



Article

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Are Alternative Voting Methods Ideologically Biased? Evidence from the 2022 Italian Election

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Abstract: One key component of electoral systems is ballot design. This paper focuses on the consequences of alternative – more expressive – ballot designs in terms of party performance and voter behavior. Expressive voting methods are expected to reduce wasted votes and vote splitting, potentially penalizing polarizing parties and favoring consensual ones. Yet, empirical studies show that far-right candidates perform worse under alternative rules, raising concerns about ideological asymmetry. We test this prediction in a limit case: the 2022 Italian general election, where the far-right party *Brothers of Italy* (FdI) was projected to win. Using an original pre-electoral online survey with a nationally representative sample ($N = 1,021$), we simulate party rankings and vote shares under multiple alternative voting rules: ranked-choice, approval, score, and evaluative voting. Under all tested methods, FdI would have remained the largest party. Performance shifts primarily reflect the attenuation of strategic overstatement for viable parties and coalition dynamics rather than ideological orientation. Quorum and top-three parties lose relative support, whereas smaller coalition parties gain modestly. We further examine party exclusivity through co-approvals and distributional analysis as well as voter exclusivity through bullet voting, extreme-grade voting, and t-distributed stochastic neighbor embedding (t-SNE) dimension reduction. Neither form of exclusivity is systematically associated with ideological orientation. These findings suggest that, in mixed electoral systems, viability incentives are stronger predictors of party performance than ideological polarization under alternative voting methods.

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1 Introduction

Electoral democracies face mounting pressures, including affective polarization, representational dissatisfaction, and autocratization. While these challenges are often attributed to political actors or institutional decay, some scholars argue that electoral rules themselves may shape the competitive environment in systematic ways. In particular, the rise of extreme parties in Europe – especially on the far-right – has been linked to the informational constraints of plurality, single-choice, voting systems (Baujard et al. 2021): when voters can only express a single choice, polarizing candidates¹ may benefit from concentrated support, whereas more consensual candidates may be disadvantaged.

Plurality ballots capture only a single preference (“I choose X”), suppressing additional preference information such as secondary support (“I would prefer either X or Y over Z”) or strong opposition (“I dislike Z”). In response, scholars have advocated more expressive voting rules – including ranked, approval, and evaluative systems – that allow voters to convey richer preference structures (Hamlin and Hua 2023; Laraki 2023; Richie et al. 2023; Saari 2023; Smith 2023; Wolk et al. 2023). Under such systems, candidates are often classified as *polarizing* or *consensual* based on their ability to attract support beyond their core electorate. Polarizing candidates tend to receive more extreme rankings or evaluations, whereas consensual candidates attract more intermediate support (Vote de Valeur 2012; Baujard et al. 2014; Darmann et al. 2017). These distributional patterns are then used to infer performance under expressive rules: polarizing candidates are expected to decline, while consensual candidates are expected to gain.

Although electing consensual candidates may be normatively appealing, electoral reform must satisfy a neutrality condition. A change in voting method should not systematically disadvantage one ideological camp.² If alternative, more expressive, rules consistently penalize far-right actors, this would raise concerns about institutional bias rather than merely improved expressivity.

¹ The terms “candidate” and “party” are used interchangeably according to the relevant electoral unit. We primarily use “candidate” when referring to majoritarian contexts and “party” when discussing proportional or mixed systems.

² While alternative voting methods might restore neutrality if current plurality systems favored a specific ideological camp, many electoral frameworks were intentionally designed to counter far-right movements following World War II. The French *cordon sanitaire* serves as a prime example of this institutionalized exclusion.

Existing evidence, however, remains largely context-bound. Many empirical tests of alternative³ voting methods reveal an asymmetry in ideological orientation among expressive rules' losers: far-right – and not far-left – candidates tend to perform worse under alternative methods (e.g. Van der Straeten et al. 2013; IFOP 2017; Darmann and Klamler 2023; Delemazure and Bouveret 2024). Yet, majoritarian settings – particularly France (Laslier 2019) – are overstudied, and strategic incentives in such contexts may differ substantially from those in proportional or mixed systems. Moreover, far-right candidates have often been challengers rather than projected winners, with no prior study examining a case in which a far-right party is electorally dominant *ex ante*. If expressive ballots inherently disadvantage far-right candidates, the effect should persist even when the far right is projected to win the elections. If instead observed asymmetries reflect contextual electoral incentives, performance should remain stable in such a limit case.

We then test whether ideological asymmetries generalize using an original online survey ($N = 1,021$) conducted immediately before the 2022 Italian general election. Italy constitutes a theoretically informative case for three reasons. First, the far-right party *Brothers of Italy* – characterized as extreme and polarizing (Vassallo and Vignati 2024) – was leading in the polls and ultimately won: would alternative voting methods alter the potential winner of an election? Second, the Italian electoral law combines proportional and majoritarian components,⁴ allowing us to evaluate both threshold- and plurality-based strategic incentives. Third, the presence of coalitions further permits comparisons in performance across ideological blocs rather than isolated candidates, increasing external validity.

Our findings indicate that the far-right party would have remained first under all tested alternative methods. Consistent with evidence that experimental tests of alternative methods tend to elicit more sincere preferences (Igersheim et al. 2016), differences in vote shares largely reflect the attenuation of strategic overstatement under the current system – particularly the lack of viability incentives affecting larger parties – rather than ideological bias embedded in alternative rules. Coalition-based spillovers explain gains of smaller coalition parties, while the independent centrist party performed worse under expressive rules. Analyses of party and voter exclusivity only partially account for performance differences, showing no systematic association with ideological orientation. Instead, behavioral patterns indicate

³ As most countries endorse plurality, single-choice, systems, more expressive methods are considered as “alternatives” to the status quo. Throughout the paper, the term “alternative” is therefore used to highlight that a voting method is not currently endorsed in the studied context and should not be conflated with the “Alternative Vote”, a specific 2011 referendum proposal in the United Kingdom.

⁴ Italy endorses a mixed-member majoritarian system, allocating 37 % of seats in a majoritarian way and 63 % proportionally, with a 3 % threshold.

that voters internalize strategic incentives from the existing mixed system and reproduce them under alternative ballots.

The work proceeds as follows. We first present a review of empirical tests of alternative voting methods, identifying patterns in candidate performance. We then introduce the survey design and analyze party rankings and vote shares under each rule. Finally, we examine party- and voter-level exclusivity, highlighting their shortcomings in explaining performance under alternative rules.

2 Performance under Alternative Voting Methods

Electoral systems can be divided into two analytically distinct components (de Swart et al. 2003): the *voting method* – which elicits and aggregates voter preferences by selecting, ranking, or evaluating candidates – and the *electoral law*, which translates votes into seats in the parliament according to majoritarian, proportional, or mixed formulas. The present study focuses on the former, following the established literature on alternative voting methods that holds the electoral law constant while examining the hypothetical⁵ performance and behavioral consequences of more expressive ballot structures than the status quo.

Since the 1980s, alternative voting methods have been examined in field (e.g. De Maio et al. 1983), framed-field⁶ (e.g. Laslier and Straeten 2008), and laboratory experiments (e.g. Forsythe et al. 1996), as well as face-to-face interviews (Przybyszewski et al. 2011) and online surveys (e.g. Van der Straeten et al. 2013). While these approaches provide insights into electoral outcomes and voter behavior, only framed-field and survey designs allow the identification of respondents' ideological orientation through reported official votes or voting intentions for real candidates. This distinction is crucial when assessing whether alternative voting methods systematically advantage or disadvantage specific ideological families.

Voting methods can be distinguished by the number of choices voters are allowed to express (Blais 1988): single-choice systems permit the selection of one candidate, whereas multi-choice systems allow voters to rank or evaluate multiple

5 If alternative voting methods were implemented in real elections, parties and candidates would likely adapt their campaign strategies accordingly. Strategic adaptation by parties (Blais and Carty 1991) and voters' learning effects across elections (Baujard et al. 2025a) are therefore outside the scope of this study. The results presented in empirical tests of alternative methods do not simulate electoral outcomes under institutional reform. Rather, they identify how voter preferences translate into outcomes.

