

# From votes to seats

## The 2017 French legislative elections

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## THE 2017 FRENCH LEGISLATIVE ELECTIONS

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Bernard Dolez, Annie Laurent

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### Introduction

Throughout the 2017 presidential campaign, commentators with knowledge of the workings of French politics discussed the chances that a victorious Emmanuel Macron would have of gaining a parliamentary majority in the legislative elections in June. The situation that had occurred in 1981 and 1988 following François Mitterrand's dissolution of the National Assembly, and since 2002 thanks to the reduction of the presidential term in office from seven to five years and to the changes in the electoral calendar, seemed harder to envisage this time around. Emmanuel Macron's task was more complicated than that of his predecessors for at least two reasons. First, it seemed unlikely that his party, *La République en marche!* (LREM), established only a year earlier, would be able to put forward a credible candidate in each of the country's 577 constituencies. Second, the *Parti socialiste* (PS) and especially *Les Républicains* (LR) seemed able to limit Macron's success due to the local presence of their candidates and, in particular, their outgoing deputies. The prospect of a hung parliament, or even a new coalition, seemed to be taking shape.

The result of the legislative elections, held on June 11 and 18, 2017, therefore came as a surprise: Macron obtained a large parliamentary majority. This unexpected outcome was the result of the new president, like his predecessors, taking advantage of the associated effects of the electoral calendar and the majority vote.<sup>1</sup>

The effects of proximity between elections, which are well known in the United States<sup>2</sup> under its party system, have now crossed the Atlantic. When they are held on the same day, as in the United States, the electoral options, the campaign, and the results of the legislative elections are thereby closely linked to the presidential election, via a process of "contamination" that the anglophone literature has named the "coattail effect."<sup>3</sup> When legislative elections are held immediately after the presidential election, as has been the case in France since 2002, the

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1. Pierre Martin, "Les élections législatives des 11 et 18 juin 2017," *Commentaire* 159 (2017): 525-534; Bernard Dolez and Annie Laurent, "La logique implacable des élections séquentielles," *Revue politique et parlementaire* 1083-1084 (2017): 127-142.

2. Matt Golder, "Presidential Coattails and Legislative Fragmentation," *American Journal of Political Science* 50, no. 1 (2006): 34-48.

3. Golder, "Presidential Coattails," 34-48.

ripple effect of the presidential election on the legislative elections may be even greater<sup>1</sup> and some have even deemed these election cycles to be “‘executive’ elections with four rounds”<sup>2</sup> or “four-round systems.”<sup>3</sup>

Once again, and despite the uncertainties, the proximity effect played a key role and the majority vote had spectacular effects once more. Receiving 32.3% of the votes cast in the first round of the 2017 legislative elections, the LREM-MoDem (La République en marche!-Mouvement démocrate) coalition won 60% of the seats in the National Assembly (LREM 308 seats and MoDem 42 seats). When considered together, these two figures raise the question of how votes translate into seats and call for a review of the literature on the subject, especially since the mechanical effects are more complex in two-round elections than in one-round elections. Moreover, in 2017 this question can be seen in a new light, after Emmanuel Macron managed to successfully “demolish” the Left-Right divide. This situation leads us to reconsider how representation in the National Assembly is constructed, in other words, the analysis of the translation of votes into seats. This can no longer be carried out by looking at the results at a national level: instead, a study that looks at each constituency must be conducted and, more precisely, it must examine the configurations in the second round of voting in each constituency.

In this light, it seems clear that the LREM-MoDem coalition took advantage of the deconstructing of the party system and the central position it occupied in the political arena in order to gain a large number of seats, despite being less successful than anticipated in the second round. The amplification effect of the single-member district electoral system was fully instrumental in this, and the two-round system, as practiced in France, thus appeared to have a more brutal effect than ever before.

## The voting system, the party system, and how representation in the National Assembly is constructed

**T**he question of the translation of votes into seats is now a well-established field of research that is part of the broader field of studies on the effects of voting systems, the theoretical framework of which was put forward by Maurice Duverger in 1951: the single-member plurality system tends to produce a two-party system (Duverger’s “law”), while proportional representation and the two-round system favor a multi-party system (Duverger’s “hypothesis”).<sup>4</sup>

Duverger identifies two types of effect: mechanical effects and psychological effects. Mechanical effects arise after the election and relate to the way in which votes translate into seats. In the first-past-the-post election, the success of the majority party in terms of votes is thus considerably amplified in terms of seats. The leading party wins in a large number of constituencies, while the party that comes in third place is under-represented. Psychological effects refer to the propensity of parties and voters to anticipate the mechanical effects of election rules. According

1. Annie Laurent, “Des effets de l’inversion du calendrier électoral sur la fragmentation du système partisan français (1967-2012),” in *Institutions, élections, opinion. Mélanges en l’honneur de Jean-Luc Parodi*, eds. Yves Déloye, Alexandre Dézé, and Sophie Maurer (Paris: Presses de Sciences Po, 2014), 119-138. Translator’s note: Our translation here. Unless otherwise stated, all translations of cited foreign language material in this article are our own.

2. Jean-Luc Parodi, “L’ancre d’une curiosité française: l’élection ‘exécutif’ à quatre tours,” *Revue française de science politique* 57, nos. 3-4 (2007): 285-291.

3. Élisabeth Dupoirier and Nicolas Sauger, “Four Rounds in a Row: The Impact of Presidential Election Outcomes on Legislative Elections in France,” *French Politics* 8, no. 1 (2010): 21-41.

