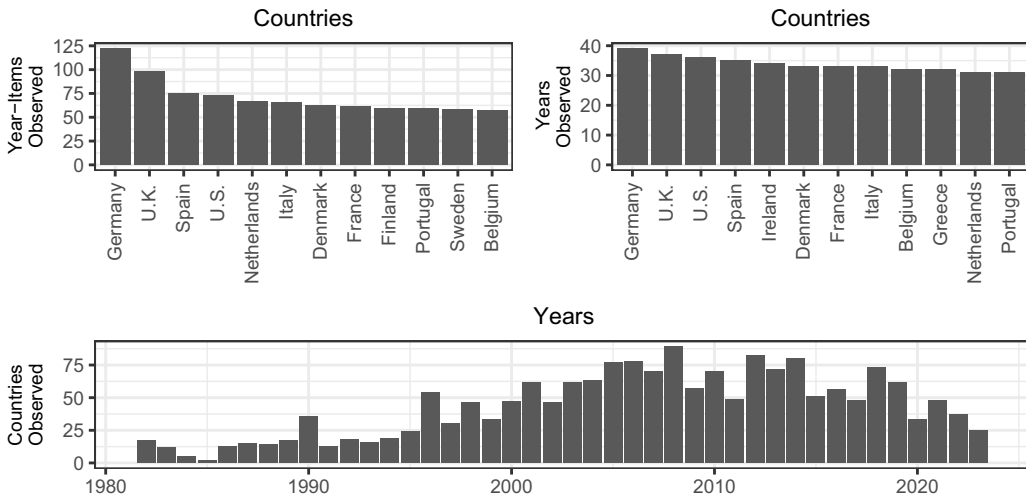


Figure 1. Countries and Years with the Most Observations in the Source Data.

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 the supplementary appendix 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, that is, random-walk priors, for each country. That is, within each country, each year’s value of macrointerest is modelled 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.

The model was estimated using the DCPOtools 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

<sup>1</sup>Supplementary appendix compares our estimates for the USA 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 supplementary appendix.

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 supplementary [appendix](#)). 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, for example, 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).

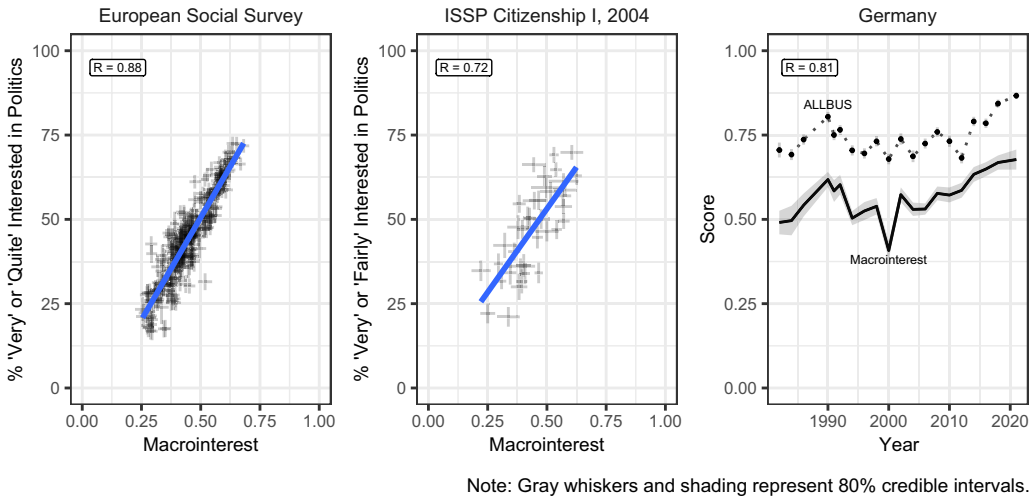
On the left, macrointerest scores are plotted against the percentage of respondents across all country-years who offered the two most interested responses on the European Social Survey's four-point item, 'How interested are you in politics?' The middle panel shows responses to the question with the most 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 focussing 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, 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.