6 Framed-field experiments combine laboratory control with real-world context by testing a specific subject pool on a task embedded in its natural environment (Harrison and List 2004). In voting applications, participants cast mock ballots under alternative rules in an experimental polling booth immediately after voting officially.

candidates. Single-choice ballots remain the dominant format at the national level in many democracies, constituting the institutional status quo. Multi-choice systems are comparatively rare in national elections and are typically framed as “alternatives”. Advocacy organizations such as *FairVote*, *The Center for Election Science*, *Mieux Voter*, and *Institute H21* promote specific alternative methods in the United States and European countries at subnational and national levels, and referenda have been held in several jurisdictions to replace existing ballot designs (Marsilio 2023).

Multi-choice methods increase the informational richness of ballots. Ordinal systems such as *ranked-choice voting* (“RV”; Bowler and Grofman 2000), currently used nationally in Australia, Ireland, and Malta, allow voters to rank candidates (e.g. candidate A = 1st, candidate B = 2nd, candidate C = 3rd). Cardinal systems – although rarely used in large-scale elections – allow voters to evaluate candidates on a graded scale. *Approval voting* (“AV”; Brams and Fishburn 1978), implemented locally in St. Louis (MO) and Fargo (ND), permits voters to approve of as many candidates as they wish (e.g. candidate A = 1/1, candidate B = 1/1, candidate C = 0/1). *Evaluative voting* (“EV”; Poundstone 2008) and related score-based systems enable voters to express varying intensities of support (e.g. candidate A = 4/4; candidate B = 2/4; candidate C = 0/4).

By allowing voters to express secondary preferences or degrees of support, alternative methods reduce strategic pressures associated with viability constraints. In single-choice systems, voters may abandon preferred but less viable candidates (“wasted vote” logic) or coordinate among ideologically proximate options (“vote splitting”; Dasgupta and Maskin 2004). Multi-choice ballots mitigate these pressures by enabling expressive flexibility. Consequently, inclusive (“consensual”) candidates may benefit from cross-cutting support, whereas exclusive (“polarizing”) candidates – those strongly supported by a niche but rejected by others – may be disadvantaged (Baujard et al. 2014; Darmann et al. 2017). Assuming symmetric ideological distributions, this logic should affect both ideological extremes, without penalizing a specific ideological bloc.

2.1 Empirical Tests of Alternative Voting Methods

To assess whether alternative voting methods may asymmetrically affect candidate performance, we draw on empirical studies that tested expressive ballots using real candidates in real electoral contexts. These studies typically compare candidate rankings obtained under alternative voting rules with those produced by the officially used single-choice ballot. We here focus on changes for viable candidates, defined as the main competitors depending on the electoral competition (Cox 1997): in majoritarian contexts, top-two candidates in plurality elections (e.g. the US) or top-three candidates in two-round systems (e.g. Czechia, France, Poland, and Romania); in proportional contexts, parties expected to surpass the electoral threshold (e.g. Austria).

Across this literature, performance effects are not ideologically neutral. In many majoritarian settings, far-right candidates tend to perform worse under at least some alternative voting methods, often coinciding with improved outcomes for far-left candidates (Vote de Valeur 2012; van der Straeten et al. 2013; Baujard et al. 2014; IFOP 2017; Bouveret et al. 2018, 2019; Kamwa et al. 2020; Delemazure and Bouveret 2024). Other studies similarly report reduced performance for far-right candidates without corresponding gains for the far left (OpinionWay 2011, 2021; Przybyszewski and Sosnowska 2016). A smaller set of studies finds neutral or mixed effects (Roescu 2012, 2014; Alda et al. 2017; Igersheim et al. 2022; OpinionWay 2022; Baujard et al. 2025b). Although the evidence is heterogeneous, these findings suggest a recurring asymmetry: far-right candidates appear more likely to lose support under expressive ballots than far-left candidates. Similar, though weaker, patterns have occasionally been observed among center-left and center-right candidates (Blais et al. 2012).

Evidence regarding centrist candidates is mixed, with effects ranging from neutrality to moderate gains (Oreský and Čech 2020) outside the French case, where the centrist candidate was the polling leader of the 2017 and 2022 presidential elections. Thus, alternative methods may affect not only challengers but also leading contenders. If the polling leader is penalized under alternative methods, the implications may extend beyond ideological redistribution to questions of perceived legitimacy. We formulated the first hypothesis (H1) concerning contexts where the poll-leading party coincides with the far right.

H1: A far right, poll-leading, party attains a lower rank under alternative voting methods.

Because much of the literature examines majoritarian contexts – particularly France – most studies focus on ranking shifts rather than vote shares. However, vote share variations are central in proportional or mixed contexts, where strategic coordination revolves around electoral thresholds. Evidence from proportional systems suggests that small and centrist parties benefit from more expressive ballots (Darmann and Klamler 2023; Artiga González et al. 2024), and that green parties may gain while right-wing parties lose vote shares (Darmann and Klamler 2023; Kurella 2026). Yet, these studies compare *within*-party changes relative to official results but do not examine *between*-party redistributive effects conditional on ideological position. It therefore remains unclear whether alternative ballot formats systematically produce strategic or ideological reallocation effects.

2.2 Mechanisms Underlying Performance

The improved performance of small parties may relate to increased sincerity in studies testing alternative methods (Igersheim et al. 2016). Given the lack of incentives to avoid

wasting the vote, voter may tend to cast alternative votes that align with their sincere preferences. Some studies directly elicited sincere preferences and compared them to votes under alternative rules (Roescu 2014; Igersheim et al. 2022). Where respondents behaved sincerely, alternative methods largely reproduced official outcomes (Igersheim et al. 2022). When insincere behavior occurred, some differences in rankings emerged (Roescu 2014). If respondents tend to be more sincere when casting hypothetical votes, observed performance may simply reflect the absence of majoritarian, proportional, or other⁷ incentives in those studies.

We therefore formulated a set of hypotheses for differences in vote shares under alternative methods. The second hypothesis (H2) concerns viability.

H2a (majoritarian): Top-two parties receive lower vote shares under alternative methods relative to other above-threshold parties.

H2b (proportional): Parties expected to surpass the electoral threshold receive lower vote shares under alternative methods relative to parties below the threshold.

H2c (Rae's): Top-three parties receive lower vote shares under alternative methods relative to other above-threshold parties.

The improved performance of centrists may result from the possibility of attracting support from both ideological camps, whereas extreme parties should theoretically draw additional support from only one proximate side. We therefore hypothesized the following (H3) concerning centrist parties.

H3: Centrist parties receive higher vote shares under alternative methods relative to extreme parties.

2.3 Mechanisms Underlying Ideological Asymmetries

Differences in ideological performance may stem from candidate- and voter-exclusivity mechanisms (Baujard et al. 2014). First, far-right *candidates* may struggle to attract support outside of their niche, missing co-support from other right-wing voters. Second, rightist *voters* may use voting strategies to exclusively support their favorite candidate, penalizing other ideologically-similar candidates. To examine these mechanisms, existing studies analyzed candidates' vote distributions under

⁷ Rae (1971) predicts that when n parties are viable, parties polling above $1/n$ may benefit from overstated support, whereas those below may suffer understatement. Given seven potentially viable parties (n) in the 2022 Italian election, $1/n$ is equal to 0.14. Consequently, strategic overstatement is expected for parties polling above 14 %, which constitute the top three parties in the Italian case.

alternative methods, as well as the frequency of voters' extended support beyond their favorite candidate.

2.3.1 Candidate Exclusivity

When examining candidates' vote distributions, consensual candidates typically receive intermediate rankings or evaluations across ideological groups, whereas polarizing candidates tend to receive extreme rankings or evaluations (Darmann et al. 2017). Although theoretical models often assume symmetric voter dispersion, empirical evidence indicates that bimodal, U-shaped, distributions are more common among far-right candidates (Vote de Valeur 2012; Baujard et al. 2014; Darmann et al. 2017).