4. Maurice Duverger, *Les partis politiques* (Paris: Armand Colin, 1951).

to Duverger, these two effects must not be dissociated, since psychological effects are the product of mechanical effects: it is because they have little chance of winning the election locally that the third-place parties end up losing their voters. In the single-member plurality system, mechanical and psychological effects are combined to favor or perpetuate a two-party system.

To understand the mechanical effects of a voting system in a given election, we can use the seat-vote equation, working on the premise that the proportion of seats attributed to a given political party is a result of the proportion of votes that it has gained. This approach, initially used to assess the effects of first-past-the-post, was quickly extended to proportional representation. It is equally likely to be applied to two-round elections, especially when the party system is structured in two blocs, as was long the case in France, where the second round of the legislative elections in most constituencies consisted of a right/left run-off.<sup>1</sup>

However, the calculation of the seat-vote equation is based on the results—in votes and seats—collected by each party or bloc at national level and assumes that the range of electoral options is identical in all places. But this is not always the case. For example, in 1993 in Canada, the Bloc Québécois, which had only put forward candidates in Quebec, won 54 seats for only 13% of the votes cast nationally and emerged as the second largest political party in parliament, ahead of the Parti réformiste who, with more than 18% of the votes cast, had only won 52 seats. In this specific case, to understand the national construction of the assembly, it is necessary to “go down” to the provincial level and consider, province by province, how the vote to seat translation takes place depending on how the range of electoral options is configured.

*Mutatis mutandis*, in France, the analysis of the translation of votes into seats is now inseparable from that of the range of electoral options in the second round. The “tripartition” of the French political landscape had already introduced a first disruption, which was particularly noticeable during the elections when, as in 1997, the Front national (FN) was able to hold its own in a large number of constituencies. The consequences of the “disruptive vote” of spring 2017<sup>2</sup> are, for the issue at hand, of a completely different magnitude. The political explosion witnessed during the presidential election immediately led to a reconfiguration of the range of electoral options and a sudden change in the balance of power during the legislative elections. The parties or movements that had put forward the five main candidates in the presidential election together won 75.6 per cent of the votes cast in the first round of the legislative elections. In a multiparty system where no second-round coalition was established, the analysis of the second round is even more complicated and the logic of the vote to seat translation is inseparable from the study of second-round configurations. These configurations can take the form of two-way, three-way, or even four- or five-way contests, as long as the election rules allow more than two candidates to remain in the second round, as is the case in France where the qualification threshold is set at 12.5% of registered voters. However, even in the case of a two-way contest, the range of electoral options is likely to vary from one constituency to another. With at least five parties—or coalitions—likely to qualify, it can theoretically take ten different forms (Table 1), compared to only one when French political life was mainly structured into two blocs, the Left and the Right.

1. Bernard Dolez, “Les mystères de la chambre bleue: Des voix aux sièges lors des élections législatives de juin 2002,” *Revue française de science politique* 52, no. 5 (2002): 577-591; Bernard Dolez and Annie Laurent, “The Seat-Vote Equation in French Legislative Elections (1978-2002),” *French Politics* 3, no. 2 (2005): 124-141.

2. Pascal Perrineau, ed., *Le vote disruptif. Les élections présidentielle et législatives de 2017* (Paris: Presses de Sciences Po, 2017).

**Table 1. Second-round configurations: Five political coalitions/parties, ten theoretical types of two-way contest**

	FI	PS	LREM-MoDEM	LR-UDI	FN
France insoumise (FI)					
Parti socialiste (PS)	1				
La république en marche - Mouvement démocrate (LREM-MoDem)	2	5			
Les républicains * - Union des Démocrates et Indépendants (LR-UDI)	3	6	8		
Front national (FN)	4	7	9	10	

\* previously called "Union pour un mouvement populaire," (UMP)

The question of vote to seat translation can therefore no longer be considered globally, based on national data. Instead, we must examine the types of configuration actually encountered in the second round, which themselves result from the results of the first round.

Because of the extremely low turnout in the first round (48.7%), only one constituency had a three-way contest in the second round. With the exception of the second round in the second constituency in the department of Aveyron, where only one candidate remained in the running after the withdrawal of the candidate who came second, there was a two-way contest in all the other constituencies that had not elected their candidate in the first round (Table 3).

The second round was marked both by the virtual disappearance of the traditional left v. right contest (there were only 16 of these, compared to 443 in 2012),<sup>1</sup> and by the omnipresence of the LREM-MoDem coalition.<sup>2</sup> Having won 32.3% of the votes cast in the first round, the LREM-MoDem coalition was more than 13 points ahead of the LR-UDI (Les Républicains- Union des démocrates et indépendants) coalition, allowing it to qualify in nine out of ten constituencies, i.e., in 516 constituencies (Table 2). LREM-MoDem was thus the central pivot of a second round whose three main aspects were the contests between LREM-MoDem and the Right (273 constituencies), LREM-MoDem and the Left (135 constituencies) and LREM-MoDem and the FN (103 constituencies) (Table 3). In other words, although the FN had been disrupting the Left-Right divide for thirty years, Emmanuel Macron's victory in the presidential election totally demolished it.

1. Pierre Martin, "Les élections législatives des 10 et 17 juin 2012," *Commentaire* 139, (2012): 853-864.

2. The information used in this article has come from the Ministry of the Interior (<http://www.data.gouv.fr/>) and from Jean Chiche (Cevipof), to whom we are grateful.