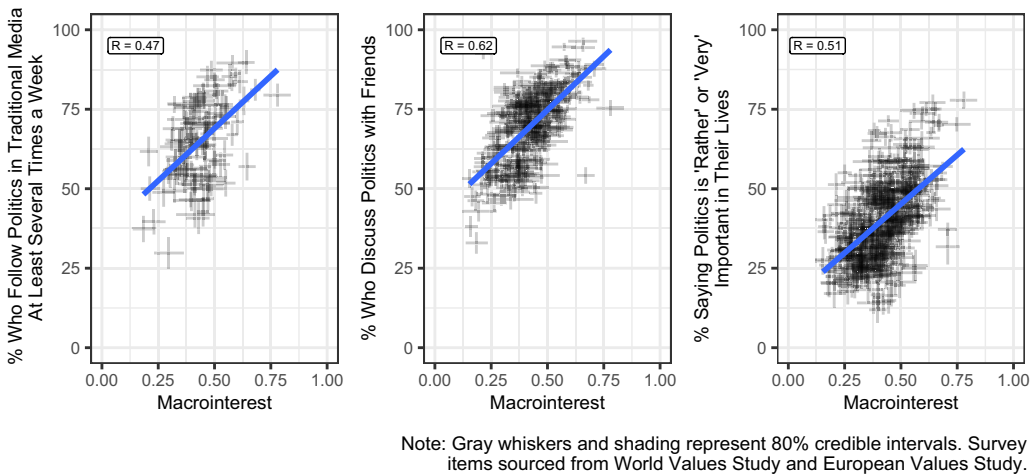
### Testing Theories of Macrointerest Cross-Nationally

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 (supplementary [appendix](#) presents these macrointerest data for all available countries). While macrointerest scores approach and often exceed 0.6 in countries such as Denmark and Canada, in Chile, they scarcely cross 0.25. 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 and elections attract



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

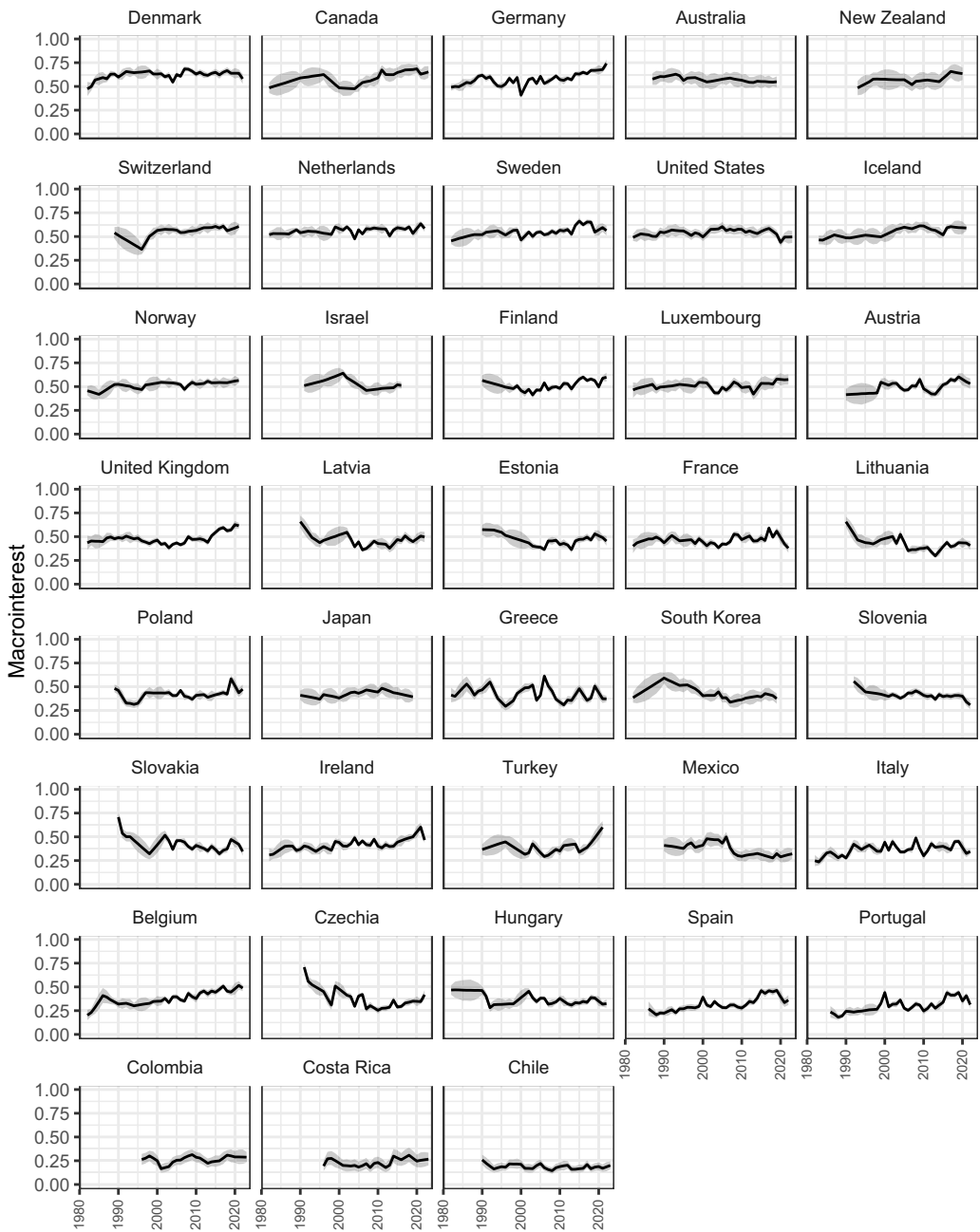


**Figure 3.** Construct Validation: Correlations Between Macrointerest and Other Aspects of Political Engagement.

media coverage and increase the information available to the public on the issues being contested, leading to increased interest in politics (see, for example, 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) argue 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) argue that ‘when there is information that something has gone wrong . . . then voters should be more



