

THE COMPETITIVE ROAD TO PROPORTIONAL REPRESENTATION

Partisan Biases and Electoral Regime Change under Increasing Party Competition

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I. ROKKAN'S FORGOTTEN ROAD TO PROPORTIONAL REPRESENTATION

ONE of the most noteworthy political regularities in the twentieth century was the shift away from majoritarian electoral rules. As has been well documented,¹ in the first half of the twentieth century almost every reformed or new electoral system belonged to the proportional representation (PR) family. The conventional story, first introduced by Stein Rokkan and later formalized by Carles Boix,² argues that shocks to the median voter and the rising threat of Socialist parties led incumbent elites, fearful of the electoral gains that majoritarian rules could provide to successful newcomers, to reform the electoral system. The argument is not only consistent but also fits well with existing knowledge about reforms under stress in some Western European countries.³

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¹ Rokkan 1970; Boix 1999; and Grofman and Lijphart 2003.

² Rokkan 1970; and Boix 1999.

³ The argument builds on Rokkan's two roads to Proportional Representation. As presented by Rokkan, early reforms (the first road) were introduced to protect electoral minorities in the years before World War I. The second road, the "antisocialist" phase, was common in the 1920s. According to Rokkan (1970, 157), in the prewar years, increasing competition led to the introduction of reforms to protect political minorities in the culturally heterogeneous countries of Belgium, Denmark, and Switzerland. Prior to World War I, threatened elites in Germany, Norway, and Sweden, introduced PR to minimize seat losses to rising Socialist parties. As presented by Grofman and Lijphart (2003, 10), "the

However, this argument fails to explain PR reforms in countries with weak or nonexistent Socialist parties, a list that includes most countries of the world in the early twentieth century. More importantly, it provides no explanation as to why in Western European democracies these reforms were not immediately followed by sweeping Socialist victories, even if those victories would provide fewer seats than those expected under majoritarian electoral rules.⁴ Finally, it does not explain why, once the Socialist threat was over and Socialist parties were regular participants in the political arena, majoritarian electoral rules were not brought back in.

To explain cases in which an electoral Socialist threat was an unlikely explanatory factor, such as in the countries of Belgium, Denmark, and Switzerland, Rokkan developed a lesser-known hypothesis that early reformers were seeking to protect cultural minorities. Unlike the Socialist-threat argument, in this hypothesis Rokkan provides weak self-interest as motivation for the introduction of these reforms; the traditional elites seemingly sacrifice seat shares without obtaining clear political benefits. The notion of a second road to electoral reform, however, fits a wide body of empirical research⁵ that stresses the importance of uncertainty, seat-vote distortions, and redistricting problems⁶ in the elimination of majoritarian electoral rules in the early twentieth century. In contrast to the Socialist threat argument, however, the mechanisms that explain this alternative road to electoral reform have not been fully developed.⁷

This article builds upon this second body of research and provides a self-interest rationale for the move away from majoritarian rules with

primary force behind the introduction of PR was the desire of conservative parties (then dominant) to avoid complete elimination in light of the expected socialist gains when the working class was enfranchised, coupled with the view of challengers that PR would guarantee them equitable representation." The "view of the challengers" however, has received little empirical attention.

⁴ Indeed, the guiding theme of Przeworski and Sprague's (1986, 1) seminal study of the electoral strategies of the early Socialist parties, *Paper Stones*, is the failure by these parties to win a majority of the votes. As stated in the first paragraph of the book, "No political party ever won an electoral majority on a program offering a socialist transformation of society."

⁵ Andrews and Jackman 2005; Blais, Dobrzynska, and Indridason 2004; Cusack, Iversen, and Soskice 2007; Grofman and Lijphart 2003; and Blais and Massicotte 1997.

⁶ In a recent article, Cusack, Iversen, and Soskice 2007 also challenge the standard view of PR reforms as a defense mechanism by the old elites, arguing instead that in countries with "previously densely organized local economies," coordination between business and unions facilitated the implementation of PR reforms. As I highlight in this article, these authors also identify the increasing disproportionality associated with such "local economies" as a predictor of PR electoral rules (p. 386). In this article I take their argument one step beyond and show the precise mechanisms that augment the severity of partisan biases prior to the implementation of the reforms.

⁷ A reexamination of the Boix 1999 data, in fact, has shown that his statistical results are not robust to alternative specifications (Andrews and Jackman 2005; and Cusack, Iversen, and Soskice 2007).

or without an emerging electoral threat by Socialist parties. As I will show, multiparty competition under majoritarian electoral rules increases the severity of partisan biases⁸ and the sensitivity of electoral regimes to districting problems. Simply put, the arrival of a new competitor who draws votes more intensively from one of the long-established parties will introduce severe partisan biases in the allocation of seats. These biases do not necessarily benefit the largest parties and, as I will show, in the early twentieth century led to increased pressure to reform majoritarian rules. The alternative road to electoral reform, therefore, describes cases in which the expansion of the franchise resulted in a substantial increase in the number of parties and, consequently, in significant partisan biases that adversely affected well-established political elites.

As I will show, when there are more than two parties and the territorial distribution of the vote is not symmetric, territorially concentrated minority parties will obtain more seats than territorially dispersed minority parties with an equivalent vote share. In cases such as Belgium, for example, the increase in competition in the late nineteenth century crowded out well-established old parties in favor of territorially concentrated newcomers. Electoral reforms provided a mechanism to moderate the partisan biases brought about by increasing competition and to restore the pre-enfranchisement seat-vote properties of the electoral system.

By measuring the seat-vote properties of early twentieth-century electoral regimes, this article complements extensive narratives that describe the troubling allocation of seats in the pre-PR electoral settings. As I will show, in countries where Socialist parties truly represented a revolutionary threat to the old establishment, PR electoral reforms diminished revolutionary pressures by granting extra seats to Social Democratic parties rather than preventing future losses by Conservative parties. This is the why in Austria, Germany, Italy, the Netherlands, and Norway—cases Rokkan explains by using the Socialist-threat argument—PR reforms were unequivocally supported by Social Democratic parties. Moreover, in those countries the reforms improved the seat shares won by Social Democratic parties and did not help old elites to maximize their seat shares.

In contrast, seat maximization by the old elites through the introduction of PR rules is only observed in cases in which newcomers crowded

⁸ Partisan biases describe extra seats won or lost by a particular party *i* beyond those expected by any other party *j* with an equivalent vote share under similar electoral rules. A formal treatment of partisan biases is presented in Sections III and IV.

out one of the old parties, as in Belgium and Denmark—two of the countries whose reforms Rokkan explains by the elite's interest in protecting cultural minorities. While it is unclear whether these reforms protected cultural minorities, the new electoral rules did eliminate partisan biases that penalized one of the old parties.

By presenting a general model to estimate the allocation of seats in multiparty races, this article provides microfoundations that explain the two different electoral scenarios underlying the choice of alternative PR arrangements in the early twentieth century. The results presented in this article also provide evidence that in cases where partisan biases did not systematically hurt a major party or coalition, as was the case in the United Kingdom, PR reforms failed to be implemented.⁹

This article proceeds as follows: Section II describes an electoral reform game where the arrival of a new party increases the severity of both majoritarian and partisan biases. Section III provides a formal model that explains how increasing the number of parties affects the majoritarian properties of electoral rules. Section IV explains how increasing the number of parties also enhances the severity of partisan biases after enfranchisement. Section V analyzes in further detail the mechanical properties of the electoral regimes of Belgium, Denmark, Germany, Italy, Norway, the Netherlands, Sweden, Switzerland, and the United Kingdom. Section VI analyzes Belgium in further detail. I conclude with a discussion of future extensions of this research.

II. AN ABSTRACT PRESENTATION OF THE GENERAL PROBLEM: ELECTORAL SHOCKS, MAJORITARIAN BIASES, PARTISAN BIASES, AND POLITICAL REFORMS

In this article, I emphasize two different problems that affect electoral regimes as the number of parties increases: more severe majoritarian biases, which have been recognized as an important factor explaining early PR reforms; and more severe partisan biases, which have received little attention in the past. Majoritarian biases describe the extra seats that a party obtains by virtue of winning more votes than any other party in a race. These majoritarian biases should reward or penalize any

⁹ Most party biases in the U.K. were relatively small and benefited the national delegations of Ireland and Scotland. While PR reforms were not implemented in the U.K., there were plenty of initiatives to that end that were rejected at different times by either the Conservatives and/or Labor. The campaign of Mills and Hare in favor of single transferable vote (STV), which was endorsed by a 1909 Royal Commission, was also resisted by both the Liberal and Labor delegations. In the end, the difficulty in finding common ground between the supporters of the STV and PR made any reformist attempt more difficult (McClaren Carstairs 1980, 195).

party with an equivalent vote share and are at the basis of Rokkan and Boix's explanation of the reform of early electoral regimes in Europe. Partisan biases, by contrast, describe the seat benefits that a particular party obtains beyond those expected by any other party with an equivalent vote share. These biases result from the interaction between multi-party competition and the districting properties of the electoral regime, and do not necessarily benefit winning parties.

Imagine a nineteenth-century restricted democracy with only two parties, the Conservatives and the Liberals. For several elections they have been competing to control a majority of seats in the parliament and, in the last election, the Conservatives won 55 percent of the vote and the Liberals 45 percent. Under single-member plurality rule¹⁰ and in a classic majoritarian system governed by the cube law,¹¹ the Conservatives won 65 percent of the seats and the Liberals the remaining 35 percent.¹² However, after a stormy platform conflict, the left faction of the Liberal Party in the urban districts breaks away and creates a Radical Party. This Radical Party competes successfully in the metropolitan provinces but performs poorly in the rural districts.¹³ In the next election, the Conservatives win 52 percent of the rural vote and 35 percent of the urban vote, the Liberals win 38 percent in rural districts and 23 percent in the urban ones, and the Radicals win 42 percent of the urban vote but only 10 percent of the rural vote. However, in counting seats, the Conservatives realize that with 47.5 percent of the vote they only obtain a modest advantage—51 percent of the seats. Meanwhile, the Liberals collect 31 percent of the vote but their delegation receives only 21 percent of the seats—10 percent fewer seats than votes. Finally, the Radicals win 26 percent of the vote and 28 percent of the seats, 7

¹⁰ Of the cases analyzed in this article, one country used block-vote rules in multimember districts (Belgium), two countries used simple plurality (SP) electoral rules (Denmark and Sweden), and five used two-ballot or multiballot rules (Austria, Germany, Italy, the Netherlands, and Norway). Two-ballot and multiballot rules sometimes allowed a simple plurality among all candidates in a second round, and sometimes forced a runoff between the two most-voted candidates. In Appendix 2 I present a formal treatment of this problem and in Section V I estimate a general model taking into consideration these differences in electoral rules.

¹¹ In the early twentieth century, the cube law provided an approximation to the expected seat share of a party in single member districts (SMD). The equation $(s_i/(1-s_i)) = (v_i/(1-v_i))^3$ described the log-odds ratio of seats s_i that a party expected to receive given its log-odds ratio of votes, v_i . For example, a party winning 55 percent of the vote would be expected to receive $(s_i/(1-s_i)) = (.55/(1-.55))^3$, or a 1.22 log-odds ratio of seats equivalent to a ≈ 65 percent of seats in a two-party race. A more intuitive algebraic equivalent may be written as $s = v^3/(1-3v + 3v^2)$, $s = .55^3/(1-3*.55^2) = 0.65$. Further details can be found in Taagepera 1986.

¹² The effect of other majoritarian rules such as block vote or the two-ballot system can also be modeled. For presentation purposes, I use SP electoral rules to exemplify the effect of increasing competition.

¹³ For simplicity I assume that the two regions have the same number of electoral districts.

percentage points more than the Liberals despite the lower vote share. As I will show in further detail, the arrival of a new party introduced new partisan biases where none existed before.

In the next election, the leadership of the Liberal Party bargains with the Conservatives to find an electoral mechanism to get rid of the Radicals. The Conservatives know that the Liberals are severely biased against and the Radicals are reaping most of the benefits of this. After months of negotiations, the Liberals and Conservatives agree to an electoral reform that imposes PR multimember districts with small magnitudes. Additionally, they impose the requirement of a minimum-vote threshold (to transfer seats from the Radicals to the Liberals) and guarantee majority safeguards (to keep the Conservatives above the 50 percent majority line).

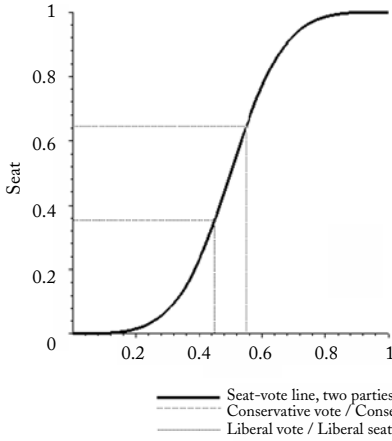
The imposed reforms make sense because there are few alternatives that can restore the majoritarian properties of the existing electoral rules when the number of parties increases. The alternatives in the new electoral environment are: (1) to eliminate the emerging Radical Party; (2) to accept larger majoritarian and partisan biases, or (3) to change the electoral rules to approximate the distribution of seats that existed when only Conservative and Liberals competed for the popular vote.