**Table 2. First-round (R1) score and second-round (R2) presence of the five main political coalitions/parties**

	R1 score as a percentage of votes cast	R2: number of candidates who qualified	R2: Percentage of candidates who qualified	Percentage of constituencies where the candidate qualified
LREM-MoDem	32.3	516	45.0	90.0
LR-UDI	18.8	299	26.1	52.2
FN	13.2	120	10.5	21.0
FI	11,0	67	5.8	11.6
PS	7.4	65	5.7	11.4
Other political coalitions/parties*	17.3	79	6.9	
Total	100.0	1,146	100.0	

\*DVD (Divers droite), DVG (Divers gauche), etc.

**Table 3. The electoral configurations in the second round of the 2017 legislative elections (whole of France)**

	Types of electoral configurations*	
Seats elected in the first round		4
Second-round contests		573
Of which	1 LREM-MoDem v. Right (1)	273
	2 LREM-MoDem v. Left (2)	135
	3 LREM-MoDem v. FN (3)	103
	4 Left v. Right	16
	5 Left v/ FN	6
	6 Right v. FN	11
	7 Other types of two-way contest	27
	8 Other cases (three-way contest, independent candidacy)	2
Total number of constituencies		577

(1) Right: LR, UDI, DVD, DLF

(2) Left: PS, PC, FI, Left Radicals, Ecologists, DVG

(3) Including Emmanuelle Ménard (4th constituency of Vaucluse)

## The two-round system: Each round matters

**T**he very large majority obtained by the LREM-MoDem coalition can be explained above all by its position in the political arena. As the “Condorcet winner,” it entered the second round in a favorable position, regardless of who its opponents were. However,

as the name gives away, a two-round election also involves a second round, and this one had a dampening effect on Emmanuel Macron's party's announced victory.

### Position matters: LREM, as close as possible to the median voter

The LREM-MoDem coalition garnered more than 50% of the votes cast, regardless of the second-round configuration (Tables 4a, 4b, and 4c), and took advantage of its central position to obtain an average of 52.7% of the votes cast when competing against the Right, 52.4% when competing against the Left, and 59.1% when competing against the Far Right. The results seen in each of these three configurations highlight the "mechanical effects" specific to the majority system(s): obtaining on average more than 50% of the votes cast meant that LREM-MoDem was capable of winning in well over half of the constituencies.

However, in the first-past-the-post system, the translation of votes into seats is particularly sensitive to the geographical distribution of votes. The more nationalized the election is, in other words, the closer the standard deviation (calculated by constituency) of each party's score is to 0, the more spectacular the mechanical effects of the two-round system. Thus, when two coalitions or parties clash, if the leading one obtains 51% of the votes with a standard deviation of 0 nationally, it will get 51% of the votes in each of the constituencies involved and will therefore obtain 100% of the seats. As shown in Tables 4a, 4b, and 4c, standard deviations are small, regardless of the type of contest involving the LREM-MoDem coalition. The leverage effect is therefore very high. The LREM-MoDem coalition thus gained 60.1% of the seats in the 273 constituencies where it was competing against the Right. Similarly, it won 64.4% of the seats in its contests with the Left, and 91.3% of the seats when it faced the Front national.

**Table 4a. LREM-MoDem v. Right contests (273 constituencies)**

	LREM-MoDem	Right
Score in the second round (percentage of votes cast)	52.7	47.3
Number of seats	164	109
Proportion of seats	60.1	39.9
Standard deviation	8.9	
N	3.8	

**Table 4b. LREM-MoDem v. Left contests (135 constituencies)**

	LREM-MoDem	Left
Score in the second round (percentage of votes cast)	52.4	47.6
Number of seats	87	48
Proportion of seats	64.4	35.6
Standard deviation	8.0	
N	7.1	

**Table 4c. LREM-MoDem v. FN contests (103 constituencies)**

	LREM-MoDem	FN
Score in the second round (percentage of votes cast)	59.1	40.9
Number of seats	94	9
Proportion of seats	91.3	8.7
Standard deviation	6.0	
N	6.4	

### The second round matters, or the corrective ability of the second round

Since 1958, there have been three types of scenario in second rounds of legislative elections. Most often, the second round is in line with the logic of the first round and confirms its verdict. But it sometimes amplifies the results of the first round (1993)<sup>1</sup> or, on the contrary, corrects them (1967, 2007).<sup>2</sup>

On the eve of the first round, the survey institute IPSOS made a projection of the distribution of seats, based on estimates of the results of the first round, a delicate exercise that requires us to take the resulting projection with a pinch of salt. According to this projection, the LREM-MoDem coalition could expect to obtain between 415 and 455 seats.<sup>3</sup> A few days later, another survey institute, OpinionWay, argued based on a survey conducted between the two rounds that the LREM-MoDem coalition could obtain between 440 and 470 seats,<sup>4</sup> suggesting momentum between the two rounds (Table 5).

However, the second round of the 2017 legislative elections is clearly aligned with the notion of a “corrective” round. Its results are quite different from the seat projections made on the basis of the results of the first round and even more different from those made in surveys conducted between the two rounds. The turnout was even lower than in the first round (42.6%), and lower than predicted. The results of the LREM v. LR or LREM v. Left contests were much closer than expected and because of this the new presidential majority won significantly fewer seats than it had expected (Table 5).

According to the above-mentioned survey conducted by OpinionWay between the two rounds, 87% of French people believed that Emmanuel Macron would have an absolute majority at the end of the election (compared to 65% before the first round), but interest in the campaign declined further compared to the latest evaluations made by OpinionWay before the first round. The prospect of a major victory thus contributed to demobilizing those who had voted for LREM candidates, as well as slowing down the party’s electoral momentum by discouraging voters from other political parties to support LREM candidates in the second round.