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

**Figure 4.** Macroiinterest Scores Over Time Within OECD Democracies.

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, for example, Inglehart and Welzel 2005). Unemployment has long been argued not to motivate but to depress political interest (see, for example, 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, for example, 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 UK, and the USA) 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 per cent 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 supplementary [appendix](#)).

Shor et al. (2007) demonstrate 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, for example, 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, 425–431; see also Kurz 2023, 15.1.2). The model was estimated using the brms R package (Bürkner 2017).

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 per cent credible interval: 0.2 to 1.4 points) higher than in years without elections. This accords

<sup>3</sup>The supplementary [appendix](#) provides a tabular version.



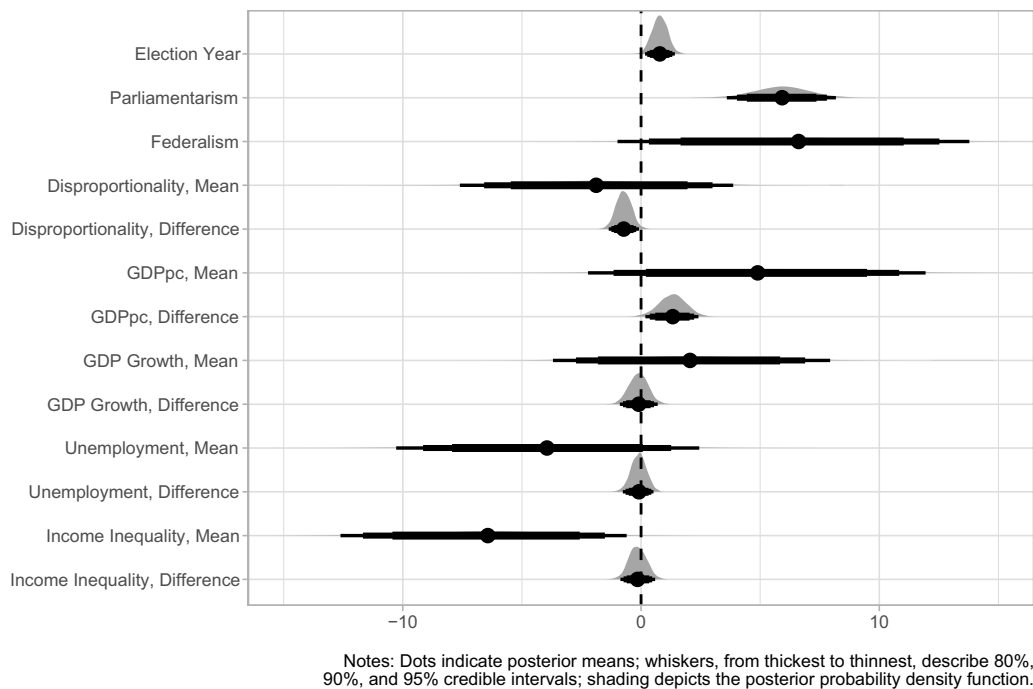


Figure 5. Predicting Macrointerest in OECD Democracies.

with previous research finding small but well-estimated increases in political interest in election years (see, for example, 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 per cent confidence interval [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 per cent 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 per cent 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 per cent 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 per cent 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 per cent 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 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, 997–999) finds that, between 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.

**Supplementary Material.** The supplementary material for this article can be found at <https://doi.org/10.1017/S0007123424001042>.

**Data Availability Statement.** Replication data for this paper can be found at <https://doi.org/10.7910/DVN/TWPM9X>. The Cross-National Macrointerest dataset can be found at <https://dcpo.org/data/cnm>.

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**Competing interests.** None.