Asymmetries in social acceptability and negative partisanship may account for this pattern. Far-right parties often generate stronger affective polarization and lower cross-ideological tolerance than far-left parties (Iyengar et al. 2019; Gidron et al. 2020). If voters are less willing to assign secondary support to highly polarizing candidates, alternative methods that reward broad acceptability may disproportionately penalize them. At the same time, evidence suggests that some far-right candidates may reduce their polarizing profile over time, attenuating such effects (Baujard et al. 2025b). This finding indicates that far-right candidates can conveniently adapt their electoral strategy to different incentives. We therefore hypothesized the following (H4) concerning polarizing parties.

H4: Party exclusivity is higher among right-wing parties relative to left-wing parties.

A general limitation of distributional analysis concerns potential strategic voting. Although strategic voting appears limited in experimental settings (Igersheim et al. 2016, 2022), respondents may strategically⁸ assign extreme grades under cardinal systems to maximize the relative difference between supported and non-supported candidates (Baujard et al. 2021). No previous study has examined whether far-right candidates attract more extreme evaluations due to strategic coordination against them, consistent with “Republican Front” dynamics to prevent the far-right from gaining power (Downs 2002).

2.3.2 Voter Exclusivity

Exclusive voter behavior has often been associated with conservative ideology (Bowler and Farrell 1995). *Bullet voting* occurs when voters rank, approve, or positively evaluate only one candidate preference despite expressive capacity.

⁸ Outside majoritarian contexts, strategic consequences become more complex to predict, possibly leading to inconsistencies or voting mistakes (Stephenson et al. 2018).

Empirically, this behavior is not frequent in either experiments (e.g. De Maio et al. 1983) or real elections using alternative methods (e.g. Hamlin and Hua 2023). However, mono-approval ballots increase with age (Baujard and Lebon 2022), suggesting a potential role for status quo bias (Samuelson and Zeckhauser 1988) and the habit of providing “bullet” information under single-choice methods. Status quo bias correlates with conservative orientations (Jost et al. 2003), and right-wing voters tend to give fewer approvals (Baujard et al. 2014). Moreover, far-right supporters exhibit stronger authoritarian traits than far-left supporters (Vasilopoulos and Lachat 2018), and voters high in authoritarianism tend to approve fewer candidates (Przybylszewski and Sosnowska 2015). If supporters of certain ideological families distribute support more narrowly, alternative ballots may magnify cross-ideological asymmetries in expressive behavior. We therefore hypothesized the following (H5) concerning ideology and exclusivity.

H5: Voter exclusivity is higher among right-wing voters relative to left-wing voters.

3 Methodology

We fielded an online survey between the 22nd and the 24th of September 2022, immediately prior to the Italian general election held on September 25. Conducting the study at peak electoral salience ensured that respondents had well-formed preferences while preventing post-election rationalization effects, whereby supporters of electorally-defeated parties may retrospectively adjust their preferences to penalize election winners (Anderson et al. 2005).

3.1 Sample

After a soft launch ($n = 21$), data collection continued until reaching the target sample size ($N = 1,021$). Respondents were recruited through *Opinioni.net*, operated by *Demetra*, a major Italian survey firm. Sampling was conducted via random selection from a representative panel frame primarily profiled offline.⁹

This sample was stratified *ex ante* by region of residence, age, and gender. To enhance population inference, we applied post-stratification weights aligning reported voting intentions with official results. Some discrepancies between the sample and the official results are expected in pre-election online surveys. This adjustment addresses

⁹ Further information about the panel provider is available at: <https://www.demetra.com/en/panel-online-profilato/>.

representation bias commonly observed in online panels (e.g. Darmann and Klamler 2023), where certain parties may be over- or under-represented.¹⁰ Tables A1-5 (Appendix A) reports full sample composition and weighting procedures.

3.2 Survey Flow

The survey consisted of four stages. Appendix B provides the full questionnaire translated to English.

First, respondents answered attitudinal questions about the current Italian electoral system. We report these results in another paper (Marsilio and Delemazure *forthcoming*).

Second, participants cast hypothetical votes using four alternative¹¹ voting methods: ranked, approval, score, and evaluative voting. Presentation order was randomized. Each method was introduced with a concise description of the voting task and aggregation rule. A vote was considered valid when at least one party was ranked or evaluated. Abstention was always granted.

Third, respondents expressed sincere party evaluations on a continuous 0–100 scale, which included a negative emoticon on the left pole (0) and a positive emoticon on the right pole (100). Subsequently, they reported their voting intention if the election were held that day, with the possibility of abstaining.

Fourth, participants rated satisfaction with each method and provided socio-demographic information. The median completion time was 8 min and 57 s¹².

3.3 Tested Voting Methods

We selected one ordinal and three cardinal alternatives among the most popular in the literature. The ordinal alternative was *ranked voting* (“RV”; Bowler and Grofman

¹⁰ Parties differ in their digital visibility and ability to mobilize supporters online, which can generate deviations between web-based samples and the electorate. Parties with stronger online infrastructures or higher media salience tend to be overrepresented, whereas parties relying more heavily on traditional campaign channels are more likely to be underrepresented.

¹¹ We assumed limited familiarity with the tested voting methods given that they have never been tested in Italy and – unlike contexts such as France, Czechia, or the US – no prominent advocacy organization currently campaigns for their adoption.

¹² As a data quality measure, respondents were flagged as speeders if completion time fell below the minimum estimated reading time. Only one participant completed the survey in under 2 min, but qualitative inspection did not reveal irregular response patterns. Abstentionists tended to complete the survey more quickly, particularly when abstaining across alternative methods, which mechanically reduced response time.

2000), which lets voters rank as many parties as they want. Aggregation occurs through sequential elimination: first-ranked preferences are counted; the least-supported party is eliminated; if the eliminated party was ranked first by a voter, their vote is assigned to the next-ranked – and not yet eliminated – party on the ballot. The elimination process continues until only one party remains.

The simplest cardinal alternative is *approval voting* (“AV”; Brams and Fishburn 1978), which lets voters approve of as many parties as they want. Each time a party is approved, it earns one point. Under all cardinal rules, party scores are calculated by summation. Non-evaluated parties receive zero by default. Party rankings are obtained by comparing the total scores.

The remaining cardinal methods share discrete 0–4 scales. To normalize totals across 0–4 scales, summed scores were divided by four. The 0–4 scale was selected to (a) avoid attributing more weight to either intermediate or extreme evaluations (Baujard et al. 2018) when scales are, respectively, too narrow (e.g. three grades) or too wide (e.g. 21 grades) and (b) resemble scales to which people are more accustomed, e.g. online reviews and Likert scales. The starting point is zero to avoid penalizing extreme candidates with negative grades (Baujard et al. 2014).

The 0–4 cardinal methods were framed according to different voting tasks (Laslier 2011). We labeled *score voting* (“SV”) the task of point attribution, letting voters attribute points to as many parties as they want on a discrete quantitative scale: 0; 1; 2; 3; 4. *Evaluative voting* (“EV”; Poundstone 2008) entailed an evaluation of parties, letting voters evaluate as many parties as they want. Half the sample received qualitative labels (“EV1”): severely insufficient (=0); insufficient (=1); sufficient (=2); good (=3); excellent (=4). The other half received a neutral-dot scale (“EV2”): ●○○○○ (=0); ○●○○○ (=1); ○○●○○ (=2); ○○○●○ (=3); ○○○○● (=4). EV1 was conceived as a summation-based *majority judgment* (Balinski and Laraki 2010), a qualitative-label and median-based voting method, to study the effects of qualitative labels while holding the aggregation rule constant.

3.4 Party Names

Voting intentions are used for ideological classification. As party acronyms are used throughout the results, Table 1 provides a classification of the 14 running parties¹³ in the 2022 Italian general election.

¹³ Parties were included based on their presence in most jurisdictions: 14 parties have a presence rate of above 80 %, with a minimum of 26 out of 29 for the House and 17 out of 21 for the Senate. The most popular party among those that were not included – *Mastella Noi di Centro Europeisti* – was present in around just 50 % of the jurisdictions.

Table 1: Party classification.