Figure 1 provides a formal representation of the problem. The horizontal axes describe the percent votes v_i obtained by party p_i , and the vertical axis represents the seat share s_i . In a two-party race, 1a, the distribution of votes follows the classic cube law and, therefore, the Conservative Party (solid line) receives 65 percent of the seats with 55 percent of the vote while the Liberals (dotted line) receive 35 percent of the seats with 45 percent of the votes.

However, in a three-party race, 1b, the curve shifts to the left to a new cut-off point precisely located at $1/N$, e.g., the sum of votes over the effective number of competing parties. Given that a party still elects the plurality winner in each district, if one of the two parties could hold on to its previous vote share, it would obtain a larger number of seats. Holding the electoral formula constant, the increase in competition would allow the Conservatives (dashed line) to win ≈ 88 percent of the seats with only 55 percent of the vote.

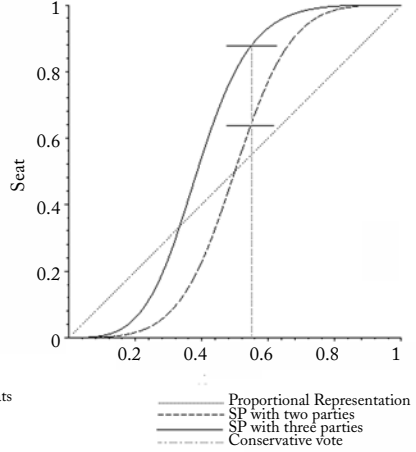
In this example, however, it is only in the more competitive urban districts that the seat-vote line is to the left of the rural districts, 1c.¹⁴ The consequence of such regional differences is that the Radicals in

¹⁴Notice that the effective number of parties in the rural areas is 2.35 and in the urban areas it is 2.84. Biases, however, will emerge with almost any combination.



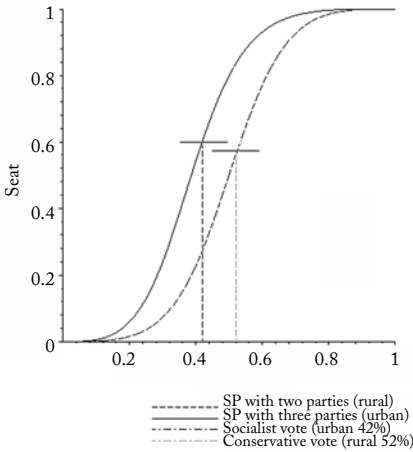
(a)

TWO PARTY COMPETITION UNDER
SIMPLE PLURALITY



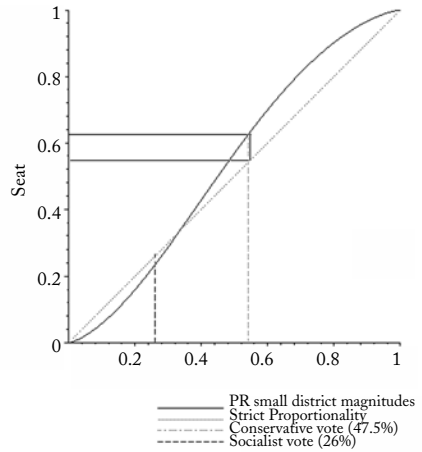
(b)

COMPARING TWO- AND
THREE-PARTY CURVES



(c)

EXPECTED SEAT SHARES BY THE
CONSERVATIVE PARTY IN THE RURAL
DISTRICTS AND BY THE SOCIALISTS IN THE
URBAN DISTRICTS



(d)

EXPECTED SEAT-VOTE CURVE
AFTER PR REFORMS

FIGURE 1

MAJORITYTARIAN REPRESENTATION UNDER INCREASING COMPETITION^a

^aCurves drawn using equations 3 and 4 from Section III, where ρ describes the majoritarian bias, v_i describes the vote share of party i , and n is the number of parties. Parameters for the seat-vote line: (a) $\rho = 3, n = 2, v_c = .55, v_l = .45$; (b) $\rho = 3, n = [3,2], v_c = .55$; (c) *Rural* $\equiv \{\rho = 3, v_c = .52, n = 2\}$, *Urban* $\equiv \{\rho = 3, v_s = .42, n = 3\}$ and (d) $\rho = 1.4, v_c = .55, v_s = .26$.

the urban districts have a considerably large seat premium than the one benefitting the Conservatives in the less competitive rural districts. Meanwhile, the Liberals win considerably fewer seats than their vote share as a result of their minority status in both regions. The national elections, therefore, return a severely biased allocation of seats that, in this example, benefits the Radicals while penalizing the Liberals. Finally, by introducing PR electoral rules with moderate district magnitudes, as in 1d, the Conservatives collect 53.5 percent of the seats, 2.5 percent more than under the previous majoritarian rules, while the Radical seat share is reduced to 23 percent. The introduction of PR, therefore, benefits both the Conservative and the Liberal Parties at the expense of the Radicals. As I will show in further detail, increasing the number of parties will affect the seat-vote properties of an electoral system even if the electoral rules appear to remain unchanged.

III. MAJORITARIAN BIAS UNDER INCREASING PARTY COMPETITION: A FORMAL APPROACH

To understand the incentive to reform the electoral rules in the early twentieth century, a theory that explains how an increase in the number of parties affects the seat-vote properties of prior electoral rule and who benefits from the proposed reforms is needed. To that end, the effect that increasing competition has on the majoritarian bias and the partisan bias parameters—two key parameters of an electoral system—must be modeled. The technical presentation that follows will first show that an increase in the number of parties significantly enhances the majoritarian properties of an electoral system and moves the seat-vote line to the left as in Figure 1b. Section IV shows how partisan biases also become more significant after enfranchisement.

GENERALIZED VERSIONS OF THE CUBE LAW

Early in the twentieth century, political practitioners noticed that the distribution of seats under simple plurality (SP) single-member districts was not proportional and could be approximated by a “cube law” where winning parties are expected to win more seats than their share of votes and losing parties are expected to win fewer seats than their share of votes. Generalized versions of this law were proposed in the mid-1980s by Bernard Grofman and Rein Taagepera¹⁵ to estimate the seat-vote properties of a wide range of electoral systems.

¹⁵ Grofman 1983 and Taagepera 1986.

$$\left(\frac{S_i}{1-S_i}\right) = \left(\frac{v_i}{1-v_i}\right)^\rho \quad (1)$$

Equation 1 describes a generalized version of the cube law in which the log-odds ratio of seats, S_i , is a function of the log-odds ratio of votes, v_i . In equation 1, ρ is no longer arbitrarily fixed to 3. Instead, the majoritarian representation parameter ρ is allowed to vary across electoral systems and, therefore, could be estimated directly from the seat and vote data. Grofman and Taagepera¹⁶ provide ordinary least squares (OLS) log-log approximations to equation 1 and extend the model to multiparty races. In his treatment of the cube law, Taagepera also shows that the vote-swing ratio should change under different levels of party competition and provides an equation for the cut-off point with more than two competitive parties. Taagepera, however, does not explore the effect that an increase in the number of parties had in the majoritarian representation parameter.

In 1987, Gary King and Robert Browning¹⁷ derived an algebraic alternative to Taagepera's log-log model—a grouped logistic procedure estimating the number of total seats S_i by the party's vote. A shift in the position of the curve to the left or to the right was interpreted as a measure of the extra seats (partisan bias) benefiting a particular party:¹⁸

$$S_i = K_d \left\{ 1 + \exp \left[-b_i - \rho \ln \left(\frac{v_i}{1-v_i} \right) \right] \right\}^{-1} \quad (2)$$

In equation 2, the total number of seats S_i won by party i is modeled as a grouped logistic function of the vote share v_i , the partisan bias b_i , and the effective district magnitude K_d . The advantage of this new treatment of majoritarian bias was its congruence with individual-level voting models. King and Browning, however, fail to incorporate Taagepera's key insight that the cut point of the majoritarian representation parameter was a function of the number of parties. After some algebraic manipulation, holding partisan bias constant, it is possible to derive the increase in majoritarian bias resulting from an increase in party competition as:¹⁹

¹⁶ Grofman 1983 and Taagepera 1986.

¹⁷ King and Browning 1987.

¹⁸ This is in fact a generalized linear version of Bernard Grofman's log-log model (Grofman 1983).

¹⁹ See Appendix 1 for the algebraic derivation of equations 3 and 4. See Appendix 2 for the estimation model.

$$S_i = K_d \left\{ 1 + \exp \left[-b_i - c * n - \rho \ln \left(\frac{v_i}{1-v_i} \right) \right] \right\}^{-1} \tag{3}$$

where

$$c = \frac{\rho \ln(n - 1) + \ln(n - 1)}{n} \tag{4}$$

Equation 4 describes the multiplicative effect that a unit increase in the number of parties n has on the majoritarian parameter ρ . The right term $\ln(n - 1)$ shifts the seat-vote curve to the left while $\rho \ln(n - 1)$ makes the line steeper, increasing the seat premium to the winning party. In a two-party race, $\ln(2 - 1) = 0$ reduces equation 3 to the model described by King and Browning (1987).²⁰

Equations 3 and 4 allow the comparative statics of electoral regime change under increasing competition to be explored. Scholars can select various theoretical values of majoritarian bias ρ , the effective number of parties n , party vote v_i , and district magnitude k , to describe the seat-vote properties of an electoral system and study how it changes as the number of parties increases.

Evaluating the theoretical properties of multiparty competition in any electoral system is straightforward. Plugging different values into the parameters of equations 3 and 4 will fit different seat-vote lines. For example, Figure 1a was drawn with the majoritarian-representation parameter set to the cube law value $\rho = 3$, and the number of parties equal to two, i.e., $S(v_i | \rho = 3, n = 2)$. As we increase the number of parties to three, $S(v_i | \rho = 3, n = 3)$, we see the multiplicative effect of increased party competition in Figure 1b. The comparative statics of the models show that in a two-party race, if the Conservative Party maintained a vote share $v_i = .5$, a new entrant in the electoral race would have the same effect as an increase in the Conservative vote share from 50 percent to 66 percent.

A very important insight gained from equations 3 and 4 is that party competition has a multiplicative effect that depends on the preexisting majoritarian biases. Figure 2a, for example, shows that the expected seat-vote distribution under majoritarian rules, $\rho = 3$) is very sensitive to increases in the number of parties n). That is, when the majoritarian bias ρ is large, an increase in the number of parties has a very large mul-

²⁰ A previous extension of majoritarian representation and partisan bias can be found in King 1990.

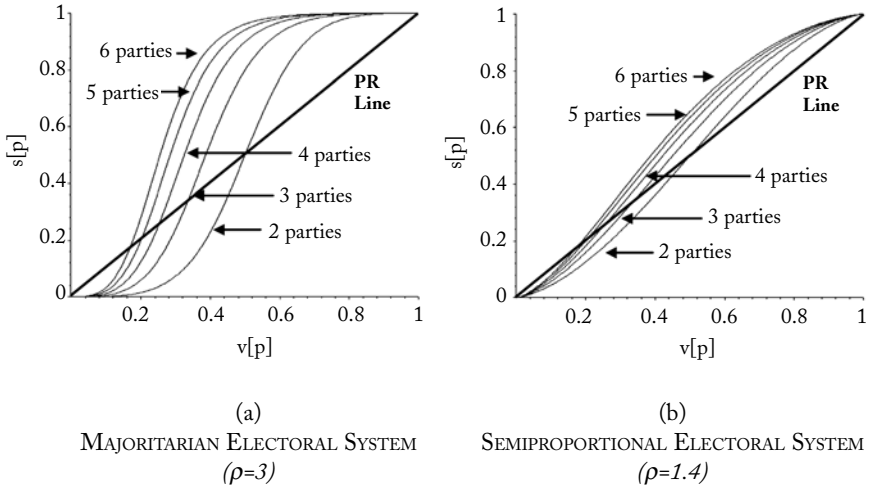


FIGURE 2
EFFECT OF INCREASING PARTY COMPETITION DIFFERENT ELECTORAL SYSTEMS

tiplicative effect and will lead to large seat swings in response to moderate vote changes. Meanwhile, as shown in Figure 2b, the multiplicative effect of an increase in competition is more moderate under relatively proportional electoral rules, $\rho = 1.4$).