## References

- Adcock R and Collier D (2001) Measurement Validity: A Shared Standard for Qualitative and Quantitative Research. *American Political Science Review* 95(3), 529–546.
- Almond GA and Verba S (1963) *The Civic Culture: Political Attitudes and Democracy in Five Nations*. Princeton: Princeton University Press.
- Bell A and Jones K (2015) Explaining Fixed Effects: Random Effects Modelling of Time-Series Cross-Sectional and Panel Data. *Political Science Research and Methods* 3(1), 133–153.
- Bormann N-C and Golder M (2022) Democratic Electoral Systems Around the World, 1946–2020. *Electoral Studies* 78, 102487.
- Bürkner P-C (2017) brms: An R Package for Bayesian Multilevel Models Using Stan. *Journal of Statistical Software* 80, 1–28.
- Caughey D, O'Grady T and Warshaw C (2019) Policy Ideology in European Mass Publics, 1981–2016. *American Political Science Review* 113(3), 674–93.
- Claassen C (2019) Estimating Smooth Country-Year Panels of Public Opinion. *Political Analysis* 27(1): 1–20.
- Foa RS and Mounk Y (2016) The Danger of Deconsolidation: The Democratic Disconnect. *Journal of Democracy* 27(3), 5–17.
- Gallagher M (1991) Proportionality, Disproportionality and Electoral Systems. *Electoral Studies* 10(1), 33–51.
- Gallagher M (2023) Election Indices Dataset. [https://www.tcd.ie/Political\\_Science/about/people/michael\\_gallagher/ElSystems/Docts/ElectionIndices.pdf](https://www.tcd.ie/Political_Science/about/people/michael_gallagher/ElSystems/Docts/ElectionIndices.pdf).

- Hu Y and Solt F** (2025) Replication Data for: Macrointerest Across Countries. <https://doi.org/10.7910/DVN/TWPM9X>, Harvard Dataverse, V1.
- Hu Y, Tai YC, Ko H, Woo B-D and Solt F** (2023) An Incomplete Recipe: One-Dimensional Latent Variables Do Not Capture the Full Flavor of Democratic Support. SocArXiv. <https://doi.org/10.31235/osf.io/rym8g>.
- Hu Y, Tai YC, and Solt F** (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 R and Welzel C** (2005) *Modernization, Cultural Change, and Democracy*. Cambridge: Cambridge University Press.
- Kittilson MC and Schwindt-Bayer L** (2010) Engaging Citizens: The Role of Power-Sharing Institutions. *Journal of Politics* 72(4), 990–1002.
- Kolczynska M, Bürkner P-C, Kennedy L and Vehtari A** (2020) Trust in State Institutions in Europe, 1989–2019. SocArXiv. <https://doi.org/10.31235/osf.io/3v5g7>.
- Kurz AS** (2023) *Statistical Rethinking with brms, ggplot2, and the tidyverse: Second Edition*. Version 0.4.0.
- Lane DS, Do K and Molina-Rogers N** (2022) Testing Inequality and Identity Accounts of Racial Gaps in Political Expression on Social Media. *Political Communication* 39(1), 79–97.
- Larsen EG** (2022) Dynamic Political Interest: How Personality Differences and the Political Environment Shape Political Interest. *British Journal of Political Science* 52(1), 467–474.
- Lijphart A** (1999) *Patterns of Democracy: Government Forms and Performance in Thirty-Six Countries*. New Haven: Yale University Press.
- McElreath R** (2016) *Statistical Rethinking: A Bayesian Course with Examples in r and Stan*. Chapman & Hall/CRC Texts in Statistical Science Series.
- McGann A, Dellepiane-Avellaneda S and Bartle J** (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 DAM, Miller JM, Saunders KL and McClurg SD** (2022) Macrointerest. *British Journal of Political Science* 52(1), 200–220.
- Powell Jr. GB** (2000) *Elections as Instruments of Democracy*. New Haven: Yale University Press.
- Rosenstone SJ** (1982) Economic Adversity and Voter Turnout. *American Journal of Political Science* 26(1), 25–46.
- Shor B, Bafumi J, Keele L and Park D** (2007) A Bayesian Multilevel Modelling Approach to Time-Series Cross-Sectional Data. *Political Analysis* 15(2), 165–181.
- Solt F** (2008) Economic Inequality and Democratic Political Engagement. *American Journal of Political Science* 52(1), 48–60.
- Solt F** (2020a) Measuring Income Inequality Across Countries and over Time: The Standardized World Income Inequality Database. *Social Science Quarterly* 101(3), 1183–1199.
- Solt F** (2020b) Modelling Dynamic Comparative Public Opinion. SocArXiv. <https://doi.org/10.31235/osf.io/d5n9p>.
- Solt F, Hu Y, and Tai YC** (2019) DCPOtools: Tools for Dynamic Comparative Public Opinion. <https://github.com/fsolt/DCPOtools>.
- Stimson JA** (2015) *Tides of Consent: How Public Opinion Shapes American Politics*. Second edition. New York: Cambridge University Press.