Coalition	Party name	Acronym	Political orientation ^a
Right	Lega per Salvini Premier	LSP	Right
	Forza Italia	FI	Center-right
	Fratelli d'Italia	FdI	Far-right
	Noi Moderati	NM	Center
Left	Partito Democratico – Italia Democratica e Progressista	PD-IDP	Center-left
	Impegno Civico – Centro Democratico	IC	Center
	Alleanza Verdi e Sinistra	AVS	Green/left
	+Europa	+E	Center
	Movimento 5 Stelle	M5S	Transversal
Independent	Azione – Italia Viva	Az-IV	Center
	Unione Popolare con De Magistris	UP	Far-left
	Italia Sovrana e Popolare	ISP	Transversal
	Italexit per l'Italia	IpI	Transversal
	Vita	Vita	Transversal

Parties are displayed in their official presentation order. ^a2022 Italian general election (2023).

3.5 Operationalization

3.5.1 Vote Shares (H2-3)

Hypotheses on performance are evaluated using two-way repeated-measures ANCOVA models, with voting methods and party categories as factors.

H2a (majoritarian):

- “Top 2” = FdI + PD-IDP.
- “Else 5” = LSP + FI + AVS + M5S + Az-IV.

H2b (proportional):

- “Quorum” = LSP + FI + FdI + PD-IDP + AVS + M5S + Az-IV.
- “Small” = NM + IC + +E + UP + ISP + IpI + Vita.

H2c (Rae’s):

- “Top 3” = FdI + PD-IDP + M5S.
- “Else 4” = LSP + FI + AVS + Az-IV.

As robustness checks, we estimated majoritarian and Rae’s contrasts using all remaining parties – rather than only quorum parties – as the baseline (Table C5, Appendix C).

To further examine whether strategic distortion concentrated among larger parties, we conducted chi-square tests of independence between party category (top two, quorum, and top 3 supporters) and insincere behavior.

Insincere preferences:

- “Insincere” = ballots in which the officially supported party was ranked or rated lower than at least one other party.
- “Sincere” = ballots in which the officially supported party was ranked or rated at least as high as other parties.

H3 (centrist):

- “Centrist” = Az-IV.
- “Extreme” = UP + ISP + IpI + Vita.

3.5.2 Voter Behavior (H4-5)

Hypotheses on ideological asymmetries (H4-5) are assessed through chi-square tests of independence applied to ideological orientation and exclusive voter behavior.

Ideological orientation:

- “Right” = LSP + FI + FdI + NM.
- “Left” = PD-IDP + IC + AVS + +E.

H4 (extreme-grade voting):

- “Extreme” = ballots assigning only minimum (0) or maximum (4) grades.
- “Non-Extreme” = ballots including at least one intermediate grade (1–3).

H5 (bullet voting):

- “Bullet” = ballots ranking, approving, or rating exactly one party.
- “Non-Bullet” = ballots ranking, approving, or rating exactly two or more parties.

4 Results

4.1 Hypothetical Performance

4.1.1 Party Rankings (H1)

Figure 1 summarizes party rankings, comparing official results and performance under alternative methods.

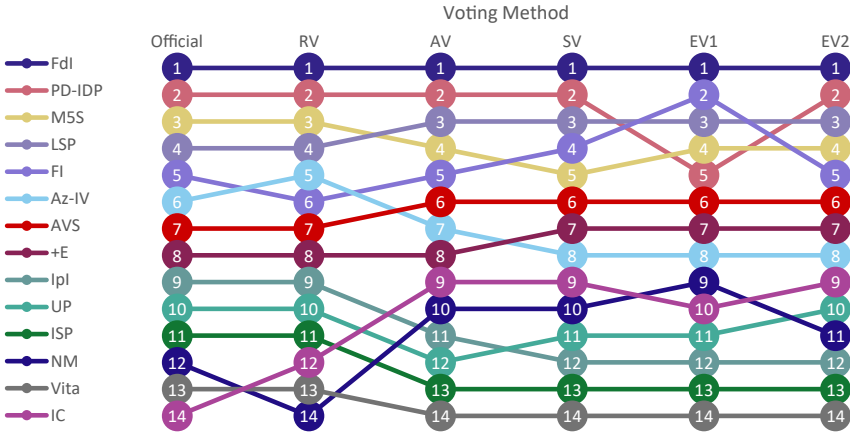


Figure 1: Party rankings (overview). *Note.* EV1 and EV2 were randomized for half the sample.

Our first hypothesis (H1) concerned the performance of the poll-leading party in contexts where it coincides with the far right, expecting a lower rank under alternative methods. Across all alternatives, the far-right party (FDI) remained first.

Result 1: The far-right, poll-leading, party (FDI) did not lose rank under any alternative.

Thus, H1 is rejected. In contrast to prior findings in majoritarian contexts (Baujard et al. 2021), far-right success in Italy appears robust to ballot design.

The second place (PD-IDP) was affected only under qualitative labeling (EV1), which also generated more ranking volatility than neutral labeling (EV2), suggesting that linguistic framing influences evaluative intensity. Changes below the top-two positions have limited electoral relevance in a mixed system, where thresholds and vote shares matter more than ordinal shifts. Rank changes among smaller parties were largely confined to coalition¹⁴ dynamics: center-right (LSP and NM) and center-left (AVS, +E, and IC) tended to gain positions, whereas independent parties – transversal (M5S), centrist (Az-IV), and small extreme (Ipl, UP, ISP, and Vita) – tended to lose some. The absence of coalition membership appears to reduce the likelihood of attracting support beyond a party's core electorate.

¹⁴ The Italian electoral system permits pre-electoral coalitions. Under alternative methods, coalition parties may benefit if voters approve of, or positively evaluate, allied parties in addition to their primary preference, potentially generating intra-coalition spillovers.

4.1.2 Party Vote Shares (H2-3)

Cardinal methods allow comparisons in vote shares. Vote shares were computed by dividing party’s approvals, scores, or grades either by *total respondents* (Figure 2) or *total approvals, scores, or grades* (Figure 3). Exact percentages are reported in Appendix C (Tables C1 and 2).

Under cardinal rules, respondents could support multiple parties. As a consequence, overall support increased for all parties when measured as a proportion of respondents (Figure 2). However, when expressed as a proportion of total votes, the relative gaps between parties narrowed (Figure 3).

To assess relative gains, we calculated ratios (Figure 4) and differences (Figure 5) between alternative methods and weighed voting intentions (“Official”) ¹⁵ for each party’s total. Figure 4 presents the proportional increase of parties’ *total* support under alternatives relative to the official results. Figure 5 reports the difference in parties’ *relative* support between alternative and official methods.

Two systematic patterns emerge. First, smaller parties experienced larger proportional increases (Figure 4). Second, top-three parties (FdI, PD-IDP, and M5S), as well as the independent centrist party (Az-IV), experienced losses in relative vote share (Figure 5).

Our second hypothesis (H2) concerned viability effects. We expected top-two (H2a), quorum (H2b), and top-three (H2c) parties to experience reduced vote shares

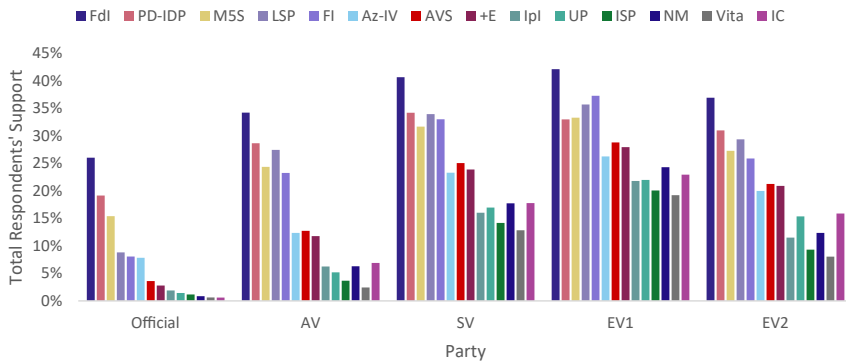


Figure 2: Party vote shares by total respondents. *Note.* Presentation order reflects parties’ ranking according to official results.

15 Weighted voting intentions were computed by multiplying the number of respondents reporting a given voting intention by the corresponding party quota, thereby aligning the sample distribution with official vote shares.