If two parties are competing under majoritarian electoral rules, $\rho = 3$, a new entrant that draws votes more heavily from one of the old parties would have a dramatic effect on the expected seat shares of all parties. By contrast, under relatively proportional rules, each new entrant would mildly increase the majoritarian representation parameter. The more the effective number of parties, the more majoritarian the allocation of seats. A second result to highlight is that an increase in the number of parties also has multiplicative majoritarian effects in any electoral regime that is not strictly proportional.²¹

IV. PARTISAN BIASES AND THE TERRITORIAL DISTRIBUTION OF THE VOTE

The example above assumes that the partisan biases associated with the districting properties of the electoral system were unaffected by an in-

²¹ There is extensive evidence of majoritarian biases in proportional representation systems when the number of parties increases. See Taagepera 1986 and Calvo and Micozzi 2004. The only case in which there will be no effect from an increase in party competition will be when the majoritarian representation parameter is equal to 1, $\rho = 1$.

crease in the number of parties. Therefore, the entrance of new parties had only a multiplicative effect on the majoritarian properties of the electoral system. Under increasing competition, however, the heterogeneous distribution of votes across electoral districts will also introduce new partisan biases.²² This section describes the effect that party competition has on the partisan-bias parameters.

For descriptive purposes, following the example in Section II, I assume that prior to the expansion of the franchise, the Liberals consistently won by a comfortable margin in the more economically developed states of the federation—the metropolitan area—while the Conservatives won comfortably in the rural area—the periphery.²³ When the Radicals broke away from the Liberal Party, they gained a majority of the Liberal vote in the metropolitan area but almost none of that vote in the periphery.²⁴ As a result, the Radicals became the most important force in the metropolitan region while the Conservatives became the dominant force in the periphery, with both parties defeating minority Liberal candidates. While the Liberals may still control considerably more votes than the Radicals (or even more votes than the Conservatives) at the national level, the party's minority status in each region results in large seat losses. That is, two parties territorially concentrated (Radical and Conservative) crowd out the territorially dispersed party (Liberal).

In a two-party race in a perfectly apportioned electoral system, partisan biases are generally small; however, an increase in competition generates a districting problem where there was none before. This partisan effect is difficult to address through redistricting. That is, the possibility of generating minority-majority districts to unite Liberal voters spread over different states is not just technically unfeasible but also normatively unacceptable.

The mechanical aspects of the problem can be clarified by discussing how the territorial distribution of the vote affects the allocation of seats when there are two distinct regions with more than two parties and relatively simple majoritarian rules. As shown in Appendix 2, the seat-vote equation can be used to describe two or more electoral arenas that

²² More heavily denationalized party systems, such as those characteristic of the early twentieth century (Caramani 2004), would enhance the salience of partisan biases.

²³ Both Rokkan 1970 and Gudgin and Taylor 1974 have shown that overlapping territorial and national partisan cleavages led to an increase in partisan biases in SP electoral systems. Recent analyses can be found in Monroe and Rose 2002 and Jones and Mainwaring 2003.

²⁴ It is not uncommon for new parties to develop strongholds in a few districts. Most Social Democratic parties saw early growth concentrated in relatively urban and industrial provinces but were unable to penetrate the most rural and backward regions of their respective countries.

contribute a fraction of the total seats to each party. Geographically induced partisan biases can be described by using a restricted version of the same equation with two geographically distinct electoral arenas, one urban and one rural, that produce independently drawn vote shares. In the equation below, I eliminated the term-capturing partisan bias and, instead, estimate seat allocations for two different regions that contribute seats to each party.

$$S_i = \sum_r K_{dr} \left\{ 1 + \exp \left[-c * \ln(n_r - 1) - \rho_r \ln \left(\frac{v_{ir}}{1 - v_{ir}} \right) \right] \right\}^{-1} \quad (5)$$

In equation 5, the allocation of seats is a function of the number of parties, the parties' vote shares, and the majoritarian parameter ρ , in two or more different regions, i.e., $R \equiv \{r_1 = Rural, r_2 = Urban\}$. The model will produce R -different allocations of seats and, because of the different composition of the vote in each region, the winner's seat premium could reward different parties in each of region and, more importantly, to a different degree. This is the case because ρ_r is itself affected by the effective number of parties. The example of Section II can now be analyzed in further detail. As stated, there are two regions that allocate seats to three parties with the following vote shares: Conservatives, 52 percent in the rural area and 35 percent in the urban area; Radicals, 10 percent in the rural area and 42 percent in the urban area; and Liberals, 38 percent in the rural area and 23 percent in the urban area. Setting $\rho=3$ in both regions and plugging in those vote shares to equation 5 produces the following seat distribution: Conservatives, 69 percent of seats in the rural area and 34 percent in the urban area; Radicals, 0 percent in the rural areas and 56 percent in the urban areas; and Liberals, 29 percent in the rural areas and 8 percent in the urban areas. At the national level, therefore, the Conservatives would win 51 percent of the total seats with 47.5 percent of the vote; the Radicals would win 28 percent of the seats with 26 percent of the vote; and the Liberals would win only 21 percent of the seat with 31 percent of the vote. While Liberals received the second largest vote share, their seat share significantly lags behind that of the Radicals. If we use only national-level aggregate data to estimate the overall allocation of seats, these regional differences would be captured by the partisan bias parameters, b_j , which would describe deviations from the mean national allocation of seats for each party. Such biases can be replicated using very simple seat-allocation rules.²⁵

²⁵ Code to replicate Appendix 4, simulating territorially induced partisan biases, is available at <http://calvo.polsci.uh.edu>.

In a three-party race, therefore, the territorial distribution of the vote is no longer symmetric for all parties and the effect of district heterogeneity is absorbed by the partisan bias parameters. A minority party with a territorially concentrated constituency (the Radicals in the Section II example), will suffer fewer seat losses than a party with a similar vote share whose constituency is territorially dispersed (the Liberals in the same example).

The result is the emergence of districting-driven partisan biases where none existed before. In the example, the old Liberal Party with a territorially dispersed vote gives up seats to the newcomer (a minority party with a territorially concentrated vote). Because new parties usually emerge in territorially concentrated bursts, successful challengers in perfectly apportioned electoral systems will squeeze losing parties that have a dispersed constituency. A similar finding was highlighted by Thomas Cusack, Torben Iversen, and Daniel Soskice who argue that:

Countries that grew out of locally coordinated economies may have been able to sustain more parties because of the geographical concentration of interests . . . The latter logic ties in with another part of our argument, namely, the notion that SMD [single member districts] systems in coordinated economies—before the onset of large-scale industrialization—functioned in an essentially proportional manner . . . Those are the countries most likely to transition to PR.²⁶

The next section shows that in the early twentieth century the consequence of increased enfranchisement was an increase in the effective number of competing parties which, in turn, led to severe partisan biases in the years preceding the introduction of PR.

V. THE TWO ROADS TO ELECTORAL REFORM: INCREASED COMPETITION AND THE EMERGING SOCIAL DEMOCRATIC THREAT

In *Setting the Rules of the Game*, Boix explains PR electoral reforms as the result of old Conservative and Liberal parties minimizing likely seat losses to rising Social Democratic parties. In Boix's argument (and consistent with the mechanics described in Section III), if Conservatives and Liberals split their votes, the Social Democratic Party would receive more seats than its share of votes, leading to costly Liberal and Conservative defeats. The argument is sound but, if we accept Adam Przeworski and John Sprague's²⁷ account of the electoral performance of Socialist parties, there are only a handful of countries in which So-

²⁶ Cusack, Iverson, and Soskice 2007.

²⁷ Przeworski and Sprague 1986.

cialists won a plurality of the vote and none in which they won a majority of the vote.

The conventional story also leads to paradoxical conclusions when analyzing cases such as Belgium, where the Catholic Party remained the dominant party for more than twenty years after the introduction of PR electoral rules. One might think that moving away from majoritarian electoral rules would be a political mistake or an irrational choice that would lead to reductions in the seat bonus for the incumbent Catholics and would benefit all other minority parties (including the Liberal-Socialist cartel and the Socialist Party). As I will show, however, even parties that control a plurality of votes could be, and often were, biased against under the preexisting electoral rules.

Table 1 provides an overview of the votes and seats received by the largest political parties in elections before and after the introduction of PR in eight countries.²⁸ Narrow Socialist victories in Denmark, Germany, and Norway occurred before the enactment of PR reforms. After the PR reforms, only the German Social Democrats retained a plurality of the vote; the Socialist vote share declined in Denmark and Norway. Given that Socialists were never in position to win the election by the time reforms were implemented, election results in Belgium and Sweden, however, defied the “Socialist threat” argument.²⁹

The descriptive information in Table 1 provides some puzzling information. While it is true that the old elites could have been concerned with losing seat premiums to rising new parties, the Social Democratic Party in Germany won a plurality of the vote in the 1912 election but failed to obtain a seat premium (in fact, it won 7.1 percent fewer seats than its vote share). This is consistent with historical accounts showing that Friedrich Ebert’s Social Democratic administration proposed the PR legislation and provided support for its approval in parliament.³⁰ By contrast, the Zentrum (center democratic) and Democratic Parties garnered few votes in the election prior to the introduction of PR but gained significantly larger seat shares while opposing the proposed reform.

As shown in Table 1, Socialist parties also supported PR reforms in two other countries that Boix and Rokkan characterized as “Socialist

²⁸ Information about the U.K. is not reported in Table 1 because PR failed to be implemented.

²⁹ More importantly, the winner’s bonus would not necessarily have benefited Socialist parties. In the two early elections in which Socialist parties won a plurality of votes (Norway 1918 and Germany 1919), the allocation of seats consistently benefited the traditional parties.

³⁰ The proposed PR legislation was drafted by Hugo Preuss, secretary of the Ministry of Interior under the Socialist administration of Friedrich Ebert. See McLaren Carstairs 1980.

TABLE 1
 PERCENTAGE OF VOTES AND SEATS FOR SELECTED WESTERN EUROPEAN COUNTRY
 ELECTIONS BEFORE AND AFTER THE INTRODUCTION OF
 PROPORTIONAL REPRESENTATION^a

| | <i>PR Reform</i> | <i>Election Year</i> | <i>ENCP^b</i> | <i>Party I Conservative</i> | <i>Party II Liberal</i> | <i>Party III</i> | <i>Socialist Party</i> |
|---|------------------|----------------------|-------------------------|--------------------------------|-----------------------------------|--------------------------------|--------------------------------|
| <i>ROKKAN'S FIRST ROAD (SOCIALIST THREAT)</i> | | | | | | | |
| Germany | 1919 | 1912 | 4.94 | 9.2 (10.8) ^c | 13.6 (11.3) ^d | 16.4 (22.9) ^e | 34.8 (27.7)^f |
| | | 1919 | 4.25 | 10.3 (10.5) ^g | 18.6 (17.8) ^h | 19.7 (21.6) ^e | 37.9 (38.7)^f |
| Italy | 1919 | 1913 | 2.74 | — | 55.9 (61.0)ⁱ | 11.7 (14.4) ^j | 17.6 (10.2) |
| | | 1919 | 3.63 | — | 35.5 (38.8)ⁱ | 20.5 (19.7) ^k | 32.3 (30.7) |
| Norway | 1919 | 1918 | 3.63 | 4.7 (2.4) ^k | 28.3 (40.5) ^m | 30.4 (39.6) ⁿ | 31.6 (14.3)^o |
| | | 1921 | 4.48 | 13.1 (11.3) ^k | 20.1 (24.7) ^m | 33.3 (38.0)ⁿ | 21.3 (19.3) ^o |
| Netherlands | 1917 | 1913 | 6.57 | 14.5 (28.0) ^p | 10.0 (10.0) ^q | 21.5 (30.0)^r | 18.5 (14.3) ^s |
| | | 1918 | 5.70 | 13.4 (13.0) ^p | 6.5 (7.0) ^q | 30.0 (25.0)^r | 22.0 (22.0) ^s |
| Sweden | 1909 | 1908 | 2.57 | 38.5 (39.6) ^t | 46.8 (45.7)^u | — | 14.6 (14.8) ^f |
| | | 1911 | 2.93 | 31.2 (28.3) ^t | 40.2 (43.9)^u | — | 28.5 (28.3) ^f |
| <i>ROKKAN'S SECOND ROAD (CULTURAL MINORITIES' PROTECTION)</i> | | | | | | | |
| Belgium | 1899 | 1898 | 3.68 | 41.4 (49.3)^v | 18.9 (12.0) ^u | — | 21.1 (36.0) ^w |
| | | 1900 | 2.89 | 48.5 (56.6)^v | 24.3 (21.7) ^u | — | 22.5 (21.1) ^w |
| Denmark | 1918/20 | 1913 | 3.89 | 22.6 (6.1) ^x | 29.1 (38.6) ^y | 18.7 (27.2) ^z | 29.6 (28.1)^f |
| | | 1918 | 3.70 | 18.3 (15.8) ^x | 29.4 (31.7)^y | 20.7 (23.0) ^z | 28.7 (28.1) ^f |
| Switzerland | 1919 | 1917 | 3.42 | 16.5 (22.2) ^A | 40.8 (54.5)^B | — | 30.8 (10.6) ^f |
| | | 1919 | 4.85 | 20.9 (21.7) ^A | 28.7 (31.7)^B | 15.3 (15.9) ^C | 23.4 (21.7) ^f |

SOURCES: McLaren Carstairs (1980); Mackie and Rose (1991); and Caramani (2000).