1. Colette Ysmal, “Les logiques d’un choix sous contraintes: Le second tour,” in *Le vote sanction. Les élections législatives des 21 et 28 mars 1993* eds. Philippe Habert, Pascal Perrineau, and Colette Ysmal (Paris: Presses de Sciences Po, 1993), 229-250.

2. François Goguel “Les élections législatives des 5 et 12 mars 1967” *Revue française de science politique* 17, no. 3 (1967): 429-467; Élisabeth Dupoirier, “Le parti socialiste et la gauche: l’implacable spirale de l’échec,” in *Le vote de rupture. Les élections présidentielle et législatives d’avril-juin 2007*, ed. Pascal Perrineau (Paris: Presses de Science Po, 2008), 145-174.

3. Ipsos/Sopra Steria survey for France Télévisions and Radio France.

4. OpinionWay, Légitrack, cinquième vague (fifth wave), June 15, 2017, <http://opinionlab.opinion-way.com/dokumenty/LegiTrack-OpinionWayOrpi-Cinquiemevague-15juin2017.pdf>, accessed December 15, 2018.

**Table 5. The second round: Comparison between the June 15 OpinionWay survey and the actual results on June 18**

	OpinionWay survey June 15, 2017		Second-round results, June 18, 2017	
	LREM-MoDem	Others	LREM-MoDem	Others
Participation	46 %		42.6 %	
LREM-MoDem v. Left contests 135 constituencies	59 %	41 %	52.7 %	47.3 %
LREM-MoDem v. LR-UDI contests 273 constituencies	58 %	42 %	52.4 %	47.6 %
LREM-MoDem v. FN contests 103 constituencies	60 %	40 %	59.1 %	40.9 %
Total number of seats LREM-MoDem	440 to 470		350	

To understand the electoral shifts that occurred from one round to the next, it is possible, for each type of contest, to assume that the score of each of the two opposing coalitions/parties depends on their ability to keep their first round electorate mobilized and to attract voters who either abstained in the first round, cast a blank or null vote, or expressed their support for another candidate.

For example, for the 273 LREM-MoDem v. Right contest, the equation for the LREM-MoDem second-round vote can be written as follows (calculation as a percentage of registered voters):

$$\text{LREM-MoDem T2} = a + a1 \text{ ABS T1} + a2 \text{ BN T1} + a3 \text{ EXG T1} + a4 \text{ LEFT T1} + a5 \text{ REG+DIV T1} + a6 \text{ LREM-MoDem T1} + a7 \text{ RIGHT T1} + a8 \text{ FN T1} + \epsilon$$

A similar equation can, of course, be used for the right-wing vote in the second round. The same calculation can also be made for each type of contest.

In operational terms, two types of method can be used to understand electoral movements from one round to the next. The first method consists of using individual data, from exit polls or post-election surveys, to estimate the mechanics behind the transfer of votes from the first to the second round. Many studies have thus enabled us to understand voting transfers from one round to another, or from one election to another.<sup>1</sup> The second method does not focus on individuals themselves but on aggregate data, i.e., the actual results of the two rounds of voting on a given scale.<sup>2</sup> In this case, however, we should avoid making ecological inferences. Strictly speaking, it is not possible to infer the behavior of voters (individuals) based on electoral results (aggregate data) even if, in the absence of data to the contrary, this suggests their likely behavior.<sup>3</sup> To prevent any confusion, in the following paragraphs we will use the terms “transfer of electorates” between the two rounds instead of “transfer of votes” between the two rounds.

1. See Jacques Capdevielle, Élisabeth Dupoirier, and Colette Ysmal, “Tableau des électors en mars 1978,” in *France de gauche, vote à droite*, eds. Jacques Capdevielle, Élisabeth Dupoirier, Gérard Grunberg, Etienne Schweisguth, and Colette Ysmal (Paris: Presses de Sciences Po, 1981), in particular 86-89.

2. Alain Lancelot and Pierre Weil, “Les transferts de voix du premier au second tour des élections de mars 1967 : une analyse de régression,” in *Les élections législatives de mars 1967* (Paris: Armand Colin, 1971), 373-388 ; Colette Ysmal, “Le second tour: Le prix de l’isolement de la droite modérée,” in *Le vote surprise. Les élections législatives des 25 mai et 1er juin 1997*, eds. Pascal Perrineau and Colette Ysmal (Paris: Presses de Sciences Po, 1998), 289, n. 1.

3. Luana Russo, “Estimating Floating Voters: A Comparison between the Ecological Inference and the Survey Methods,” *Quality & Quantity* 48, no 8 (2014), 1667-1683.

This second method is used here, particularly in the absence of robust individual data for each of the three types of second-round configurations studied here. Data from the two rounds of voting were collected at the level of each legislative constituency, allowing the construction of regression models on the transfer of electorates from the first to the second round. Several regression models were put into competition, each introducing (or not) a constraint on the estimators and/or the constant.<sup>1</sup> In the regression model used here, on the one hand, each coefficient is positive and ranges from 0 to 1; on the other hand, for the same type of contest, the sum of the coefficients assigned to the same first-round coalition or party is equal to 1.