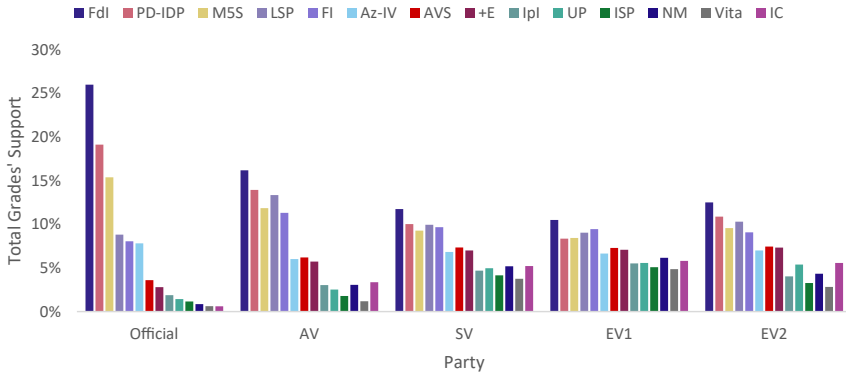


Figure 3: Party vote shares by total alternatives, scores, and evaluations. *Note.* Presentation order reflects parties' ranking according to official results.

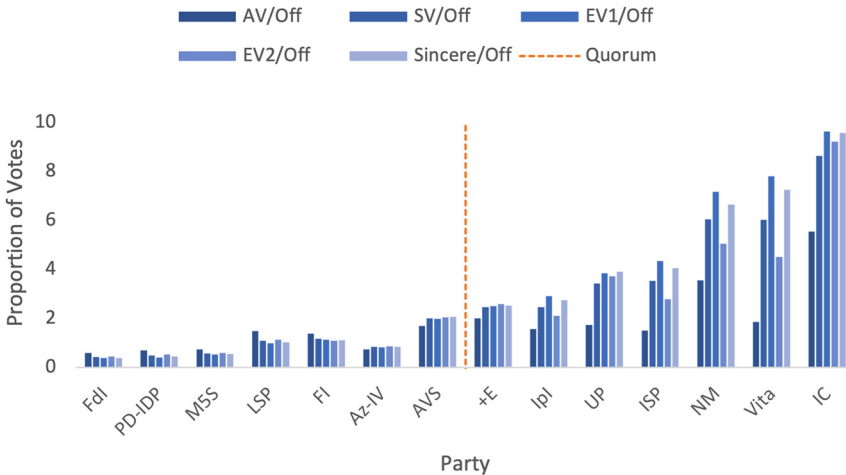


Figure 4: Party's total support (ratio: alternative/official). *Note.* Presentation order reflects parties' ranking according to official results.

under alternative methods. While Figure 5 reflects *within*-party changes, we additionally tested *between*-party differences using two-factor repeated measures ANCOVA models¹⁶ (see Appendix C, Table C4). These confirm that the largest variance

¹⁶ The repeated-measures ANCOVA tested (a) differences in vote shares across parties under official results, (b) differences between official and alternative methods, and (c) the interaction between party type and voting method. While main effects (a) and (b) are frequently significant – indicating baseline differences across parties and systematic increases under alternatives – the interaction

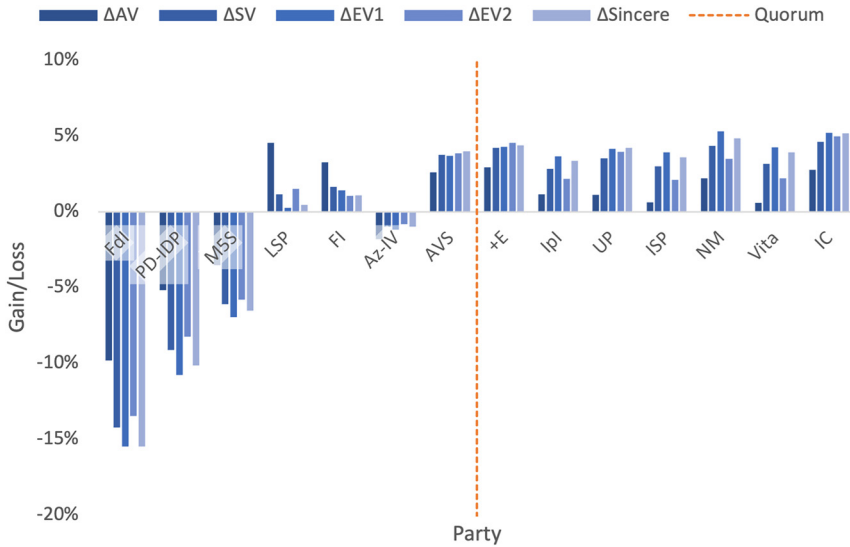


Figure 5: Party's relative support (Delta: alternative-official). *Note.* Presentation order reflects parties' ranking according to official results.

occurred between quorum and small parties. Among above-threshold parties, more variance was explained by the top three rather than the top two.

Results 2a-c: Top-two, quorum, and top-three parties received lower vote shares under alternative methods.

Thus, H2a-c are supported. In Italy's mixed system, both proportional and majoritarian incentives shape vote shares. However, proportional dynamics – particularly involving quorum and top-three parties – appear more consequential than strict top-two competition. This pattern aligns with Rae's (1971) prediction of overstated preferences for multiple viable contenders rather than a purely majoritarian logic.

Moreover, by examining between-party variations, we extend similar prior findings that small parties benefit under alternative methods (Darmann and Klamlar 2023; Artiga González et al. 2024). Analysis of insincere preferences¹⁷ – defined as

term (c) captures whether performance changes differ across party categories. This interaction is essential for assessing *between-party* differences.

¹⁷ To examine asymmetries in vote shares, we focused on AV and SV given their larger sample sizes relative to EV1 and EV2. We considered bullet voting under AV and extreme-grade voting as well as insincere preferences under SV, ensuring enough subcases and avoiding redundancy: for instance, most extreme grades attributed under cardinal methods coincided with bullet votes ($\chi^2 = 389.2, p < 0.001$), indicating substantial overlap between these behaviors.

assigning higher support under alternative methods to a party other than the officially supported one – shows that supporters of the top two ($\chi^2 = 5.0, p = 0.026$) and, marginally, the top three ($\chi^2 = 3.7, p = 0.054$) were less sincere than supporters of other quorum parties. This suggests that disadvantaged parties under alternative methods may have benefited from strategic overstatement under the official rule. Consistent with Igersheim et al. (2016), reduced strategic incentives in these studies may produce outcomes closer to sincere preferences.

Our third hypothesis (H3) concerned the performance of centrist parties under alternatives. We expected improved performance through cross-bloc appeal. Contrary to this expectation, the independent centrist party (Az-IV) experienced a reduction in relative support, while several smaller extreme parties registered proportional gains.

Result 3: The centrist party (Az-IV) performed worse under alternative methods.

Thus, H3 is rejected. The centrist Az-IV lost ranking positions (Figure 1), exhibited smaller proportional gains (Figure 4), and experienced losses in relative vote share (Figure 5) under alternative methods. These patterns appear more closely associated with by quorum status and independent positioning rather than ideological moderation per se. Below-threshold parties generally gained relative to above-threshold parties, and coalition-affiliated centrist parties (+E, IC, and NM) performed more favorably under alternative methods. Under approval voting in particular, coalition-affiliated centrists increased their vote shares more than independent extreme parties. The evidence therefore suggests that coalition membership, rather than centrism alone, conditions performance under expressive ballots.

4.2 Mechanisms for Asymmetrical Performance

The analysis of aggregate performance did not reveal any systematic disadvantage for right-wing parties relative to left-wing parties (Appendix C, Table C4). We therefore examine party- and voter-exclusivity, using non-weighted results as the focus is on voter behavior and not party performance.

4.2.1 Party Exclusivity (H4)

Party exclusivity was assessed through co-approvals and distributional patterns.

Co-Approvals. AV allows voters to approve of multiple parties. Higher rates of non-supporter approvals are associated with inclusivity (Baujard et al. 2014). To avoid inflating inclusivity via core supporters, we excluded approvals from official voters (Table D1, Appendix D). Because coalition voters may approve coalition partners without signaling broader inclusivity, we distinguish between receiving

Table 2: Approvals outside electorate and coalition (%).

