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Gerrymandering in comparative perspective

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Abstract
Using data from the *Electoral Integrity Project*, we measure the level of gerrymandering according to country expert surveys in Lower House elections in 54 democracies from the second half of 2012 until the first half of 2015. We show that majoritarian systems are more prone to gerrymandering than mixed-member and above all in Proportional Representation (PR) systems. When majoritarian systems are employed in large countries, gerrymandering is exacerbated. Per capita GDP and the age of electoral systems do not significantly affect gerrymandering.

Keywords
gerrymandering, electoral systems, districting

Introduction

Gerrymandering—the practice of redrawing district lines to achieve partisan or other advantage (Cox and Katz: 2002: 3)—is a long-standing practice in electoral democracies with very well-known normative and political implications see (Grofman and Handley, 2008). A vast literature, particularly in the United States, has focused on the effects of gerrymandering, more specifically on how redistricting affects partisan bias and the responsiveness of the legislature to changes in voter preferences (Chen and Rodden, 2013; Cox and Katz, 2002; King, 1990; Gelman and King, 1990, 1994a, 1994b).

To the best of our knowledge, however, there are no cross-national, comparative studies of the determinants of gerrymandering. The literature lacks a method for measuring gerrymandering in different types of electoral systems. As explained by Grofman and Handley (2008: 4), determining whether redistricting is biased in favor of specific parties in a given country requires looking at the nitty-gritty of political geography, such as the overlaps among boundaries of different types of political and administrative jurisdictions and the distribution of racial and ethnic groups and partisan voting strength across the territory. In multiparty systems, measuring gerrymandering is particularly problematic. On the one hand, it demands a very long panel of elections in the same country, which makes the exercise essentially meaningless for most systems because of changes in the party system. On the other hand, it produces estimates that are hardly comparable across elections (Borisyuk et al, 2008).

In this article, we seek to fill this gap by providing a measure of gerrymandering based on the data collected by the *Electoral Integrity Project* (EIP) for 54 Lower House elections held from the second half of 2012 until the first half of 2015. Relying on country expert surveys, the measure captures whether district boundaries are considered impartial on a scale going from 1 (strongly agree, that is, no gerrymandering at all) to 5 (strongly disagree, i.e. maximum gerrymandering). We explore three simple questions: whether majoritarian systems are more prone to gerrymandering than PR and mixed systems; to what extent a large legislature, whose proxy is country size, matters for gerrymandering; and whether the age of the electoral system affects gerrymandering.

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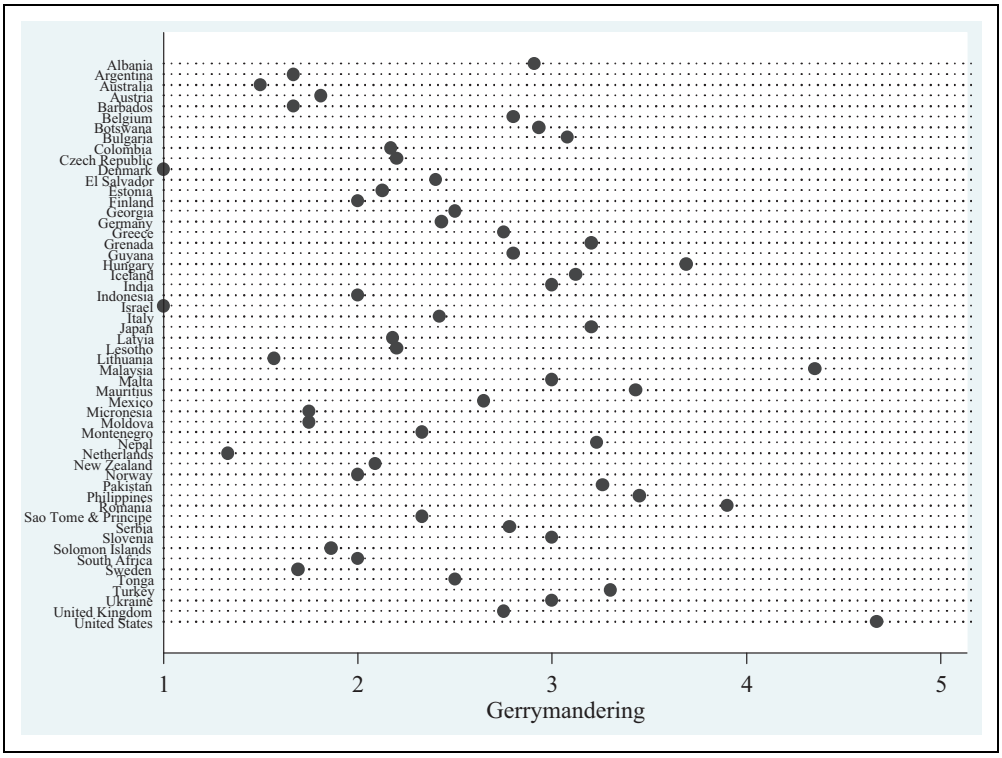