^a Percentage of seats shown in parentheses; main supporters of proportional representation in dark grey boxes, divided supporters in light grey boxes; party with the plurality of votes/seats in boldface type.

^b Effective number of competing parties

^c German Conservatives

^d National Liberals

^e Center Party

^f Social Democrats

^g National Peoples Party

^h Democratic Party

ⁱ Ministerial and Opposition Liberals

^j Radical Party

^k Popular Party

^l Landmandsforbundet

^m Høiere and Frisindede venstre

ⁿ Conservatives and Liberal Left

^o Det norske arbeiderparti

^p Anti-Revolutionary Party

^q Christian Historicals

^r Rooms-Katholieke Staatspartij

^s Sociaal-Democratische Arbeiders Partij

^t Hogerpartiet

^u Liberal

^v Catholic

^w Socialist

^x Konservative folkeparti

^y Venstre

^z Radikale Venstre

^A Schweizerische Konservative Volkspartei

^B Freisinning-demokratische

^C Schweizerische Bauern, Gewerbe, und Bürger

threat” cases—Norway³¹ and the Netherlands. In both cases, however, Socialist parties were significantly biased against and paid a hefty seat penalty under the previous electoral rules. Particularly dramatic was the 1918 election in Norway where Socialists won a plurality of the vote (31.6 percent) but collected only 14 percent of the seats. In five of the countries analyzed, Germany, Italy, Norway, the Netherlands, and Switzerland, Social Democrats were severely biased against and favored PR reforms. (By contrast, the Socialist parties in Sweden and Denmark and the Labor Party in the U.K. were not biased against and did not support the PR reforms.) Interestingly, in Belgium the Socialists benefitted from the prior electoral rules and provided moderate support for the PR reforms advanced by the Liberals. The information presented in Table 1 corresponds with prior accounts of Socialist-advanced reforms. As noted by Stefano Bartolini:

With majority systems socialist parties suffered heavy under-representation in the periods before World War I (-5.5 percent) and between the wars (-4.35 percent) . . . In proportional systems they are, on average, always overrepresented in every period . . . In the period of party foundation and consolidation before World War I, socialist parties were severely underrepresented in parliaments in Germany, Switzerland, Italy, Norway, Denmark, and Austria. In the first three cases, underrepresentation was massive.³²

The cases of Belgium and Denmark, however, are of a different nature. In both of these countries, the most severely penalized parties were the well-established elite parties: the Liberals in Belgium and Conservatives in Denmark. In Belgium the Socialists gained 21 percent of the vote and 36 percent of the seats in the election immediately preceding the introduction of PR, a fifteen-point bonus that was considerably larger than that gained by the largest party, the Catholics. As noted by Bertolini: “A case worth mentioning is that of the Belgian socialists. In the four general elections held before the war, two took place under the majority formula and two under PR. The socialist party was more underrepresented under PR than under the majority formula.”³³ In Denmark, the Conservatives had 4 percent more votes than the Radikal Venstre but won 21 percent fewer seats! The Radikal Venstre, in turn, won 10 percent fewer votes than the Socialists but still managed to win almost the same seat share, 27 percent.

³¹ Before the PR reform, Socialists in Norway were severely biased against. In spite of losing 10 percent of the vote in the election that followed PR reforms, the new rules gave them 5 percent more seats.

³² Bartolini 2000, 354.

³³ Bartolini 2000, 355.

Overall, in four of the eight countries analyzed, the plurality winner failed to gain a seat advantage and large seat premiums were allocated to parties controlling a minority of the vote. A case that deserves a special mention is Sweden, which systematically allocated fewer seats than votes to the majority party in almost all elections between 1887 and 1908.

In the next section, I analyze the evolution of seats and votes in nine European countries in the late nineteenth and early twentieth centuries. First, I show the severity of the partisan biases in postenfranchisement multiparty systems. I then analyze the case of Belgium in greater detail to show the benefits that PR brought to the old parties, the Catholics and the Liberals, when facing a losing but electorally significant new Socialist Party.

THE DATA AND THE MODEL

The data include the allocation of seats and votes for every party in 164 national legislative elections: 1,123 stacked observations with party allocations of seats and votes in Belgium (1860–1914), Denmark (1901–45), Germany (1871–1933), Italy (1885–1921), the Netherlands (1897–1937), Norway (1894–1936), Sweden (1885–1944), Switzerland (1896–1951), and the U.K. (1885–1945). Each observation includes the national returns for party p in election e and country c .

In order to account for two-ballot races in Belgium, Germany, Italy, the Netherlands, and Norway, I computed each party's vote by summing the returns from first-round races when the seats were assigned in the first round and from second-round races when the seats were assigned in the second round.³⁴ Notice that first-round votes contribute to the party's total national vote only if the seats were effectively assigned in that round.³⁵ Using national vote shares I also computed Taagepera and Laakso effective number of competing parties.³⁶ Variables

³⁴ Seat totals for all countries except Belgium were obtained from Mackie and Rose 1991. The Belgian seat data from Mackie and Rose reported the composition of the assembly rather than the allocated seats. Therefore, the Belgian data was obtained from Moyne 1970. National vote totals are from Caramani 2000, which I also compared to the first-round vote totals reported by Mackie and Rose 1991 and Moyne 1970; they are almost identical. Caramani 2000 also collected first- and second-round votes at the constituency level. I aggregated the national vote of each party and the total number of voters using first-round constituency data if there were no second round and second-round results otherwise. The results of the first round were only added to the totals if the election had no run off, otherwise the runoff results were used. See Appendix 2 for a description of the mechanical properties of two-round electoral rules.

³⁵ A different specification was run using only the first-round national vote. Given that first rounds allocate a majority of seats in all countries, estimates using data that include runoff results were not substantially different. Data and code for this alternative specification can be requested from the author.

³⁶ $ENCP = 1/\sum v_i^2$, for all parties vote shares, v_i . Taagepera and Laakso 1980.

with country-level information on the expansion of suffrage (enfranchisement) and on the introduction of electoral reforms provide cut-off points for estimating the median majoritarian and partisan biases of the different electoral regimes within each country. As detailed in Appendix 3, I estimated the model using equations 3 and 4 via Bayesian simulation in WinBUGS 1.4 and loaded the posterior estimates into R.³⁷ The model used a binomial distribution with a logistic link,³⁸ which can be written in the usual notation for Bayesian general linear models:

$$S_{jec} \sim \text{Bin}(\mu_{jep}, K_{ep})$$

$$\text{Logit}(\mu_{jep}) = b_{jep} + c_p * \ln(n_{ep} - 1) + \rho_{ep} \ln\left(\frac{v_{jep}}{1-v_{jep}}\right) \quad (6)$$

The total national seats S allocated to party j in election e and country p is presumed to follow a binomial distribution with probability μ_{jep} and district magnitude K_{ep} . The expected probability of winning a seat is a function of the log-odds ratio of votes v_{jep} , the majoritarian parameter ρ_{ep} , the effective number of competing parties in a given election and country n_{ep} , the competitiveness parameter c_p , and a party-specific parameter (random intercept) describing the partisan bias for each party j in country p and election e . The parameters of interest are the majoritarian parameter ρ_{ep} , the bias parameter b_j , and the competitiveness parameter c_p . The model allows an estimate of different majoritarian and partisan biases by national election and country, and of different competitiveness parameters by country. Alternatively, the model can be indexed to estimate the majoritarian and competitiveness parameters by electoral regime (before and after the introduction of PR).

THE RESULTS

Table 2 presents the summary estimates of majoritarian bias, partisan bias, and competitiveness for each of the nine countries analyzed. It also presents an adjusted majoritarian bias projecting onto a two-party race to facilitate comparison.³⁹ As was already noted by King,⁴⁰ the majoritarian-bias parameter ρ is not necessarily larger under majoritarian electoral rules, given that partisan biases capture most of the seat

³⁷ Code and replication material can be requested from the author.

³⁸ An alternative multinomial specification (King 1990) can be requested from the author.

³⁹ The adjusted ρ combines the majoritarian bias parameter with the majoritarian effect of the effective number of parties (equation).

⁴⁰ King 1990.

TABLE 2
 BAYESIAN SEATS AND VOTES MODEL FOR NINE EUROPEAN COUNTRIES
 (1860–1937): SUMMARY ESTIMATES OF MAJORITARIAN BIAS,
 COMPETITIVENESS, AND PARTISAN BIAS

| <i>Before PR</i> | <i>Belgium</i> | <i>Denmark</i> | <i>Germany</i> | <i>Italy</i> | <i>Netherlands</i> | <i>Norway</i> | <i>Sweden</i> | <i>Switzerland</i> | <i>U.K.</i> |
|-----------------------------|-------------------------------|---------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| Majoritarian bias - ρ | 1.744 (0.094) ^a | 1.386 (0.080) | 1.036 (0.021) | 0.967 (0.057) | 1.034 (0.062) | 1.559 (0.115) | 0.704 (0.108) | 1.163 (0.021) | 0.949 (0.062) |
| Adjusted ρ^b | 1.774 | 1.603 | 0.990 | 0.965 | 1.247 | 1.913 | 0.861 | 1.090 | 0.965 |
| Competition - c^c | 0.149 (0.168) | 0.216 (0.169) | -0.030 (0.086) | -0.012 (0.130) | 0.158 (0.093) | 0.785 (0.143) | 0.617 (0.161) | -0.101 (0.044) | 0.029 (0.125) |
| Conservative bias | -0.053 (0.055) | -0.491 ^d (0.199) | 0.024 (0.143) | — | 0.466 (0.135) | -0.180 (0.064) | 0.072 (0.079) | -0.043 (0.170) | 0.289 (0.029) |
| Liberal bias | -0.001 (0.058) | 0.571 (0.204) | 0.290 (0.144) | 0.495 (0.071) | -0.050 (0.124) | 0.216 (0.065) | -0.430 (0.072) | 0.400 (0.150) | -0.250 (0.031) |
| Socialist bias | 1.575 (0.238) | -0.118 (0.193) | -0.671 (0.148) | -0.999 (0.172) | -0.467 (0.206) | -0.755 (0.143) | -1.259 (0.300) | -1.204 (0.200) | -0.038 (0.044) |
| Others | 0.305 (0.431) | 0.602 (0.184) | 0.246 (0.150) | -0.104 (0.154) | -0.482 (0.140) | 0.108 (0.368) | -0.748 (0.043) | -0.033 (0.251) | 1.125 (0.076) |
| Mean (ENCP) | 2.227 | 3.730 | 5.640 | 2.210 | 4.830 | 2.570 | 2.290 | 3.060 | 2.730 |
| N Elections | 20.000 | 6.000 | 13.000 | 6.000 | 8.000 | 13.000 | 13.000 | 8.000 | 16.000 |
| N Observations (parties) | 63.000 | 30.000 | 179.000 | 29.000 | 59.000 | 44.000 | 40.000 | 40.000 | 103.000 |
| <i>After PR</i> | <i>Belgium</i> | <i>Denmark</i> | <i>Germany</i> | <i>Italy</i> | <i>Netherlands</i> | <i>Norway</i> | <i>Sweden</i> | <i>Switzerland</i> | |
| Majoritarian bias - ρ | 1.095 (0.094) | 1.111 (0.053) | 1.066 (0.018) | 0.855 (0.041) | 1.141 (0.069) | 1.395 (0.078) | 1.214 (0.047) | 0.953 (0.093) | |
| Adjusted ρ^b | 1.078 | 1.177 | 1.158 | 0.776 | 1.316 | 1.757 | 1.393 | 0.959 | |
| Competition - c^c | -0.027 (0.231) | 0.064 (0.152) | 0.057 (0.053) | -0.085 (0.227) | 0.111 (0.162) | 0.322 (0.174) | 0.190 (0.096) | 0.005 (0.200) | |
| Conservative bias | 0.213 (0.159) | 0.079 (0.170) | 0.070 (0.092) | — | 0.001 (0.245) | 0.028 (0.194) | 0.086 (0.090) | 0.002 (0.166) | |
| Liberal bias | 0.105 (0.177) | 0.114 (0.161) | 0.076 (0.087) | 0.044 (0.216) | 0.085 (0.354) | 0.216 (0.065) | -0.014 (0.091) | 0.026 (0.166) | |
| Socialist bias | 0.061 (0.175) | -0.008 (0.156) | 0.017 (0.083) | -0.136 (0.219) | 0.033 (0.243) | -0.017 (0.191) | 0.063 (0.090) | -0.167 (0.167) | |
| Others | -0.613 (0.368) | 0.171 (0.196) | 0.020 (0.080) | -0.245 (0.229) | 0.172 (0.245) | 0.360 (0.214) | 0.104 (0.126) | -0.157 (0.183) | |
| Mean (ENCP) | 2.897 | 3.790 | 6.100 | 3.510 | 5.820 | 4.080 | 3.560 | 5.080 | |
| N Elections | 8 | 12 | 9 | 2 | 6 | 6 | 8 | 10 | |
| N Observations (parties) | 44 | 94 | 122 | 20 | 87 | 48 | 61 | 60 | |

SOURCE: Replication material can be downloaded from <http://calvo.polsci.uh.edu/>.