Party		Non-supporter approvals	Non-coalition approvals
Right	LSP	8.2 %	2.0 %
	FI	6.9 %	1.6 %
	FdI	4.8 %	2.2 %
	NM	2.4 %	1.1 %
Left	PD-IDP	5.1 %	4.0 %
	IC	3.6 %	1.7 %
	AVS	5.2 %	2.3 %
	+E	4.3 %	1.4 %
Independent	M5S	4.5 %	
	Az-IV	2.9 %	
	UP	2.6 %	
	ISP	1.4 %	
	IpI	2.0 %	
	Vita	1.1 %	

Highest and lowest values for each column are highlighted in bold. Coalition parties attracted more cross-voter approvals than independent parties. Center-right parties (LSP and FI) obtained the highest rates of non-supporter approvals, reflecting strong intra-coalition reinforcement. However, when restricting attention to non-coalition approvals, center-left parties tended to gain more support from non-coalition voters. Despite these patterns, inclusivity measured through approvals did not predict performance under AV.

approvals from non-supporters and approvals from non-coalition supporters. Table 2 reports the respective percentages relative to the total¹⁸ number of approvals.

Distributional Patterns. Distributional analysis considers intermediate and extreme evaluations under cardinal rules (Vote de Valeur 2012; Baujard et al. 2014; Darmann et al. 2017). To overcome the limitation of respondents strategically using extreme grades, we proceed with distributional analysis of sincere opinions. Sincere opinions further allow differentiation between indifference and absence of evaluation: unlike under cardinal methods, respondents could select “Do not know” in the sincere-opinion measure, separating intentional and unintentional informational absence.

Figure 6 displays the raw distributions of sincere opinions grouped into five clusters¹⁹ (0–19; 20–39; 40–59; 60–79; 80–100). Respondents tended to be sincere

¹⁸ Using the total number of approvals as the denominator provides a more intuitive measure of party exclusivity than relying on either party’s total approvals or approvals net of supporter approvals. This approach captures the share of a party’s support originating outside its core electorate, enabling clearer cross-party comparisons.

¹⁹ Sincere opinions were elicited using a continuous slider rather than discrete categories. Figure D1 in Appendix D presents the non-recoded distribution prior to clustering. Clustering the continuous 0–100 scale into common intervals enables distributional comparisons with cardinal methods.

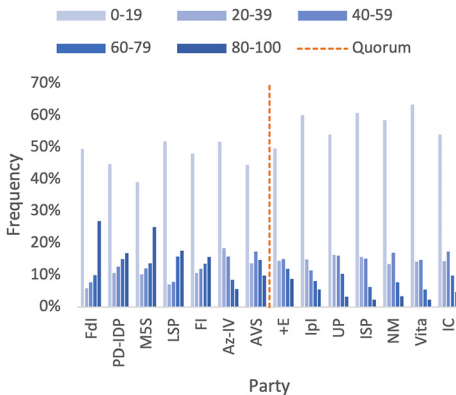


Figure 6: Recoded sincere-opinion distribution (%). *Note.* Non-weighted data.

under alternative methods as sincere opinions' distributions did not substantially differ compared to SV and EV2 distributions (Figures D2–4, Appendix D). One main difference occurred in the use of intermediate grades, with a higher frequency of intermediate sincere opinions compared to intermediate evaluations under cardinal methods, possibly reflecting indifference toward smaller and less known parties.

No consistent link emerges between polarizing distribution shapes and electoral disadvantage among quorum parties. Far-right (FdI) and transversal (M5S) parties exhibit more U-shaped patterns, whereas center-left (PD-IDP) and center-right (FI) parties show flatter distributions.

The fourth hypothesis (H4) concerned party exclusivity. We expected poorer performance under alternative methods of polarizing parties, which are typically associated with far-right parties. Yet, similar co-approval rates and distributional shapes were shared across different ideological orientations.

Result 4: Party exclusivity, measured through non-supporter approvals and U-shaped distributions, is not associated with ideological asymmetries.

Thus, H4 is rejected. While prior studies from majoritarian (Baujard et al. 2014) and proportional (Darmann et al. 2017) contexts found distributional shape predictive of performance, this relationship does not hold in Italy's mixed system. Although the far-right FdI exhibits a polarizing distribution, its performance remained stable. Extreme-grade voting was not significantly higher among left-wing voters ($\chi^2 = 1.2$, $p = 0.285$) relative to right-wing voters, suggesting no Republican-front strategy to coordinate against the far-right in this context.

Distributional patterns were more informative for smaller parties. Negative slopes characterized independent centrist (Az-IV) and extreme – Ipl, UP, and ISP (but

not Vita) – parties, consistent with declining performance. Coalition-affiliate green (AVS) and center-oriented (+E, NM, and IC) parties displayed bell-shaped distributions after excluding zero evaluations. While these parties improved their performance under alternatives, this appears attributable to coalition reinforcement rather than broad ideological inclusivity.

4.2.2 Voter Exclusivity (H5)

Voter exclusivity was measured through bullet voting and extreme-grade voting. For expressivity, we computed the average number of ranked and approved parties, as well as the average amount²⁰ of points and evaluations given, per respondent under each method. Table 3 displays average voter expressivity, the frequency of bullet voting, and the frequency of extreme-grade voting.

Respondents generally used the expressive capacity of alternative ballots: they ranked approximately five parties, approved around two, and attributed non-zero points or evaluations to at least three. Consistently with prior studies (Baujard and Lebon 2022; Igersheim et al. 2022; Darmann and Klamlar 2023), bullet voting and extreme-grade voting were limited. The use of extreme grades occurred at similar rates under alternative and sincere conditions, indicating that this behavior was largely sincere rather than strategic.

Our fifth hypothesis (H5) concerned voter exclusivity. We expected poorer performance of parties supported by exclusive voters, who are normally associated with rightists. However, chi-square tests reveal that right-wing voters exhibited

Table 3: Voter behavior under alternative methods.

Voter behavior	RV	AV	SV	EV1	EV2	Sincere
Average expressivity	4.9	2.1	13.6	15.8	11.4	385.4
Bullet voting	13.9 %	45.5 %	7.7 %	1.7 %	12.5 %	0.1 %
Extreme-grade voting	n.a.	n.a.	10.3 %	3.4 %	14.9 %	12.2 %

Extreme-grade voting only applies to graded scales with more than two options.

²⁰ For SV and EV, we report the average amount of points or evaluations assigned per respondent instead of the average number of graded parties. Dividing the former by the scale width of 4 provides a lower-bound estimate of the number of parties receiving the maximum score. For example, an average expressivity of 13.6 under SV implies a minimum of $13.6/4 = 3.4$ parties receiving the highest possible score. Given that only approximately 10 % of respondents engaged in extreme-grade voting, this calculation indicates that respondents tended to distribute positive evaluations across multiple parties.

neither higher bullet voting ($\chi^2 = 0.8, p = 0.385$) nor extreme-grade voting (see previous section) than left-wing voters.

Result 5: Voter exclusivity is not significantly associated with ideological orientation.

Thus, H5 is rejected. Although conservatism (Bowler and Farrell 1995) and authoritarianism (Przybyszewski and Sosnowska 2015) and have been linked to exclusivity in prior studies, right-wing voters in this mixed system frequently co-supported coalition partners. In contrast, supporters of quorum parties engaged in bullet voting more often ($\chi^2 = 12.3, p < 0.001$) than supporters of below-threshold parties. This suggests behavioral carryover from strategic incentives under the current system. As supporters of smaller parties engaged with exclusive behavior less, voter exclusivity therefore relates to viability rather than ideology.