Figure 1. Gerrymandering in 54 democracies.

Data and arguments

Our measure of gerrymandering is based on data collected by the EIP for 54 democratic Lower House elections held from the second half of 2012 until the first half of 2015 (www.electoralintegrity.com). A country is deemed to be democratic when it obtains a score of at least 6 in the Polity IV database (see the Appendix 1 for a description of countries included in the sample).[1] Domestic and international experts[2] were asked to evaluate whether national parliamentary elections met international standards during the preelection period, the campaign, polling day, and its aftermath (see Norris, 2013[3]). When analyzing voting district boundaries, the following question was asked to experts[4]:

> Do you agree or disagree with the following statement:
> District boundaries were impartial
> Strongly disagree 5, Disagree 4, Neither agree nor disagree 3, Agree 2, Strongly agree 1, Not applicable 9.

We have created our dependent variable, called *gerrymandering*, which reflects the experts' evaluation average of the impartiality of district boundaries in every country.[5] The variable goes from "1" boundaries were impartial, that is, no gerrymandering at all to "5" boundaries were not impartial, that is, maximum gerrymandering. The higher the value, the less impartial the district boundaries are. When the question is not applicable in the country according to experts because districts are delimited, a value of 1 on the scale is attributed[6].

The values of gerrymandering in our sample of countries are shown in Figure 1. As can be seen, there are significant differences across countries: the standard deviation is 0.84. Not surprisingly, countries using PR with large or single national districts, Israel, the Netherlands, or Norway, have the lowest scores[7], while the United States and Malaysia, using majoritarian electoral system, are, by far, the countries with the least impartial district boundaries[8].

Not all electoral systems are equally prone to gerrymandering. The problem is inherent in the system of one-seat districts, while it is less serious in PR multimember districts for two reasons. First, in PR systems, it is much more difficult to predict the exact seat distribution in every district due to the higher number of parties entering the race and the smaller percentages separating winners from losers (Cox, 1997, Grofman and Selb, 2009). Second, in PR systems, districts often coincide with well-known local government units or groups of these (Coakley, 2008: 155, see also Popescu and Toka, 2008: 262). As shown by Handley (2008), those countries that do not specifically delimit districts use PR almost without exception. In post-communist countries, for instance, nearly all countries with PR and multimember districts employ the existing administrative-territorial divisions as electoral districts (Popescu and Toka, 2008).

When comparing majoritarian systems and mixed-member systems, our expectation is that gerrymandering is more likely to be generated in the latter than in the former. In majoritarian systems, all districts are single member, while in mixed member, a varying number of seats are allocated in a tier using PR. In those mixed-member system using compensatory mechanisms guaranteeing that total seat share will be proportional to vote shares, partisan gerrymandering should be a less relevant issue than in parallel mixed-member systems.[9]

The partisan advantage that can be achieved through gerrymandering when using majoritarian institutions should be greater in larger countries (in thousands of km^2) for at least two reasons. First, assembly sizes are positively correlated with the size of the country. As shown by Taagepera and Shugart (1989: 173–183), the size of legislatures is approximately equal to the cube root of population because this size minimizes the workload of representatives. Second, heterogeneity of preferences increases with size: as countries become larger, diversity of preferences, culture, language, and identity of their population increases (Alesina, 2003: 304, see also Alesina and Spolaore, 2003). A large legislature and diverse preferences within countries give greater potential for gerrymandering. As a result, we expect a statistically significant interaction, between majoritarian institutions and country size, that is, between the institutional opportunity for gerrymandering and the expected electoral advantage generated by gerrymandering.