^a Standard errors in parenthesis.

^b Adjusted $\rho = \rho + c * \ln(encp - 1)$. The adjusted majoritarian parameter provides a projection of majoritarian bias in a two-party system and facilitates comparison. Differences between the actual ρ and the adjusted ρ grow larger as the effective number of competing parties (ENCP) increases. Mean effective number of competing parties reported in table.

^c Alternative specifications with electoral regime competitiveness parameters may be requested from the author.

^d Boldface indicates partisan biases significant at the .05 level.

premiums obtained by parties, as was shown in Table 1. Moreover, the territorial distribution of the vote systematically led to counter-majoritarian allocations of seats in Italy, Sweden, and the U.K. As expected, the variance of the majoritarian-bias parameter became extremely small after the introduction of PR, describing the higher predictability of the new electoral rules.

More importantly, Table 2 shows that antisocialist biases were large and statistically significant in a majority of countries (six) and small and not significant in two countries. It also shows that Socialist parties were favored only in one country. It is worth noting that before the introduction of proportional electoral rules, significant biases negatively affect at least one of the established parties in a majority of countries. By contrast, after the introduction of PR, there are no partisan biases that are statistically significant. Together with the elimination of partisan biases, a significantly smaller variance around each country's majoritarian-bias parameter provides further evidence of the higher predictability of seat allocation seats after the reforms.

The summary statistics in Table 2, however, fail to capture the most interesting aspects of this dynamic process. These estimates are very conservative, given that partisan biases were small before the expansion of the franchise and after the introduction of PR. In most elections before the expansion of suffrage, therefore, electoral rules did not produce severely biased allocations of seats against established parties. With the rise of new mass political parties, however, electoral regimes became unstable, displaying larger majoritarian and partisan biases. The flexible modeling strategy provided by equation 5 allows a look at the evolution of the parameter estimates across different elections and enables an exploration of the actual allocation of seats and votes that accompanied the enactment of PR electoral reforms.

Figures 3, 4, 5, and 6 provide the full range of information gathered by the parameters of the statistical model. They trace of the evolution of partisan biases in each country. A mean of zero indicates no partisan bias, while positive partisan biases are described by values greater than zero and negative partisan biases are described by values less than zero. In each figure, the solid line describes the expansion of suffrage and the dotted line describes the introduction of PR.

Figure 3 shows three cases in which electoral rules introduced severe antisocialist partisan biases. In Germany, Italy, and the Netherlands, the territorial distribution of the voters produced severe biases against Socialist parties to the advantage of the Zentrum (Germany), the Catholics (the Netherlands), and the Ministerial Liberals (Italy).

This antisocialist bias explains why reforms in Germany were favored by the Social Democrats and opposed by the Zentrum, a party that did not control a plurality of the vote but consistently benefited from positive partisan biases. Concessions to prevent a revolutionary threat in Germany, therefore, could hardly be considered a seat-maximization strategy by the old parties. In the Netherlands, the Antirevolutionary Party and the Socialists secured more votes than the Catholics but gained fewer seats.⁴¹

Figure 4 shows Norway and Sweden, two other countries where Socialists were biased against. Consistent with the descriptive information in Table 1, the model shows that the Social Democrats in Norway were severely biased against. While antisocialist biases are also observed in Sweden, the counter-majoritarian nature of the electoral rules did not severely penalized any party. Given that the prior rules were counter-majoritarian, PR rules benefited—and were supported by—all large parties.⁴²

Figure 5 shows two cases, Belgium and Denmark, in which the arrival of Socialist competitors crowded out one of the established parties. Similar to Figure 4, the electoral rules and territorial distribution of voters favored the Catholics in Belgium and the Liberals in Denmark while punishing the Liberals in Belgium and the Conservatives in Denmark. In both cases, minority Socialist parties benefited from small but positive partisan biases.⁴³

The two cases analyzed in Figure 6, Switzerland and the U.K., deserve special attention. Switzerland was classified by Rokkan as a case in which PR reforms were introduced to protect cultural minorities. Swiss electoral rules, however, displayed strong and systematic anti-socialist biases that are very much in line with the cases analyzed in Figures 3 and 4. Part of Rokkan's rationale for classifying Switzerland as a cultural-minority case rested on his analyses of PR reforms at the canton level. While national-level PR rules were implemented in 1919, a majority of cantons had already abandoned majoritarian rules for their local elections.

⁴¹ In fact, the Antirevolutionary Party won more votes than the Catholics in every election between 1897 and 1913 but always received fewer seats. The Antirevolutionary Party bias, however, grew considerably larger as party fragmentation increased. See Bartolini 2000.

⁴² Part of the incentive to reform the electoral rules, however, involved renegotiating the relative strength of the upper Chamber, which enforced strong property qualifications. It is also the reason that, in 1909, Sweden introduced early PR reforms.

⁴³ Belgium used a block-vote system that prevented parties from coordinating their candidacies after a first round. Denmark used simple plurality single-member districts. See McLaren Carstairs 1980.

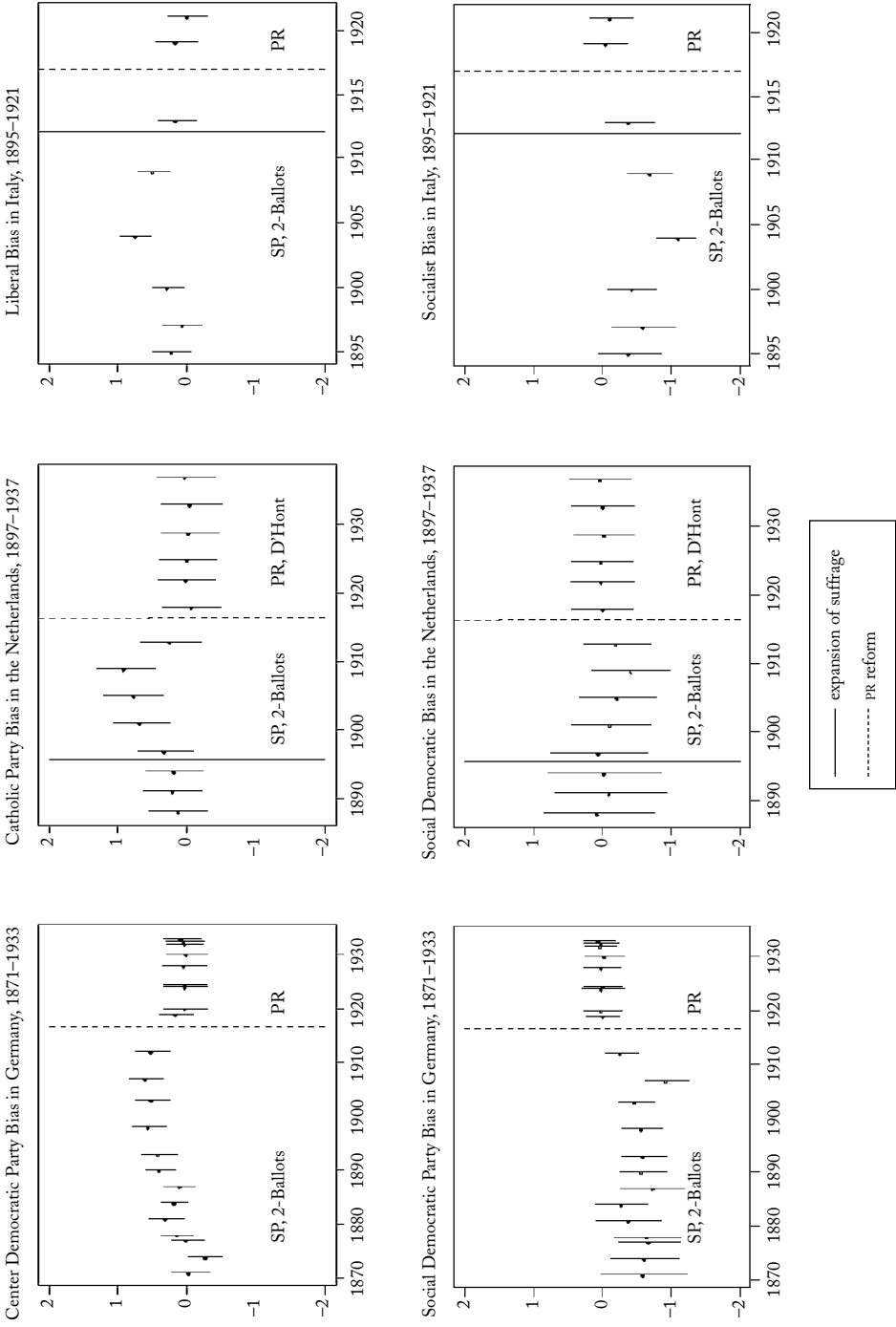
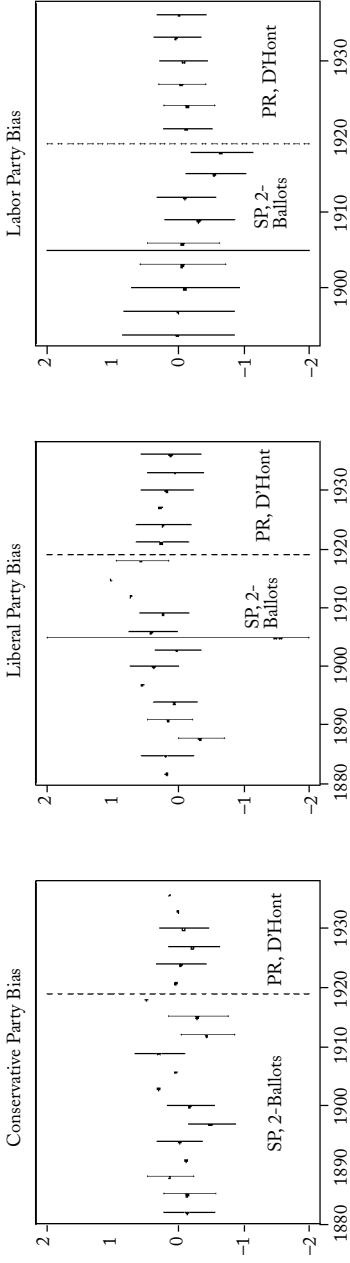


FIGURE 3

ROKKAN'S SOCIALIST-THREAT COUNTRIES: SELECTED PARTISAN BIASES IN GERMANY, THE NETHERLANDS, AND ITALY

NORWAY (1894–1936)



SWEDEN (1885–1944)

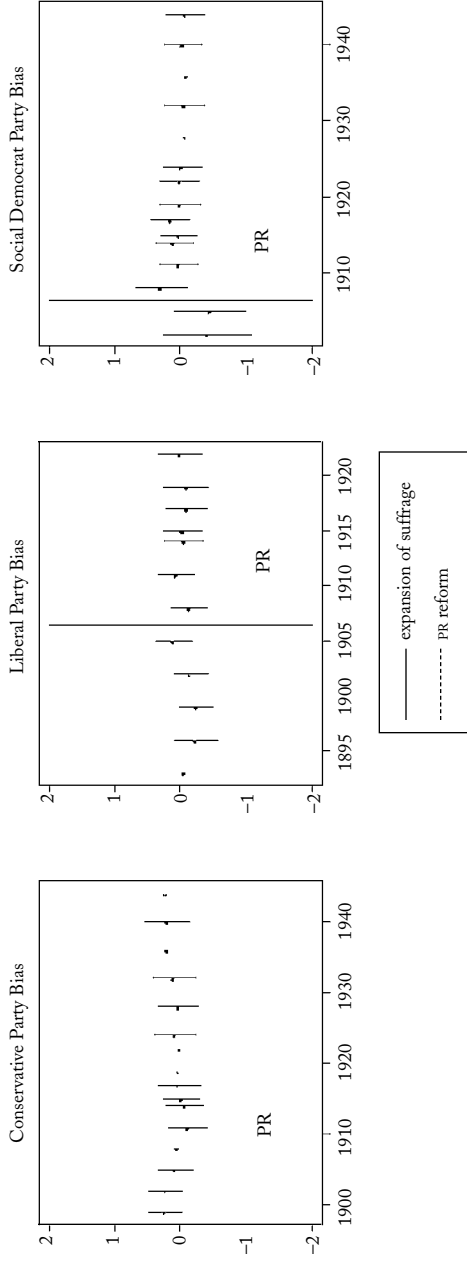
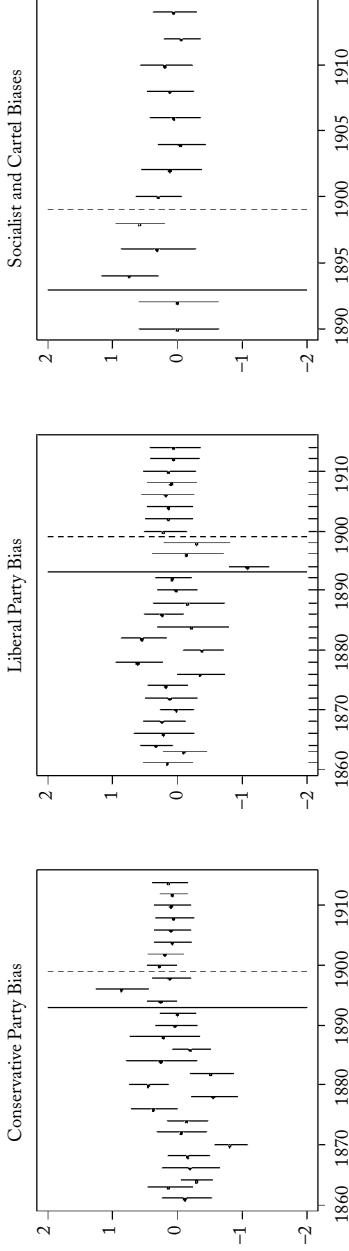