4.2.3 Dimension Reduction (t-SNE)

To jointly present findings on party and voter exclusivity, we computed a map of voters based on sincere opinions and voting intentions. Respondents' sincere opinions consist of a list of 14 numbers, i.e. the number of parties to be judged. In mathematics, this is a long vector of size 14. Using the *t-distributed stochastic neighbor embedding* dimension reduction algorithm²¹ (t-SNE; Hinton and Roweis 2002), the vector was transformed into a smaller one of size 2. The conjecture is that if two respondents gave similar ratings in their long vectors, they would have similar values in their short vectors. A vector of size 2 would correspond to the respondent's position in a two-dimensional space. Respondents were embedded in a map accordingly, adding colors based on their voting intentions (see Figure E1 in Appendix E). Figure 7 additionally represents each party as the barycenter of its supporters' opinions. The horizontal dimension represents left and right poles (Appendix E, Figure E2). However, parties in the center are not specifically centrists, just equally distant from left and right. Moreover, the vertical dimension represents respondents' average opinion of parties, with a higher placement corresponding to a higher average opinion (Appendix E, Figure E3).

Figure 7 shows that supporters of transversal M5S and far-right FdI occupy a lower position on the vertical axis, corresponding to below-average evaluations of parties overall. These two parties – previously identified as having steeper U-shape

²¹ To the best of our knowledge, no prior study testing alternative voting methods has employed t-SNE for dimension reduction. Previous work has relied primarily on principal component analysis (e.g., Laslier 2006). Unlike linear techniques, t-SNE accommodates non-linear structures in high-dimensional data, making it particularly suited for visualizing complex preference clusters using real-world data.

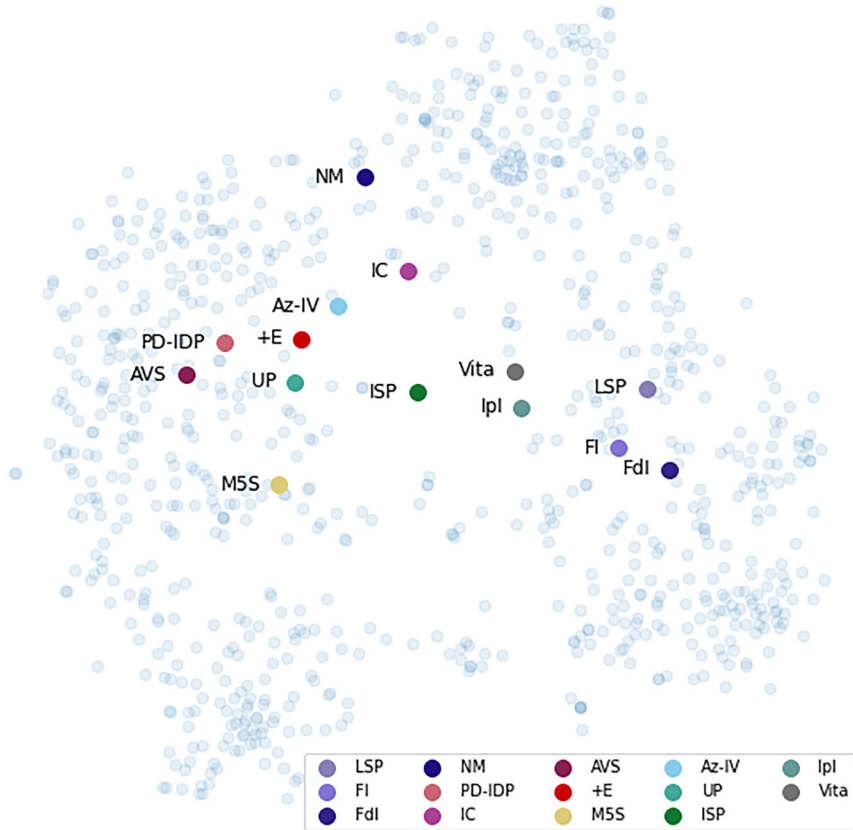


Figure 7: Map of voters (voting intention geometric mean). *Note.* Party-colored dots are computed as the geometric mean of respondents' voting intentions. As the number of supporters in our sample decreases, positional estimates become less stable (e.g. NM appearing slightly more left than IC).

distributions (Figure 6) – are associated with electorates expressing more negative assessments of parties. However, this pattern does not map onto ideology: M5S and FdI are located at distinct ideological poles, yet share similar levels of evaluative exclusivity. By contrast, supporters of center-left PD-IDP display higher average evaluations among top-three parties, indicating greater overall expressivity. Yet, this higher average evaluation does not translate into improved performance for ideologically proximate coalition partners under alternative methods. This reinforces the interpretation that performance shifts are structured primarily by institutional incentives – particularly overstatement under the current system – rather than by ideological moderation.

5 Discussion and Conclusion

This study examined the consequences of alternative voting methods for party performance and voter behavior in a mixed electoral system. Prior empirical tests of alternative voting methods show disadvantages for far-right candidates, indicating potential ideological asymmetry.

First, we conducted an original survey preceding the 2022 Italian general election, where the far-right party (FdI) was projected to win the election. Despite exhibiting a more U-shaped distribution (Figure 6) and an exclusive electorate (Figure 7), FdI remained first under all alternative rules. Far-right success in this mixed-member context therefore appears robust to ballot design.

Second, viability effects were substantial. We extend prior work by explicitly testing between-party redistributive effects: the largest difference in vote shares occurred between quorum and small parties, followed by differences between top-three and other quorum parties. Alternative methods reduced the overstatement of preferences for viable contenders, aligning outcomes more closely with sincere preferences. Despite the rhetorical importance of resulting the first party in the Italian elections, these findings support Rae's prediction about preference overstatement for the top three rather than the top two.

Third, the independent centrist party (Az-IV) performed worse under alternatives. This underscores the importance of coalition membership for mobilizing cross-voter support.

Fourth, we linked performance and behavior by testing potential mechanisms underlying asymmetries. Party exclusivity – measured through co-approvals (Table 2) and distributional shape (Figure 6) – did not predict ideological asymmetries in performance. Moreover, the concept of “consensual” distributions appears less informative in mixed systems where coalition dynamics and strategic incentives dominate.

Fifth, voter exclusivity was associated with viability rather than ideology. Supporters of larger parties, and not right-wing voters, were more likely to replicate single-choice behavior under alternative ballots. This behavioral continuity explains why ideological asymmetries did not materialize. Voter exclusivity reflects electoral positioning and coalition structure rather than ideology per se.

Finally, the t-SNE mapping (Figure 7) reinforced these findings by merging considerations of party and voter exclusivity. While supporters of polarizing parties exhibit more negative average evaluations of other parties, this pattern is not systematically aligned with ideological orientation.

In conclusion, alternative voting methods do not appear ideologically biased in this mixed-member context. Viability considerations are stronger predictors of party

performance than ideological polarization. Whether similar dynamics emerge in real elections under implemented alternative rules remains an empirical question, especially if voters progressively adopt strategic behavior across elections (Baujard et al. 2025a).

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Author Contributions: (i) Conception and design: Marsilio conceived the paper's structure whereas both authors contributed to the experimental design. (ii) Data collection has been carried out by *Demetra* (www.demetra.com). (iii) Data analysis and interpretation have been carried out by Marsilio and Delemazure. (iv) Manuscript drafting and revising: Marsilio wrote the paper's draft and Delemazure provided the revisions. (v) Approval of final version for submission: Marsilio and Delemazure.

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Appendix A

A.1. Sample Composition

The survey was administered by *Demetra*, an established Italian survey firm, which recruited a stratified sample of the Italian voting-age population using random draws from its proprietary panel. Stratification quotas were defined ex ante based on region of residence, age, and gender. Quotas were actively monitored during fieldwork, with targeted invitations sent to underrepresented demographic groups to ensure balance prior to survey closure. Tables A1–A4 report the resulting sample composition.

Table A1: Gender (sample).

Gender	Sample		CI (95 %)		Population ^a
	<i>n</i>	%	<i>Lower</i>	<i>Upper</i>	
Women	521	51.1 %	48.1 %	54.2 %	51.8 %
Men	498	48.9 %	45.8 %	51.9 %	48.2 %
Prefer not to reply	2	n.a.	n.d.	n.d.	n.d.

“Prefer not to reply” responses were excluded from percentages calculation. ^aIstituto Nazionale di Statistica [ISTAT] (2022).

Table A2: Age (sample).