Thus, for the 273 LREM-MoDem v. Right contests, the equation for the LREM-MoDem second-round vote can be written as follows, not taking into account the scores of the political coalitions or parties that obtained a negligible score in the first round:

$$\text{LREM-MoDem T2} = a + 0.01 \text{ ABS T1} + 0.44 \text{ BN T1} + 0.25 \text{ LEFT T1} + 0.74 \text{ LREM-MoDem} + 0.04 \text{ RIGHT T1} + 0.02 \text{ FN T1} + \epsilon \quad (\text{Table 6a, column 4}).$$

This suggests, for example, that 25% of the left electorate in the first round voted for LREM-MoDem in the second round in this type of contest.

Five observations can be made from the three transfer matrices presented in Tables 6a, 6b and 6c. These make it possible to understand why the LREM-MoDem coalition did not win the 450 seats that many promised it at the end of the first round.

First, these matrices highlight a real demobilization in the second round of the LREM-MoDem electorate in the first round. The observed transfer rate is approximately 75%, regardless of the configuration. This means that a quarter of the first-round LREM-MoDem electorate abstained (or cast a null or blank vote) in the second round.

Second, electorates for other political coalitions or parties who voted in the second round systematically mobilized better than the one who voted for the LREM-MoDem coalition. 95% of the Far Right electorate in the first round voted for the FN in the second round. 96% of the Right electorate in the first round voted again for the Right in the second round. 80% of the Left electorate did the same in the second round, which deserves to be highlighted in view of the Left's fragmentation (La France insoumise, Parti communiste, Parti socialiste, and Écologistes often each presenting a candidate in the first round) and the deep divisions it was beset with during the entire five-year term of François Hollande.

Third, the LREM-MoDem coalition derived only modest benefit from its central position in the political arena. In the LREM-MoDem v. Right contests, the Left-wing electorate in the first round voted more often in the second round for LREM-MoDem than they did for the Right, but only by a small amount: only a quarter of the first-round left-wing electorate voted for LREM-MoDem in the second round, while more than half of it abstained or cast a null or blank vote (Table 6a). The case was exactly the same in the LREM-MoDem v. Left contests, as the Right-wing electorate in the first round voted more often for LREM-MoDem than for the Left, but in equally modest proportions: again, only a quarter of the first-round right-wing electorate voted for LREM-MoDem in the second round, while more than half of it in this configuration abstained or cast a blank or null vote (Table 6b).

Fourth, the border between LREM-MoDem and the FN seems to have been impassable. The LREM-MoDem coalition even appears to have been a real repulsion for FN voters. When a

1. For more information on the competing models, see Appendix 1.

LREM-MoDem candidate was competing against a right-wing candidate, 65% of the FN electorate voted for the right-wing candidate. When a LREM-MoDem candidate was competing against a left-wing candidate, 59% of the FN electorate voted for the left-wing candidate.

Finally, the logic of the republican front plays very imperfectly in the event of a LREM-MoDem v. FN contest. Only half of the first-round right-wing electorate voted for LREM-MoDem in the second round, while 30% voted for the FN and 20% abstained or cast a blank or null vote. Equally, less than half of the first-round left-wing electorate voted for LREM-MoDem in the second round, while 15% voted for the FN. Above all, 40% abstained or cast a blank or null vote (Table 6c).

**Table 6a. Matrix of transfer of votes from the first round to the second round. LREM-MoDem v. Right contests (273 constituencies, in % of registered voters)**

	Abstention	Blank or null	LREM-MoDem	Right
Abstention R1	0.98	0.00	0.01	0.02
Blank or null vote R1	0.00	0.44	0.44	0.13
Left R1	0.33	0.31	0.25	0.11
LREM + MDM R1	0.24	0.02	0.74	0.00
Right R1	0.00	0.00	0.04	0.96
Far Right R1	0.19	0.14	0.02	0.65

**Table 6b. Matrix of transfer of votes from the first round to the second round. LREM-MoDem v. Left contests (135 constituencies)**

	Abstention	Blank or null	Left	LREM-MoDem
Abstention R1	0.96	0.00	0.03	0.01
Blank or null vote R1	0.00	0.37	0.27	0.37
Left R1	0.09	0.07	0.81	0.03
LREM + MDM R1	0.21	0.02	0.00	0.77
Right R1	0.43	0.14	0.18	0.25
Far Right T1	0.12	0.25	0.59	0.05

**Table 6c. Matrix of transfer of votes from the first round to the second round. LREM-MoDem/ FN contests (107 constituencies)**

	Abstention	Blank or null	LREM-MoDem	FN
Abstention R1	0.97	0.00	0.03	0.00
Blank or null vote R1	0.00	0.69	0.00	0.31
Left R1	0.22	0.17	0.47	0.14
LREM + MoDem R1	0.18	0.09	0.73	0.00
Right R1	0.10	0.11	0.51	0.29
Far Right R1	0.00	0.00	0.05	0.95

## Seat-vote equation(s): Measuring the mechanical effects of the two-round election from the perspective of the new configurations of the party system

Several studies have aimed to model the mechanical effects of first-past-the-post to predict seat distribution, particularly in the United Kingdom, a country that has long been structured around two major parties.

When two parties A and B—and only two parties—are in competition, the translation from votes to seats can be formulated as follows:  $S_A/S_B = (V_A/V_B)^n$ . In this equation,  $S_A$  and  $S_B$  refer to the proportion of seats and  $V_A$  and  $V_B$  to the proportion of votes cast by A and B respectively. The exponent “n” measures the amplification effect specific to the voting system.<sup>1</sup>

Applied to the very highly distorted British elections from 1950 to 1970, this equation showed that the amplification in terms of seats of the winning party took the form of a power exponent of 3, i.e.,  $S(a)/S(b) = (V_a/V_b)^3$ , subject to conditions, in particular a “neutral” division of the constituencies.<sup>2</sup> This result gave rise to the “cube law.”<sup>3</sup> In practice, when this exponent is equal to 3, this means that, when the distribution of the results constituency by constituency follows the normal law, the gain of one point in favor of one or the other of the two parties causes 3% of the seats to shift.