FIGURE 4
ROKKAN'S SOCIALIST-THREAT COUNTRIES: SELECTED PARTISAN BIASES IN NORWAY AND SWEDEN

BELGIUM



DENMARK

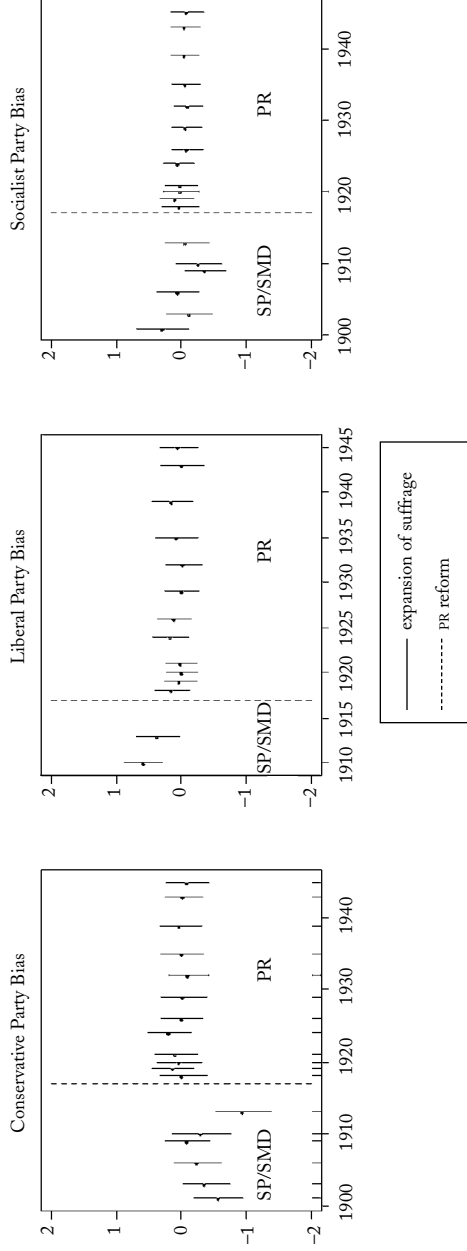
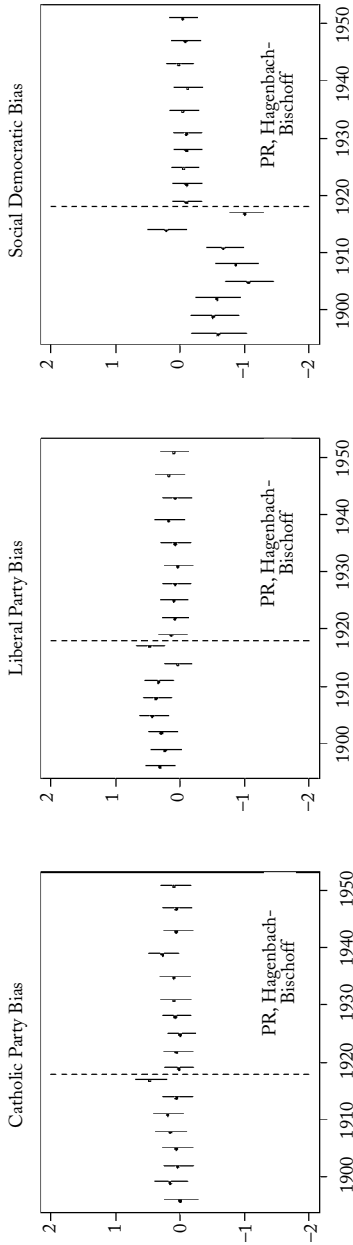


FIGURE 5

ROKKAN'S SECOND ROAD TO PR:
 SELECTED PARTISAN BIASES IN BELGIUM AND DENMARK

SWITZERLAND (1896–1951)



UNITED KINGDOM (1885–1945)

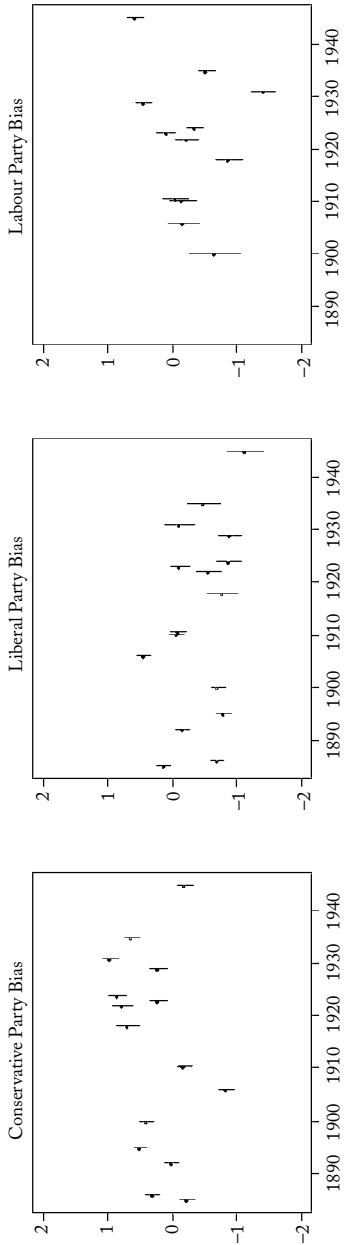


FIGURE 6
SELECTED PARTISAN BIASES IN SWITZERLAND AND THE UNITED KINGDOM

The United Kingdom provides an interesting contrast to the other cases. It is the only case in the sample, and overall one of the few countries in Europe, that failed to reform its electoral system. In spite of repeated attempts in the last two decades of the nineteenth century and the first two decades of the twentieth century, the Liberals—the party most affected by the rise of Labor—failed to gain support from either Labor or the Conservatives for implementing more proportional rules (PR or single transferable vote [STV]). Table 2 and Figure 6 show the U.K. was characterized by a counter-majoritarian allocation of seats, which benefited the small Irish and Scottish delegations and was neutral to Labor. Eventually, the Liberal Party, the only party severely biased against, paid a hefty price for failing to gain support for the reforms after World War I. During the short Labor-led administration of 1920, Liberals tried to form an alliance with Labor to introduce more proportional electoral rules (PR or STV). This reformist attempt failed as the backbenchers of the Labor Party resisted the party leadership's agenda. The failure to reform the electoral rules during the Labor-led administration would eventually impose a hefty penalty on both Labor and the Liberals, rewarding the incumbent Conservatives with seat bonuses until after World War II.

In all the cases analyzed, the introduction of PR wiped out the pre-existing partisan biases restoring to full strength the old-regime minority partners or providing an institutional boost to Socialist parties. Moreover, PR electoral reforms also guaranteed a predictable allocation of seats as can readily be observed by comparing the estimated majoritarian biases (Table 2) before and after the elimination of SP electoral rules.

VI. BELGIUM: PR REFORMS WITHOUT A SOCIALIST THREAT⁴⁴

Analyzing the Belgian case in detail provides further insight into the nature of PR electoral reforms in cases with losing Socialist parties. Between 1847 and 1892, the Kingdom of Belgium held multimember block-vote elections in forty-one arrondissements (electoral districts). Every district elected a different number of candidates. In 1893 a constitutional reform enfranchised all adult men and the number of voters increased thirteen times from 136,000 to 1,853,923.⁴⁵

⁴⁴This section uses national-level data to estimate the seat-vote model.

⁴⁵The reforms included plural voting clauses that provided extra votes to wealthy and/or well-educated constituencies. See Bartolini 2000.

In the first election after universal male enfranchisement, the Catholics obtained 51 percent of the vote in the first round, 60 percent in the runoff, and 67 percent of the seats. By contrast, the Liberals obtained 27 percent of the vote but received only 7 percent of the seats. The Liberal Party was severely punished by electoral rules that rewarded the Catholics in the less developed provinces and the Socialists and the Socialist-Liberal cartel in others. The coalition between the Socialists and the cartel, meanwhile, also won 27 percent of the first-round vote—11 percent in the runoff—but gathered 18 percent of the seats.

Under increasing pressure, the Catholics offered in 1894 a limited PR electoral reform for implementation in the Socialist-dominated provinces. Such a reform would have reduced the Socialists' seat bonus in the most-developed provinces while still preventing the Liberals from receiving more seats in the Catholic-dominated provinces of Antwerpen, Limburg, Oost-Vlaanderen, and West-Vlaanderen.⁴⁶ Consistent with the model presented in Section III, in the 1896 election, the Catholics increased their vote share to 60 percent and won 92 percent of the seats. The winner's bonus was unusually large because the Chamber had staggered elections and because competition occurred in the Catholic-dominated provinces. Finally, during the more competitive 1898 election in the provinces of Brabant, Hainaut, Namur, and Liège, the Catholics won 41 percent of the vote and 50 percent of the seats. The Liberals suffered large seat losses again, gathering 18 percent of the vote but receiving only 4 percent of the seats. In contrast, Socialists and the Socialist-Liberal cartel won 34 percent of the vote and 44 percent of the seats, becoming the second most important coalition in the Chamber in spite of having 5 percent fewer votes than the Liberal Party.

Facing increasing challenges from all minority parties and a declining vote share, the Catholic Party agreed in 1898 to a PR electoral reform that would give the Liberals a share of seats in the Catholic-dominated provinces of Antwerpen, Limburg, Oost-Vlaanderen, and West-Vlaanderen while reducing the Socialists' share of seats in the more competitive provinces of Brabant, Hainaut, Namur, and Liège.

Figure 7 shows the territorial distribution of the vote in Belgium in the 1900 election, the first under PR electoral rules. By reducing the bonus seats won by the Socialists and eliminating the antiliberal partisan bias of the old electoral rules, the Catholics deactivated the joint mobilization of the Socialists, the Socialist-Liberal cartel, and the Liberal Party.

⁴⁶ McLaren Carstairs 1980.

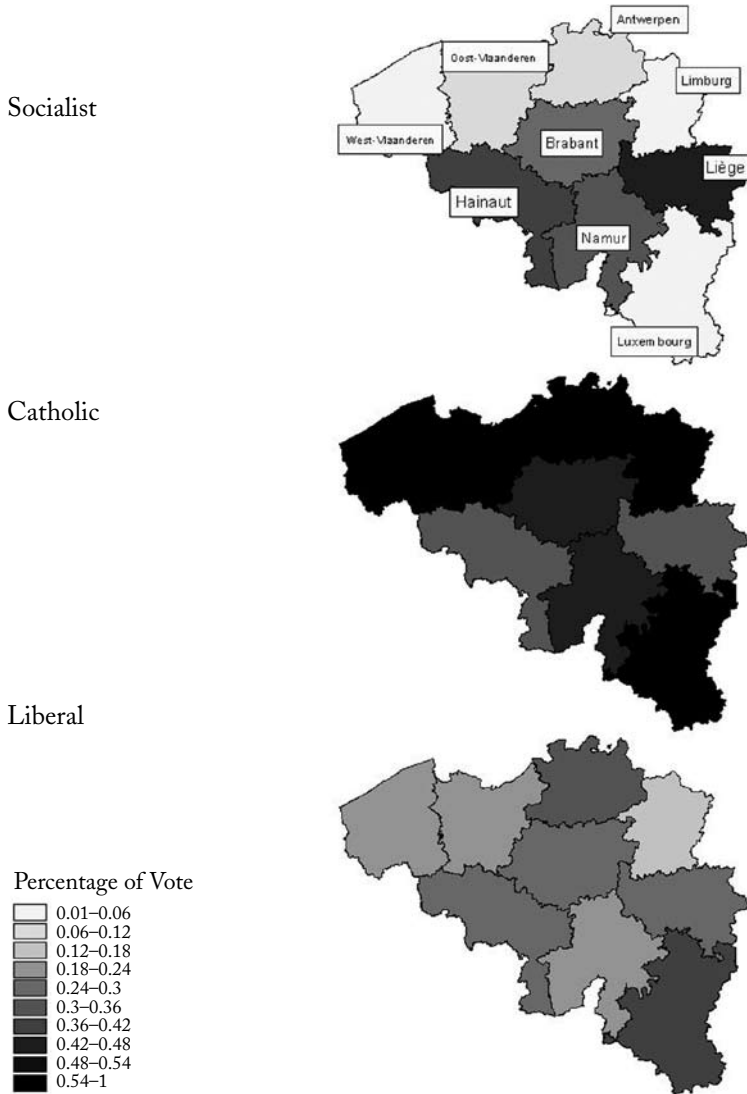


FIGURE 7
SOCIALIST, CATHOLIC, AND LIBERAL VOTE IN BELGIUM
(1900)

SOURCES: Moyne (1970), Vanhaute and Wiedemann (Belgian HIGIS).