Additionally, we test whether the age of the electoral system conditions the capacity of ruling parties to create partisan biases. The margin of maneuver for ruling parties when drawing electoral boundaries to their advantage crucially depends on their capacity to anticipate the results under different rules of the game. According to Popescu and Toka (2008: 262), gerrymandering was not a prominent feature of any delimitation in the 1990s in Eastern and Central Europe, due to the shifting partisan alliances and the uncertainty about the geographic distribution of electoral support for the various parties. Therefore, it can be hypothesized that the more time a country has been using the same electoral system, the less impartial the district boundaries will be. However, as electoral democracy is an iterated game in which parties alternate in government, a plausible focal point for parties is a non-gerrymandered electoral system. Accordingly, partisan gerrymandering should be less relevant as times goes by. To test the two arguments, the age of the current electoral system (i.e. the number of years using the current electoral system—PR, majoritarian, or mixed—under democracy since 1946) ant its square are included in the models. The source is mainly Bormann and Golder (2013). Finally, we control for good governance, whose proxy is per capita gross domestic product (GDP; in constant dollars based on the 2011 ICP round). The source is the World Bank.

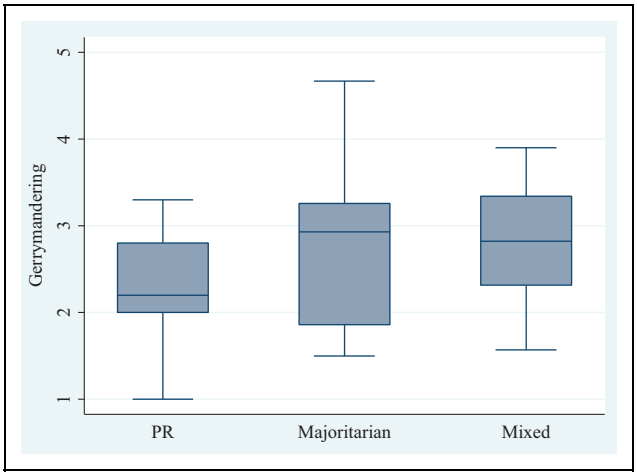

Figure 2. Gerrymandering across electoral systems in 54 democracies.

Table 1. The determinants of gerrymandering.

	Models	
Independent variables	1	2
Electoral System (ref. PR)		
Majoritarian	0.734*** (0.266)	−1.238 (0.983)
Mixed-member	0.394 (0.271)	−1.781 (2.506)
Log country size	0.049 (0.044)	−0.055 (0.066)
Log GDP per capita	0.163 (0.142)	0.153 (0.141)
Age electoral system	−0.0028 (0.0196)	−0.0001 (0.0192)
(Square of) age electoral system	−0.0001 (0.0003)	−0.0002 (0.0002)
Majoritarian × Log Country Size		0.177** (0.085)
Mixed Member × Log Country Size		0.184 (0.205)
Constant	0.410 (1.404)	1.689 (1.517)
Adjusted R^2	0.11	0.16
N	54	54

GDP: gross domestic product.
[a]Estimation is by ordinary least squares. Standard errors in parentheses.
**$p < 0.05$; ***$p < 0.01$.

Results

In Figure 2, the relationship between gerrymandering and the electoral system employed in every country is displayed. As expected, countries using PR systems score lower (2.27) than those with mixed-member (2.83) and majoritarian (2.84) systems. The differences between PR and mixed and majoritarian systems are statistically significant at the 0.05 level.

The combined effect of the electoral system, the size of the country, the per capita GDP, and the age of the current electoral system is examined in Table 1. We have run two models: an additive model with the four independent variables and an interactive model in which an interaction term

between *electoral system* and *country size* is added to the previous specification. Estimation is by Ordinary Least Squares (OLS).[10]

The first model explains about 11% of the variance of gerrymandering in the 5-point scale. As expected, district boundaries are less impartial in majoritarian electoral systems than in mixed-member and, above all, PR systems. Only the dummy for the majoritarian systems is statistically significant (at the 0.01) level. That is, there are statistically significant differences between majoritarian and PR systems but not between mixed-member and PR systems. Countries using majoritarian systems score on average about 0.7 and 0.3 points higher, respectively, than countries using PR and mixed-member electoral systems. Larger and poorer countries are more prone to partisan gerrymandering, but the two variables are not statistically significant. Finally, there is not a robust relationship between the age of the electoral system and gerrymandering.

The interactive specification produces a larger adjusted R^2, 0.16. Only the interactive terms *Majoritarian* × *Log Country Size* is positive and statistically significant (at the 0.05 level). That is, majoritrian institutions in large countries exacerbate gerrymandering.