The seat-vote equation was again posited by Rein Taagepera in 1973<sup>4</sup> and then extended to proportional representation.<sup>5</sup> But the logic of the “cube law” can also be applied to the two-round election, provided that the political landscape is structured around two blocs and that the second round pits one candidate from each of these blocs against the other in most constituencies, as was the case in France until the legislative elections in spring 2017. By this standard, the two-round system appeared to be the most brutal of all, with the seat-vote equation then taking the form of the “law of four”: the ratio in seats between the two blocks—the Left and the Right—was thus equal to their ratio in votes measured in the second round, raised to the power of four. In concrete terms, the displacement of one point of the Right/Left balance of power measured in expressed votes was then likely to tip 4% of the seats, i.e., from 20 to 25 seats.<sup>6</sup>

In 2017, the “n” amplification effect specific to the majority system was 3.8 for LREM v. Right contests (273 cases, Table 2). Indeed:

$$S_{\text{LREM-MoDem}}/S_{\text{Right}} = (V_{\text{LREM}}/V_{\text{Right}})^n$$

$$\text{Log} [S_{\text{LREM-MoDem}}/S_{\text{Right}}] = \text{Log} [V_{\text{LREM-MoDem}}/V_{\text{Right}}] * n$$

$$n = \text{Log} [S_{\text{LREM-MoDem}}/S_{\text{Right}}] / \text{Log} [V_{\text{LREM-MoDem}}/V_{\text{Right}}]$$

$$n = \text{Log} [60.1 / 39.9] / \text{Log} [52.7/47.3]$$

$$n = \text{Log} (1.50) / \text{Log} (1.11) = 0.41/0.11 = 3.8$$

1. This equation, based on the calculation of probabilities, was empirically established at the very beginning of the twentieth century by the economist and statistician Francis Ysidro Edgeworth, based on the results of the 1909 British elections.

2. Maurice Georges Kendall and Alan Stuart, “The Law of the Cubic Proportion on Election Results,” *British Journal of Sociology* 1, no. 3 (1950): 183-197.

3. Kendall and Stuart, “The Law of the Cubic Proportion,” 183-197.

4. Rein Taagepera, “Seats and Votes: A Generalization of the Cube Law of Elections,” *Social Science Research* 2, no. 3 (1973): 257-275.

5. Rein Taagepera, “Reformulating the Cube Law for Proportional Representation Elections,” *The American Political Science Review* 80, no. 2 (1986): 489-504.

6. Dolez, “Les mystères de la chambre bleue”; Dolez and Laurent, “The Seat-Vote Equation in French Legislative Elections.”

This means that, in practice, a shift of one point in the LREM-MoDem v. Right power ratio (measured as a percentage of the votes cast) causes 3.8% of the seats to shift. Because the LREM-MoDem v. Right configuration involves 273 constituencies, a shift of one point in the balance of power between the two parties is likely to cause 10 seats to shift ( $273 \times 0.038 = 10$ ). The same calculation can be made for other types of contest. The “n” amplification effect is thus 7.1 for LREM-MoDem v. Left contests and 6.4 for LREM-MoDem v. Far Right contests (Tables 4a, 4b and 4c).

### A more brutal voting system than ever before

According to Taagepera, in a one-round election, “the largest party gets a bonus, the second-largest breaks even, while the third party is heavily penalized.”<sup>1</sup> This “law” can undoubtedly be extended to the two-round election, as used in France, but its mechanical effects are even more brutal. In 2017, having won 32.3% of the votes cast in the first round of the 2017 legislative elections, the LREM-MoDem coalition represented 45% of the candidates who ran in the second round and ended up winning seats in 60% of the constituencies. The LR-UDI coalition won 19% of the votes cast in the first round, represented 26% of the candidates in the second round, and won 23% of the seats. The “second party” thus obtained a proportion of seats close to the proportion of votes it obtained in the first round. The “third” (the Front national), the “fourth” (La France insoumise) and the “fifth” (the Parti socialiste) were on the other hand heavily penalized, to use Rein Taagepera’s term. For example, the La France insoumise candidates obtained 11% of the votes cast in the first round, but they represented only 5.8% of the candidates in the second round and ended up winning seats in only 2.9% of the constituencies. While the leading party benefits significantly from the two-round election, parties beyond third place are negatively affected by attrition (Figure 1).