After the reforms the Catholics held a plurality of votes until 1914, which casts doubt on the idea that the PR reform was due to an expected defeat by the Socialists. For the long-established parties, the Catholics and the Liberals, the move away from majoritarian rules was

meant to recover some of the seats in the Socialist-dominated provinces without losing seats in Catholic-dominated ones. In the new competitive scenario, PR reforms maximized the Liberal and Catholic share of seats.

Figure 8a presents the national-level majoritarian and partisan biases for the 1847–92 elections (solid line), the 1894–98 elections (dashed line), and the 1900–14 elections (dotted line).⁴⁷ In the 1847–92 period, the block-vote electoral rules produced a moderated majoritarian bias, $\rho=2$. An increase in party competition, as expected, shifted the line up and to the left, but the relatively flat distribution of ρ led to moderate seat gains for the Catholics. Figure 8b provides a detailed look at the 1894–98 period, showing that districting had an enormous impact on the expected seat distribution; the minority Liberal Party was heavily punished for the territorial dispersion of its vote. The estimated party bias shows the Liberals as the big losers after enfranchisement and the Socialists and the Socialist-Liberal cartel as profiting from the more concentrated territorial distribution of their vote. The PR reforms eliminated the partisan biases brought about by increasing competition. As shown with the dotted line in Figure 8a, the PR line provided a winner bonus similar to the one in the pre-enfranchisement period.

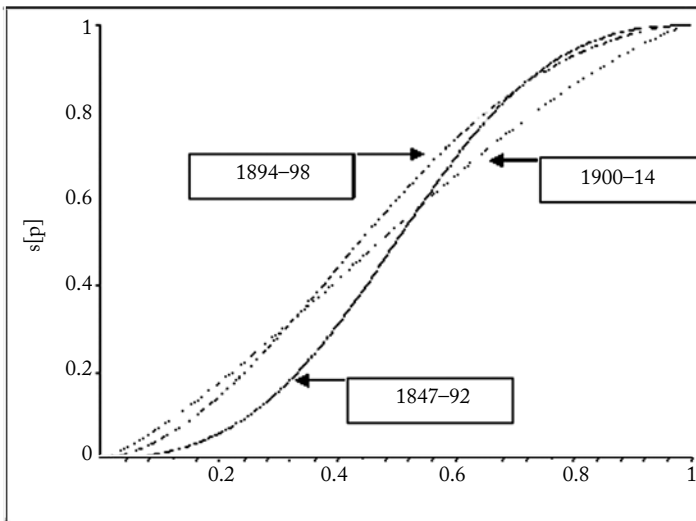
More important, however, is the fact that by eliminating the negative districting effect of the previous electoral rules, the Catholic and Liberal Parties substantially increased their total seat share. The results provide a vivid statistical description that matches Rokkan's 1970 account of the Belgian case. In Belgium, "the introduction of graduated manhood suffrage in 1893 brought about an increasing polarization between the Labour party and the Catholics and threatened the continued existence of the Liberals. The introduction of PR restored some equilibrium to the system."⁴⁸

VII. CONCLUSION

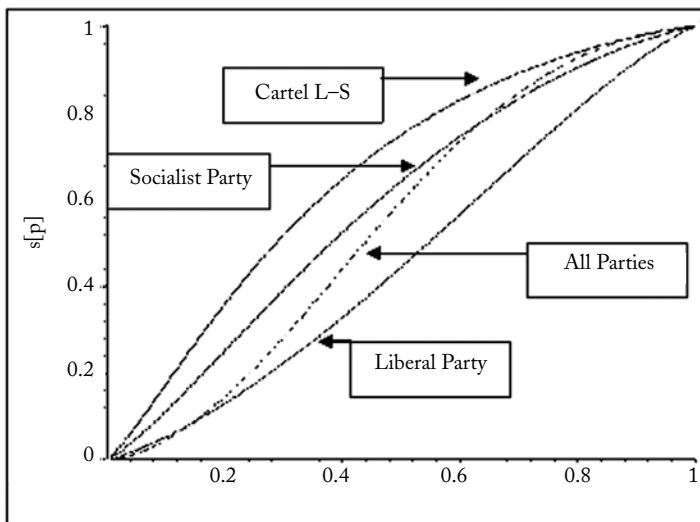
In the early twentieth century, the expansion of suffrage and the rise of Socialist parties were accompanied by a general and pervasive change in the rules of the electoral game. The simultaneous rise of Socialist parties and the elimination of majoritarian electoral rules led to the conventional view that such reforms constituted a mechanism to con-

⁴⁷ National shares of seats and votes are used to estimate the lines of Figure 8. No province-level data is required to estimate the national-majoritarian and partisan-bias parameters.

⁴⁸ Rokkan 1970.



(a) MAJORITARIAN BIAS (1847-1914)



(b) PARTISAN BIASES FOR THE POSTENFRANCHISEMENT PERIOD (1892-98)

FIGURE 8
MAJORITARIAN AND PARTISAN BIASES IN BELGIUM
1847-1914

SOURCE: Estimates are from Table 2.

tain the electoral advance of Socialists, in spite of the fact that most Socialist and Liberal parties wholeheartedly supported the implementation of PR electoral rules.

The conflict stems from two different perceptions of the idea of a “Socialist threat.” The first is the very real threat associated with the revolutionary capacity of Socialist parties to mobilize the urban poor against the established regime. In the latter part of the nineteenth century such mobilization constituted a serious political threat, and PR electoral reforms often served as a mechanism to deactivate the mobilization strategies of Socialists.⁴⁹

A second understanding of “Socialist threat” is a Socialist Party winning a majority of the seats through elections. As such, PR electoral reforms were seen as a mechanism to reduce the total seats won by rising Socialist parties. This article finds little support for the second perception of the threat. It shows that in some cases PR reforms indeed minimized the seats obtained by Socialists, but that the main mechanism for minimizing the seats obtained by them was the elimination of pro-Socialist partisan biases that resulted from districting that negatively affected one of the long-standing parties. Those biases were apparent even before Socialist parties were in a position to threaten the majority status of the old regime parties, and could be readily observed in early PR reformers such as Belgium.

A more original contribution of this article, however, is to show that there were self-interest motivations for introducing PR electoral rules even when Socialist parties were in no position to win a majority of the vote. Enfranchisement led not only to an increase in the number of voters but also to an increase in the number of parties,⁵⁰ significantly altering the mechanical properties of majoritarian electoral regimes. The emergence of territorially concentrated new parties crowded out territorially dispersed, but losing, minority parties. Significant antiliberal or anticonservative partisan biases provided incentives to shy away from majoritarian electoral rules even when the supremacy of the old established parties was not challenged.

APPENDIX 1

This appendix solves the majoritarian effect of increasing competition as a function of the majoritarian parameter $r\theta_0$, ρ , in equation 3. Start-

⁴⁹ Most Belgian Socialists, for example, felt betrayed when the Liberals decided to stop the joint antiregime demonstrations that followed the introduction of PR electoral reforms in 1899.

⁵⁰ Colomer and Grofman 2004.

ing with equation 7, where S_i is the number of seats won by party i , K is the number of seats to be distributed, b_i is a party-specific partisan bias effect, and c is the majoritarian effect of an increase in the number of parties, n .

$$S_i = K_d \left\{ 1 + \exp \left[-c * n - \rho \ln \left(\frac{v_i}{1-v_i} \right) \right] \right\}^{-1} \quad (7)$$

Solving for c we then obtain equation 8:

$$c = \frac{\rho \ln \left(\frac{v_i}{1-v_i} \right) + \ln \left(\frac{s_i}{1-s_i} \right)}{n} \quad (8)$$

where s_i is now the share of seats obtained by party i , S_i/K .

We can evaluate the previous expression for a cut-off point under different levels of party competition by replacing $v_p = 1/n$ and $s_p = 1/n$. Simplifying, we obtain equation 9, which expresses the increase in competition in terms of the majoritarian representation term ρ .

$$c = \frac{\rho \ln(n-1) + \ln(n-1)}{n} \quad (9)$$

After replacing, rearranging, and adding the party bias parameter b_i , we obtain the model:

$$S_i = K_d \left\{ 1 + \exp \left[-b_i - c * n - \rho \ln \left(\frac{v_i}{1-v_i} \right) \right] \right\}^{-1} \quad (10)$$

Equation 10 generalizes King and Browning's majoritarian representation model, including a new cut-off point for increases in the number of parties. This equation was used in the seat-vote lines of Figure 2.

APPENDIX 2 GENERALIZING THE MODEL TO R-BALLOT OR R-REGION ELECTORAL RULES

It could be argued that the stylized model in Section III does not fit many electoral regimes in which there are more than one round that distributes seats to parties or where there are two distinct regions with different majoritarian properties. Many electoral systems impose more

than one seat-allocation round or rule, allowing voters to signal second-order preferences and allowing parties to maximize their seat shares through bargaining. Early majoritarian electoral rules in Austria, Belgium, Germany, Italy, and the Netherlands, for example, forced runoff elections among two or more candidates. The mechanical properties of the electoral system, therefore, should be estimated taking into consideration the different seat-vote properties for each round, region, or seat-allocation rule. These can be easily modeled using the framework already described.

To estimate the majoritarian properties of R -round or R -region electoral systems, it is important to note that each round or region is just a different electoral “arena” contributing a limited number of seats to the legislature.⁵¹ While from a candidate’s point of view there are significant strategic considerations in runoff elections, the mechanical properties of the electoral system can be modeled with relative ease, compounding the allocation of seats over one, two, or R rounds or regions. The two-round estimation model is:

$$S_i = \sum_r^R K_{dr} \left\{ 1 + \exp \left[-b_{ir} - c * \ln(n_r - 1) - \rho_r \ln \left(\frac{v_{ir}}{1 - v_{ir}} \right) \right] \right\}^{-1} \quad (11)$$

Consider for example the case of Belgium in 1894. There were forty-one multimember electoral districts holding elections. In the first round, twenty-eight out of forty-one districts elected eighty-nine representatives. A run-off election decided the remaining sixty-three representatives in thirteen districts. Each round should be considered as a separate election;⁵² the first allocating eighty-nine seats and the second one allocating sixty-three seats. The mechanical properties of both rounds will not be identical given that the effective number of parties will generally be smaller in the second round and will provide different estimates of the parameters b and c .

Therefore, there will be a different seat-vote curve for the first and second round. The total number of seats obtained by each party, however, will be simply the sum of the seats won in the first and second rounds of an election, with different parameters for each of the rounds. Similarly, the share of seats for a party will be the weighted share of seats obtained in each round with weight determined by the number of seats allocated in each round.

⁵¹ A generalization of the seat-vote model to mixed-member electoral systems can be found in Calvo and Micozzi (2005).

⁵² There is no need to estimate the model at the province level. There are just two national election data points, one for each round.

Alternatively, the standard seat-vote model can be estimated using the total number of seats obtained by each party in both rounds and the adjusted share of votes obtained in both rounds, where the adjusted share of votes has two parts: (1) the sum of the votes obtained by a party in the first-round election in districts that had no second round plus the votes obtained in the second round when there was a second round, divided by (2) the total votes obtained by all parties in the first round in districts that had no second round plus the total votes obtained by all parties when there was a second round. Note that first-round votes are not counted if the district had a second round.