Conclusion

In all electoral democracies using small districts, ruling parties face an incentive to redraw district lines to achieve partisan advantage. Are there differences in gerrymandering across countries? If yes, what accounts for them? Unfortunately, comparative studies about the levels and determinants of gerrymandering are virtually nonexistent due to the lack of an aggregated measure travelling cross-nationally.

In this research note, we have contributed to fill this gap. Relying of data from the EIP, we have measured the level of gerrymandering in all democracies that have held Lower House elections from the second half of 2012 until the first half of 2015. Our measure captures on a 5-point scale to what extent district boundaries were impartial according to country experts. Using this measure, we have first *established the phenomenon* of gerrymandering in a sample of 54 countries. Through regression analysis, we have shown that majoritarian systems are more prone to gerrymandering than mixed-member and PR systems. When majoritarian systems are employed in large countries, gerrymandering is exacerbated. Per capita GDP and the age of the electoral systems do not significantly affect gerrymandering.

Finally, this article should be taken as a first step in investigating the determinants of gerrymandering. Gerrymandering derives from the strategic decisions made by ruling parties to maximize their parliamentary representation. In Monroe and Rose's terms (2002), gerrymandering is a "second-moment" effect in which partisan bias comes into play. The "first-moment" concerns how many parties or candidates enter the race and depends on the selection of an electoral system among three main options: PR, majoritarian, or mixed-member systems. Once the electoral system is selected, the extent to which the ruling parties are able to shape district boundaries to their own advantage depends on three conditions: whether parties have the *opportunity* to do it, the strength of the *incentive* for gerrymandering (i.e. the partisan advantage in seats they can achieve) and the *information* political actors have about the expected consequences of (re)drawing district lines. The combined impact of these three elements clearly deserves more research. More generally, Norris (2015: Ch. 5) finds that PR systems perform higher than majoritarian systems in electoral integrity terms. It remains to be further theorized and explored the specific relationship between such concrete item and electoral integrity.

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Notes

1. In order to maximize the number of cases, for those countries not included in Polity IV (below 500.000), we have relied on Freedom House. We follow Martínez i Coma and van Ham (2015) and only include those elections with at least 5 or more responses from country experts.
2. For the Electoral Integrity Project (EIP), an *expert* is a political scientist or social scientist in a related discipline who has published or who has other demonstrated knowledge of the electoral process in a particular country. By *demonstrated knowledge*, it is understood one of the following criteria: (1) membership of a relevant research group, professional network, or organized section of such a group; (2) existing publications on electoral or other country-specific topics in books, academic journals, or conference papers; and (3) employment at a university or college as a teacher. The EIP reaches about forty experts per country and follows a standardized procedure for its selection. For more details

about how elections are evaluated by experts, see Martínez i Coma and van Ham (2015).

3. This mainly applies to countries using single national districts, Israel and The Netherlands. Ten out of 12 experts in the latter and 18 out of 24 in the latter selected the option "not applicable." The results do not change appreciably if the "not applicable" is not considered in the analysis.
4. We are very much aware that relying on experts' assessments is not a risk-free endeavor as Steenbergen and Marks (2007) note. The most relevant sources of bias may arise when evaluating the object (in our case, gerrymandering) but also the bias of the expert as well as the context in which such assessment is delivered should be considered. However, we rely on the work of Martínez i Coma and van Ham (2015: 2) where they critically assessed the limitations noted and "barely find any systematic pattern for explaining experts' judgment variance, even after controlling for a considerable number of individual characteristics."
5. "Impartiality" is a multidimensional concept. While some experts may be considering the districting plan, others may be considering decisions taken in the composition of the districting commission. Regardless of this, the variable measures the perception among well informed specialists on how much controversy (if any) was there about electoral district boundaries in the country.
6. The Netherlands' score is 1 and 1.33, when it should be 1. The reason for this gap is that experts could select between "agree" and "strongly agree."
7. Although gerrymandering is not possible in countries using single national districts, they are included in the analysis to avoid selecting on the dependent variable. Given that gerrymandering is a "second-moment" effect, taking into account, the "first-moment" effect in the analysis is crucial. The results do not change appreciably when the two countries in the sample using single national districts, Israel and The Netherlands, are simply dropped. Results are available upon request.
8. The data and codebook can be downloaded at: http://thedata.harvard.edu/dvn/dv/PEI accessed on November 13th, 2015.
9. Differences within mixed-member systems are not explored in this note, as there are only 12 countries using mixed-member proportional systems in our sample.
10. Diagnostic tests indicate that there are no influential observations. Therefore, when running robust regressions the results do not change appreciably. Results are available upon request.