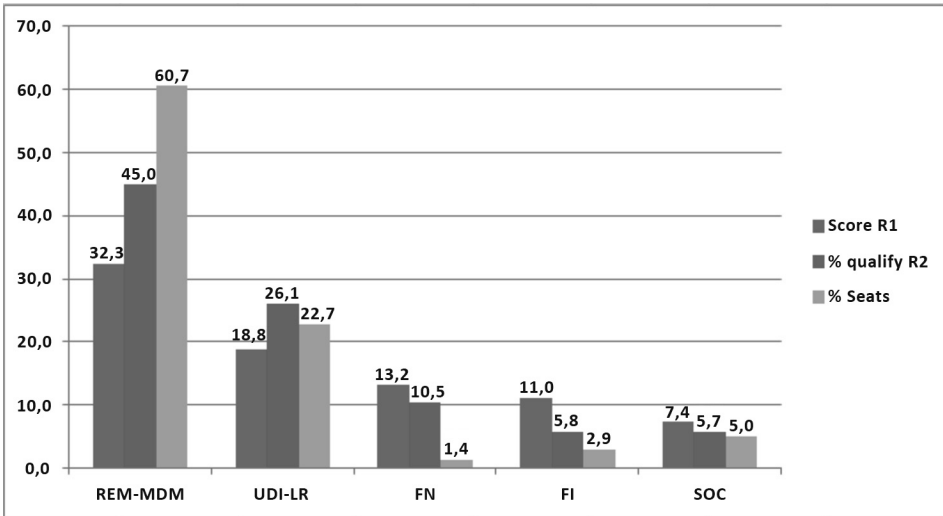
These results once again raise the usual question about the distortions of representation induced by the voting systems and the tools to measure their extent. Arend Lijphart thus measured the gap between the proportion of seats and the proportion of votes obtained by the leading party.<sup>2</sup> More sophisticated indices have also been proposed to accurately measure the degree of disproportionality of a system, including the least squares index (LSq), also known as the Gallagher index (see Appendix 2).

In 2017, the level of seat-vote disproportionality is thus particularly high, especially compared to those of the French legislative elections held since 1958 (Table 7). It stands at 22.95, approaching the record set in the 1993 legislative elections, in which nearly 80% of the seats went to the Right (RPR-UDI). Similarly, the effective number of parliamentary parties (ENPP), an index compiled by Laakso and Taagepera (see Appendix 2), was only 2.36—the lowest number since 1958, with the exception of 2002 (2.26), reflecting the imbalance in parliamentary representation (Table 7).

1. Rein Taagepera, *Predicting Party Sizes. The Logic of Simple Electoral Systems*, (Oxford: Oxford University Press, 2007), 205.

2. Arend Lijphart, *Electoral Systems and Party Systems. A Study of Twenty-Seven Democracies, 1945-1990*, (Oxford: Oxford University Press, 1994).

**Figure 1. Score in the first round, proportion of candidates who qualified for the second round, and proportion of seats won by the five main parties (or electoral coalitions)**



Source: Figures calculated by the authors

**Table 7. Election index: French legislative elections (1958–2017, whole of France)**

	The Gallagher index (LSq)	Effective number of electoral parties (ENEP)	Effective number of parliamentary parties (ENPP)	Total number of seats
1958	21.22	6.09	3.45	465
1962	14.99	4.93	3.43	465
1967	10.03	4.56	3.76	470
1968	19.21	4.31	2.49	470
1973	11.01	5.68	4.52	473
1978	6.57	5.08	4.20	474
1981	16.04	4.13	2.68	474
1986	7.23	4.65	3.90	556
1988	11.84	4.40	3.07	555
1993	25.25	6.89	2.86	577
1997	17.69	6.56	3.54	577
2002	21.95	5.22	2.26	576
2007	13.58	4.32	2.49	577
2012	17.66	5.27	2.83	577
2017	22.95	5.57	2.36	577

Source: Election indices dataset<sup>1</sup> for the period 1958–2012. Figures for 2017 were calculated by the authors.

1. Michael Gallagher, <[https://www.tcd.ie/Political\\_Science/people/michael\\_gallagher/EISystems/](https://www.tcd.ie/Political_Science/people/michael_gallagher/EISystems/)>, 2017.

The literature has shown that seat-vote distortions are determined by the electoral formula: they are more important in (one or two round) majority elections than proportional elections, the latter tending to penalize small parties less.<sup>1</sup> But the high indicators observed under the Fifth Republic tend to confirm that the two-round election “produces the most disproportionate results in Western democracies.”<sup>2</sup>

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\* \*

By the end of the 2017 electoral cycle, France had gone from having a two-bloc system to having a true multiparty system. The analysis of the translation of votes into seats during the second round of the 2017 legislative elections shows that, in this context, the two-round election has the same mechanical effects as the one-round election: The coalition that won the first round (LREM-MoDem) was over-represented in seats after the second round; the coalition that came second (LR-UDI) obtained a proportion of seats equivalent to the proportion of votes it received in the first round; and the other coalitions or parties are now under-represented in the National Assembly. This result can be explained by several factors, some of which are specific to the voting system. For example, coalitions or parties in third place (or lower) rarely qualify for the second round and are even less often elected. This means that they are subject to two-stage attrition. Other factors are linked to the central position occupied by the LREM-MoDem coalition in the political arena (Condorcet winner), which allowed it to win a large number of seats, even if it was less successful than anticipated in the second round.

The translation of votes into seats is therefore not the only result of the electoral system, even if, as Duverger very early on pointed out, each one has its own effects. Other parameters, such as the position of the parties in the political arena and the current context, also contribute together to explaining how the translation from votes into seats plays out in a two-round election.

The question of the interactions between election rules and their environment is at the heart of the concept of “embedded institutions,” coined by Shaun Bowler and Bernard Grofman<sup>3</sup> who favor a global approach, based in particular on the articulation between the voting system, the political system, and the party system. More specifically, the effects of several factors are also worth mentioning: the size of the Assembly, which has an effect on the party system,<sup>4</sup> as well as the number of decisive elections and the nature of the regime (presidential and semi-presidential versus parliamentary).<sup>5</sup>

To return to the French situation, all these elements invite us to question both the very principle of the presidential election and the electoral calendar, that is, the temporal arrangement

1. Duverger, *Les partis politiques*.

2. See the ACE project: <http://aceproject.org/ace-fr/topics/es/esd/esd01/esd01e/esd01e>.

3. Shaun Bowler and Bernard Grofman, eds. *Elections in Australia, Ireland, and Malta under the Single Transferable Vote. Reflections on an Embedded Institution* (Ann Arbor: The University of Michigan Press, 2000).