APPENDIX 3 ESTIMATION OF THE MULTILEVEL BAYESIAN MODEL

This appendix presents the estimation details of the multilevel model described by equations 3 and 4. Multilevel Markov Chain Monte Carlo (MCMC) Bayesian models provide a mechanism to incorporate prior knowledge into the estimation process and to combine different types of information. For a full derivation of the joint posterior distribution of the binomial-logistic model, please see Andrew Gelman.⁵³ Data and code to replicate the results can be requested from the author.

MODEL

I begin by describing the expected allocation of seats for a given party j , in a country p , and election e . The stochastic model presumes a binomial distribution with a logistic link, although alternative distributions can be used.⁵⁴ Each election in a country and year is treated as a different experiment with p number of parties. I write the full probability model (sampling distribution) of equation 3 as:

$$\begin{aligned}
 & p(\boldsymbol{\pi} | S_{jpe}) \propto \\
 & \prod_{j=1}^J \prod_{p=1}^P \prod_{e=1}^E \frac{K_{jpe}!}{S_{jpe}! (K_{jpe} - S_{jpe})!} [\pi_{jpe}]^{S_{jpe}} [1 - \pi_{jpe}]^{K_{jpe} - S_{jpe}} \\
 & \log\left(\frac{\pi_{jpe}}{1 - \pi_{jpe}}\right) = c_p * \ln(n_{pe} - 1) + b_{jpe} + \rho_{pe} \ln\left(\frac{v_{jpe}}{1 - v_{jpe}}\right) \quad (12)
 \end{aligned}$$

⁵³ Gelman (2004, 291–97).

⁵⁴ See Gelman (2004, chpt. 12) for a Bayesian alternative to Cox and Katz (2002).

The total number of seats, S_{jpe} , won by a party j in the country p and election e is the product of the estimated probability of winning a seat, π_{jpe} , over the seats K . The individual probabilities are explained by an inverse logistic function of the log-odds ratio of the total votes obtained by a party, v_{jpe} , a random intercept for every party capturing partisan biases, b_{jpe} , and the log of the number of competitive parties, $\ln(n-1)$.

HIERARCHICAL HYPERPRIORS

Prior information can be incorporated directly into the model. In the case of a multilevel binomial-logistic model, any normal prior distribution of the first-level parameters in equation 7 is conjugate to the normal approximation to the likelihood.⁵⁵ Therefore, we can use noninformative normal priors in the model to sample from the joint posterior distribution. Alternatively, we can also use informative normal priors. I use independent noninformative priors for the mean parameters $r_j, \lambda \sim N(0, 1000)$ and the variance parameters $\sigma^2 \sim \text{inv.gamma}(.0001, .0001)$.

COMPUTATION

I estimated this model via MCMC Bayesian simulation, using WinBUGS 1.4⁵⁶ and R 2.4.0. The observations are stacked by party, country, and election and generate a dataset of 1,023 cases in 140 elections, with 4.5 the average effective number of competing parties. I ran two Monte Carlo chains with 20,000 MCMC iterations and a 15,000 burn-in. All estimated parameters converged rapidly and Gelman's R-hat scores for convergence were under 1.05 (convergence is achieved below ≈ 1.2).

APPENDIX 4

SIMULATING GEOGRAPHICALLY INDUCED PARTISAN BIASES

To exemplify the effect that the emergence of a new challenger has on the allocation of seats under SP single-member rules, I describe a simulation written in R 2.6 using the SP and spatial libraries. The replication material can be downloaded from <http://calvo.polsci.uh.edu/>. The simulation uses extremely simple seat-allocation rules to demonstrate that severe partisan biases result from majoritarian rules when there are more than two parties with a geographically heterogeneous distribution of the vote. The current simulation, modeled on the Belgian example, has three parties (Conservative, Socialist, and Liberal) competing

⁵⁵ Gelman (2004, 391).

⁵⁶ Spiegelhalter et al. (2003).

in 146 electoral districts in two regions (eighty-eight urban districts and fifty-eight rural districts). Following the example in Section IV, the Conservatives are the dominant party in rural districts, winning an average 52 percent of the vote, and are weaker in metropolitan districts where they win only 35 percent of the vote. Meanwhile, the Socialists control a plurality of the metropolitan vote (42 percent), but only 10 percent of the rural vote. Finally, the Liberals win 23 percent of the vote in the metropolitan districts and 32 percent in the rural ones. This geographic distribution of the vote gives the Conservatives 42 percent of the national vote, $V_C \sim N(.42, 11)$, followed by the Liberals $V_L \sim N(.29, 1)$, and the Socialists $V_S \sim N(.29, 17)$. While both the Liberal and Socialist parties win 29 percent of the vote, the larger variance of the Socialists reflects the wider vote differences between its performance in the rural and the urban districts.

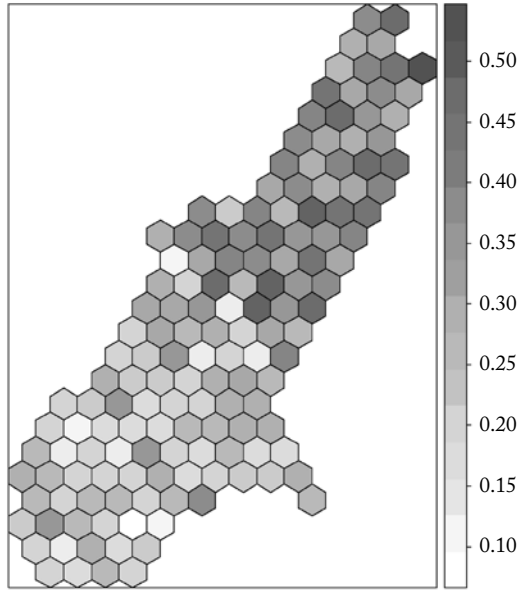
The simulation begins by randomly drawing district-level votes for all three parties for each rural district, $V_C \sim \text{Binomial}(.52, N)$, $V_S \sim \text{Binomial}(.10, N)$, $V_L \sim \text{Binomial}(.38, N)$; and the urban districts, $V_C \sim \text{Binomial}(.35, N)$, $V_S \sim \text{Binomial}(.42, N)$, $V_L \sim \text{Binomial}(.23, N)$. All districts are presumed to have the same number of voters (no malapportionment) and allocate one seat to the plurality winner of each district (SP electoral rules). Beginning with these simple sets of rules (three parties, two regions, SP, and heterogeneous distribution of the party vote), Figure 9 shows that SP will systematically reward the territorially concentrated new party (the Socialists in this case), which will gather 43.5 percent of the seats with 29 percent of the vote.

The allocation of seats in each region is strongly majoritarian but displays no partisan biases. The joint allocation, however, severely penalizes the Liberals. Figure 9 provides a visual representation of the vote share and seats for each party that shows that the Liberals, while in control of 29 percent of the national vote, systematically lose to the Conservatives in the rural districts and to the Socialists in the urban districts. Code to simulate more complex rules may be requested from the author.

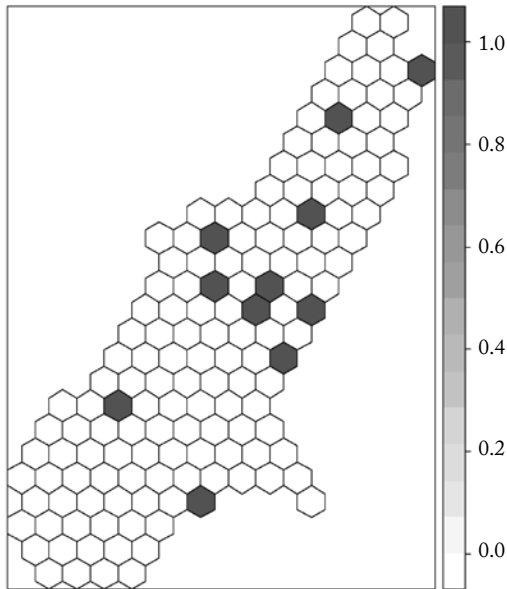
FIGURE 9
SIMULATED DISTRIBUTION OF DISTRICT-LEVEL VOTE AND SEATS^a

SOURCE: Polygon grid generated using the Libraries Spatial and sP\ in R 2.6.

^a Conservatives, Socialists, and Liberals in two regions (rural north and urban south) with single-member districts and SP electoral rules. For each grid, numbers report the percentage of votes or seats won by each party.

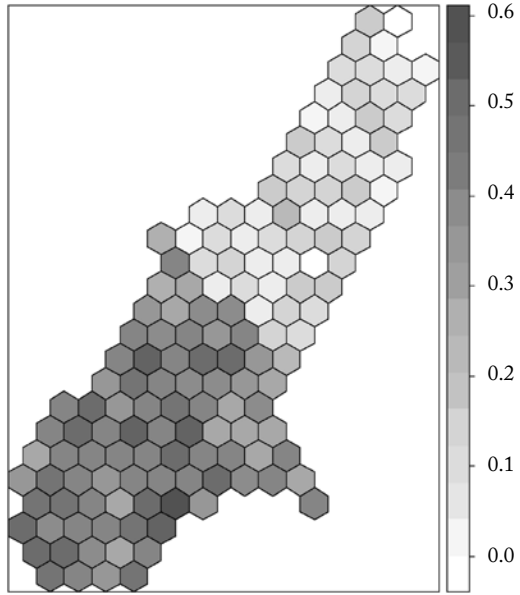


(a) VOTE MAP: LIBERAL VOTE 0.289, LIBERAL SEAT = 0.082

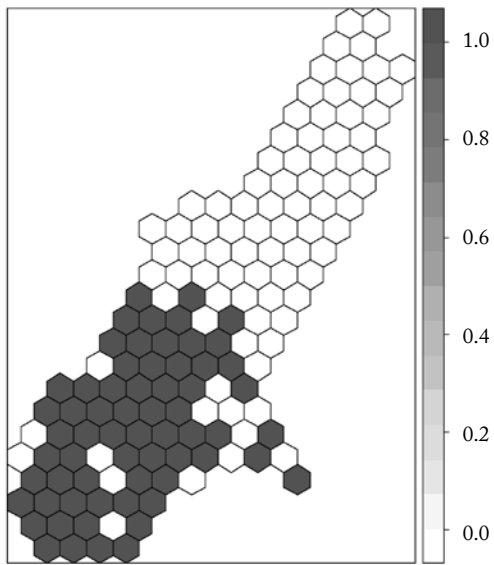


(b) SEAT MAP: LIBERAL VOTE 0.289, LIBERAL SEAT = 0.082

FIGURE 9 *cont.*

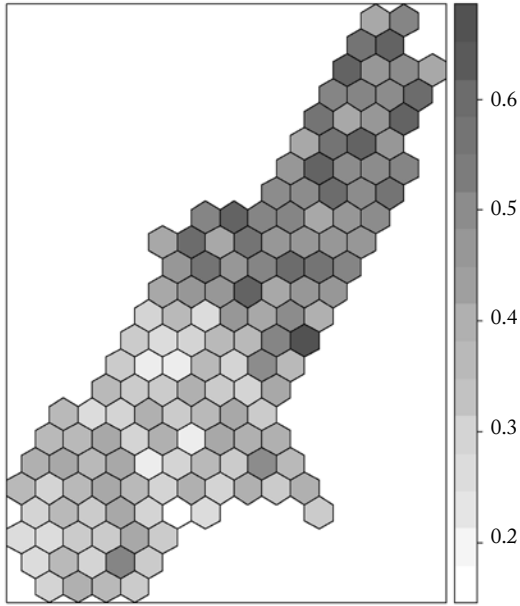


(c) VOTE MAP: SOCIALIST VOTE 0.292, SOCIALIST SEAT = 0.44

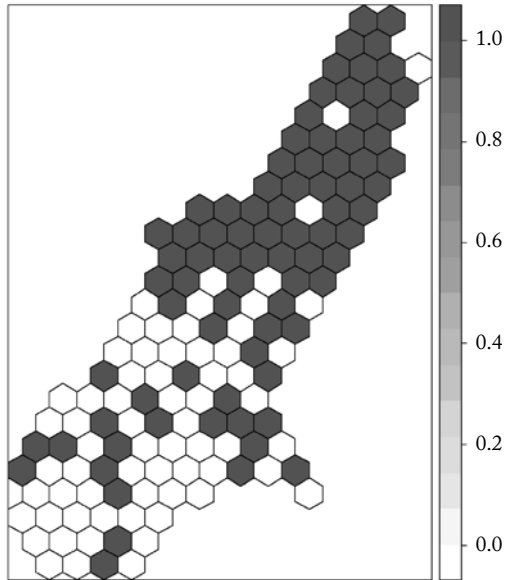


(d) SEAT MAP: SOCIALIST VOTE 0.292, SOCIALIST SEAT = 0.44

FIGURE 9 *cont.*



(e) VOTE MAP: CONSERVATIVE VOTE 0.419, CONSERVATIVE SEAT = 0.564



(f) SEAT MAP: CONSERVATIVE VOTE 0.419, CONSERVATIVE SEAT = 0.564

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