References

Alesina A (2003) The size of countries: does it matter? *Journal of the European Economic Association* 1(2–3): 301–31.

Alesina A and Spolaore E (2003) *The Size of Countries*. Cambridge and London: MIT Press.

Borisyuk G, Johnston R, Thrasher M, et al. (2008) Measuring bias: moving from two-party to three-party elections. *Electoral Studies* 27: 245–256.

Bormann N-C and Golder M (2013) Democratic electoral systems around the world, 1946-2011. *Electoral Studies* 32: 360–369.

Chen J and Rodden J (2013) Unintentional gerrymandering, political geography and electoral bias in legislature. *Quarterly Journal of Political Science* 8: 239–269.

Coakley J (2008) Electoral redistricting in Ireland. In: Handley L and Grofman B (eds) *Redistricting in Comparative Perspective*. Oxford: Oxford University Press, pp. 155–172.

Cox GW (1997) *Making Votes Count, Strategic Coordination in the World's Electoral Systems*. Cambridge: Cambridge University Press.

Cox GW and Katz J (2002) *Elbridge Gerry's Salamander. The Electoral Consequences of the Reapportionment Revolution*. Cambridge: Cambridge University Press.

Gelman A and King G (1990) Estimating the electoral consequences of legislative redistricting. *Journal of the American Statistical Association* 85: 274–282.

Gelman A and King G (1994a) A unified method for evaluating electoral systems and redistricting plans. *American Journal of Political Science* 38: 514–554.

Gelman A and King G (1994b) Enhancing democracy through legislative redistricting. *American Political Science Review* 88: 541–559.

Grofman B and Handley L (2008) Introduction. In: Handley L and Grofman B (eds) *Redistricting in Comparative Perspective*. Oxford: Oxford University Press, pp. 3–8.

Grofman B and Selb P (2009) A fully general index of political competition. *Electoral Studies* 28: 291–296.

Handley L (2008) Delimiting electoral boundaries in post-conflict settings. In: Handley L and Grofman B (eds) *Redistricting in Comparative Perspective*. Oxford: Oxford University Press, pp. 191–202.

King G (1990) Electoral responsiveness and partisan bias in multiparty democracies. *Legislative Studies Quarterly* XV: 159–181.

Martínez i Coma F and van Ham C (2015) Can experts judge elections? Testing the validity of expert judgments for measuring election integrity. *European Journal of Political Research* 54: 305–325.

Monroe BL and Rose AG (2002) Electoral systems and unimagined consequences. Partisan effects of districted proportional representation. *American Journal of Political Science* 46: 67–89.

Norris P (2013) Does the world agree about standards of electoral integrity? Evidence for the diffusion of global norms. *Electoral Studies* 32: 576–588.

Norris P (2015) *Why Elections Fail?* New York: Cambridge University Press.

Popescu M and Toka G (2008) Districting and redistricting in Eastern and Central Europe, regulations and practices', In: Handley L and Grofman B (eds) *Redistricting in Comparative Perspective*. Oxford: Oxford University Press, pp. 251–264.

Steenbergen M and Marks G (2007) Evaluating expert judgments. *European Journal of Political Research* 46: 347–366.

Taagepera R and Shugart MS (1989) *Seats and Votes. The Effects and Determinants of Electoral Systems*. New Haven: Yale University Press.

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Appendix 1

Elections in 2012: Georgia, Lithuania, Montenegro, The Netherlands, Romania.

Elections in 2013: Albania, Argentina, Australia, Austria, Barbados, Bulgaria, Czech Republic, Germany, Grenada, Iceland, Italy, Japan, Malaysia, Malta, Micronesia, Nepal, Norway, Pakistan, Philippines.

Elections in 2014: Belgium, Botswana, Colombia, Hungary, India, Indonesia, Latvia, Mauritius, Moldova, New Zealand, Sao Tome and Principe, Serbia, Slovenia, Solomon Islands, South Africa, Sweden, Tonga, Ukraine, United States.

Elections in 2015: Denmark, El Salvador, Estonia, Finland, Greece, Guyana, Israel, Lesotho, Mexico, Turkey, United Kingdom.