4. Rein Taagepera has thus shown that in the voting systems he describes as “simple” (i.e. when the allocation of all seats is made on the basis of votes collected in constituencies of similar size, whether it is a proportional list vote or a majority vote), the party system is based on what it calls the “seat factor” (MS), which is the product of magnitude (M)—i.e., the number of seats to be filled per constituency—and the total number of seats to be filled (S), i.e. the size of the Assembly. See Rein Taagepera, “Le macro-agenda duvergérien, à demi-achevé,” *Revue internationale de politique comparée* 17, no. 1 (2010): 93-109, here 94.

5. Allen Hicken and Heather Stoll, “Are All Presidents Created Equal? Presidential Powers and the Shadow of Presidential Elections,” *Comparative Political Studies* 46, no. 3 (2013): 291-319.

between the presidential election and the legislative elections, which, as indicated above, results in the presidential election having significant ripple effects on the legislative elections.

Recognizing that the voting system is “embedded” makes it easier to understand why the two-round majority system has systematically produced a large parliamentary majority since 2002, despite fragmentation or, in 2017, the fragmentation of the party landscape. It also enables us to understand that the introduction of a dose of proportional representation in the next legislative elections will be offset by the reduction in the size of the Assembly.

Above all, recognizing this embeddedness enables us to understand that, other than revisiting the very principle of the presidential election, “true” electoral reform would involve at least modifying an electoral calendar that is today, more than the voting system itself, the main matrix at the source of all the “unlocatable” majorities.

**Abstract:** The analysis of how votes translated into seats in the 2017 legislative elections in France shows that the “mechanical effects” of the two-round majority system were more brutal than ever before. Receiving 32.3% of the votes cast in the first round, the LREM-MoDem coalition ended up winning 60% of the seats in the French National Assembly. In the second round of voting, Emmanuel Macron’s movement took advantage of its centrist position on the political spectrum to win in a majority of constituencies, against left-wing, right-wing and far-right-wing candidates alike. Analyzing this situation also reiterates the importance of the second round in a two-round majority system. In this case, the narrative of a predicted victory contributed to the demobilization of LREM-MoDem voters between the two rounds of voting, thus preventing the new president from obtaining an even greater majority.

**Keywords:** two-round electoral system, seat-vote equation, French legislative elections, first-past-the-post system, electoral disproportionality

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## Appendices

### Appendix 1: Models

Several regression models were put into competition. The basic model placed no constraints on the estimators and the constant. Subsequently, constraints were gradually introduced into the model.

For the coefficients, a positivity constraint was first added (coefficients  $> 0$ ), then the coefficients were normalized ( $> 0$  and  $< 1$ ). Finally, their inline sum was reduced to 1 and similar operations were performed for the constant. Three types of models were tested: the first where the constant was equal to 0; the second with a free constant ( $-\infty + \infty$ ) and the last where the constancy was between -1 and + 1.

For reasons related both to the quality of the correlation coefficients between observed and estimated results (see below) and to the “goodness of fit,” for all the regressions published in this article we have chosen to use the model where: 1/ each coefficient is positive and ranges between 0 and 1; 2/ for the same type of two-way contest, the sum of the coefficients assigned to the same first round coalition or party must be equal to 1; 3/ the constant varies between - 1 and + 1.

Correlation coefficients between the estimated value and the observed value, by district:

#### In LREM-MoDem v. Right contests

Coefficients	Abstention	Blank or null	LREM-MoDem	Right
	0.96	0.92	0.91	0.93

#### In LREM-MoDem v. Left contests

Coefficients	Abstention	Blank or null	LREM-MoDem	Right
	0.97	0.87	0.88	0.95

#### In LREM-MoDem v. FN contests

Coefficients	Abstention	Blank or null	LREM-MoDem	Right
	0.97	0.94	0.96	0.97

## Appendix 2: Indices used

The Gallagher index, sometimes called the least squares index (LSq) or least squares method, measures the degree of disproportionality of an electoral system in a given election. It is based on the difference between the percentages in terms of votes received and seats won by a given party after an election. Its formula is the following  $I_G = \sqrt{\frac{1}{2} \sum_{i=1}^n (V_i - S_i)^2}$  where  $V_i$  is the percentage of votes received from a party  $i$  and  $S_i$  is the percentage of seats won by that same party.<sup>1</sup>

The “effective number of parties” (ENP) established by Markku Laakso and Rein Taagepera, is the most commonly used index to measure the dispersion of votes. It enables the number of competitors to be counted, as well as taking into account, by weighting, their relative strength. It can be calculated in votes, effective number of electoral parties:  $ENEP = 1/\sum v_i^2$ ), or in seats (effective number of parliamentary parties:  $ENPP = 1/\sum s_i^2$ ), where  $v_i$  is the percentage of votes cast (or  $s_i$  is the percentage of seats) collected by list  $i$ . The higher the number, the greater the political pluralism.<sup>2</sup>

1. Michael Gallagher, “Proportionality, Disproportionality and Electoral Systems,” *Electoral Studies* 10 (1) (1991): 33-51.

2. See Markku Laakso and Rein Taagepera, “‘Effective’ Number of Parties: A Measure with Application to West Europe,” *Comparative Political Studies* 12, no. 1 (1979): 3-27.