Age	Sample		CI (95 %)		Population ^a (capped)
	<i>n</i>	%	<i>Lower</i>	<i>Upper</i>	
18–29	150	14.7 %	12.6 %	17.0 %	16.5 %
30–39	140	13.7 %	11.7 %	15.9 %	15.3 %
40–49	221	21.6 %	19.2 %	24.2 %	19.5 %
50–59	251	24.6 %	22.0 %	27.3 %	21.9 %
60–69	187	18.3 %	16.0 %	20.8 %	17.4 %
Over 70 ^b	72	7.1 %	5.6 %	8.7 %	9.3 %

^aISTAT (2022). ^bThis category refers to people ranging from 70 to 75 years old. The sample was capped at age 75 (inclusive), reflecting both the limited presence of older respondents on online survey platforms and concerns that online users over 75 may not be representative of the broader elderly population. Bold values indicate the 95 % CI of a category's percentage in the sample does not include the population value.

Table A3: Education (sample).

Education level	Sample		CI (95 %)		Population ^a
	<i>n</i>	%	<i>Lower</i>	<i>Upper</i>	
Elementary school	21	2.1 %	1.3 %	3.1 %	16.4 %
Middle school	361	35.4 %	32.5 %	38.3 %	30.5 %
High school	456	44.7 %	41.6 %	47.7 %	37.3% ^b
University or higher	183	17.9 %	15.7 %	20.4 %	15.8 %

Education quotas were targeted using best-effort procedures as respondents with lower educational attainment are typically underrepresented in online survey panels. ^aISTAT (2020). ^bConsidering both 2-3-year and 4-5-year diplomas together, with the latter amounting to 31.7 % alone. Bold values indicate the 95 % CI of a category's percentage in the sample does not include the population value.

Post-Stratification Weights

Given respondents' reported voting intentions, we constructed post-stratification weights by dividing each party's official vote share by its share of voting intentions in

Table A4: Area of residence (sample).

Region (A-Z)	Sample		CI (95 %)		Population ^a
	<i>n</i>	%	<i>Lower</i>	<i>Upper</i>	
Abruzzo	25	2.4 %	1.6 %	3.5 %	2.2 %
Basilicata	10	1.0 %	0.5 %	1.7 %	0.9 %
Calabria	22	2.2 %	1.4 %	3.2 %	3.1 %
Campania	87	8.5 %	6.9 %	10.4 %	9.5 %
Emilia-Romagna	65	6.4 %	5.0 %	8.0 %	7.5 %
Friuli-Venezia Giulia	21	2.1 %	1.3 %	3.1 %	2.0 %
Lazio	117	11.5 %	9.6 %	13.5 %	9.7 %
Liguria	28	2.7 %	1.9 %	3.9 %	2.6 %
Lombardia	169	16.6 %	14.4 %	18.9 %	16.8 %
Marche	20	2.0 %	1.2 %	3.0 %	2.5 %
Molise	5	0.5 %	0.2 %	1.1 %	0.5 %
Piemonte	86	8.4 %	6.8 %	10.2 %	7.2 %
Puglia	72	7.1 %	5.6 %	8.7 %	6.7 %
Sardegna	30	2.9 %	2.0 %	4.1 %	2.7 %
Sicilia	72	7.1 %	5.6 %	8.7 %	8.2 %
Toscana	54	5.3 %	4.0 %	6.8 %	6.2 %
Trentino-Alto Adige	7	0.7 %	0.3 %	1.3 %	1.8 %
Umbria	7	0.7 %	0.3 %	1.3 %	1.5 %
Valle d'Aosta	1	0.1 %	0.0 %	0.5 %	0.2 %
Veneto	123	12.0 %	10.2 %	14.2 %	8.2 %

While some imbalances occur for Trentino-Alto Adige, Umbria, and Veneto, broader regional areas – i.e., North-West, North-East, Center, South, and Islands – are accurately represented, with no statistically significant differences at the 5 % level. ^aISTAT (2022). Bold values indicate the 95 % CI of a category's percentage in the sample does not include the population value.

the sample. Because EV1 ($n = 513$) and EV2 ($n = 508$) were randomly assigned to half the sample, weights for these two subsamples were calculated separately using the voting intentions reported within each subsample. The weight associated with each party was applied to the vote shares under alternative methods in order to compare the resulting rankings with the official outcome. Each respondent's alternative vote was multiplied by the weight corresponding to the party they reported supporting in the official election. This approach assumes that voters would express broadly similar preferences under alternative voting rules when supporting the same party in the official election. Accordingly, weights farther from one indicate greater correction of raw survey results.

Table A5 reports the sample's voting intentions, the official election results, and the resulting weights. Respondents who reported voting only for a coalition – either the center-left ($n = 15$) or the center-right ($n = 16$) – as well as abstentionists ($n = 146$) were excluded from subsequent analyses.

Table A5: Voting intentions and weights.

Coalition	Party	Sample		CI (95 %)		Official ^a	Weight		
		<i>n</i>	%	<i>Lower</i>	<i>Upper</i>		<i>General</i>	<i>EV1</i>	<i>EV2</i>
Right	LSP	71	8.4 %	6.7 %	10.4 %	8.8 %	1.05	0.95	1.17
	FI	68	8.1 %	6.4 %	10.0 %	8.1 %	1.00	1.14	0.90
	FdI	173	20.5 %	17.9 %	23.3 %	26.0 %	1.27	1.33	1.21
	NM	4	0.5 %	0.2 %	1.1 %	0.9 %	1.80	4.50	1.29
Left	PD-IDP	153	18.1 %	15.6 %	20.8 %	19.1 %	1.06	1.04	1.07
	IC	11	1.3 %	0.7 %	2.2 %	0.6 %	0.46	0.35	0.67
	AVS	38	4.5 %	3.3 %	6.1 %	3.6 %	0.80	0.75	0.86
	+E	27	3.2 %	2.2 %	4.6 %	2.8 %	0.88	0.78	1.00
Independent	M5S	210	24.9 %	22.1 %	27.9 %	15.4 %	0.62	0.61	0.63
	Az-IV	33	3.9 %	2.8 %	5.4 %	7.8 %	2.00	1.95	2.05
	UP	13	1.5 %	0.9 %	2.5 %	1.4 %	0.93	1.17	0.74
	ISP	9	1.1 %	0.5 %	1.9 %	1.2 %	1.09	0.86	1.71
	IpI	31	3.7 %	2.6 %	5.1 %	1.9 %	0.51	0.58	0.48
	Vita	3	0.4 %	0.1 %	0.9 %	0.7 %	1.75	3.50	1.40

Weight values closer to 1 indicate more accurate representation in the sample. Weights >1 indicate underrepresentation of a party's supporters, whereas weights below 1 indicate overrepresentation. ^aConsidering votes for the chamber as a reference (Eligendo 2022). Bold values indicate the 95 % CI of a category's percentage in the sample does not include the population value.

Appendix B

This section documents the survey flow. We report the translated text displayed on each screen together with the corresponding variable names used in the dataset.

On the survey's landing page, participants were informed about the general survey topic, its estimated duration, data anonymity – with the possibility of reading more information about how their privacy was taken into consideration – and the research purpose, which was exclusively academic.

The privacy information screen specified that, upon participation, respondents were assigned a randomly generated unique identifier that could not be linked to personally identifiable information (e.g. name, surname, and email). The statement further detailed procedures for data storage, protection, and dissemination in accordance with the applicable data protection standards.

The study involved no deception and posed no foreseeable risks to participants. Consent was obtained through an explicit opt-in procedure, whereby respondents indicated agreement by selecting “I agree” (variable *Intro* in the dataset) before proceeding with the survey. Following consent, participants were randomly assigned to the qualitative (EVa) or neutral (EVb) treatment condition (*Rand*).

B.1. Survey Protocol Attitudinal Questions

D1. How satisfied are you with the current Italian voting method? [1 = Not at all; 5 = Completely].

D2_. You gave this score because you [1 = Not at all; 5 = Completely]:

1. Are interested in politics.
2. Trust the Italian electoral system.
3. Find it easy to use an “X” to cast a vote.
4. Find it easy to select a party or a candidate to vote for.
5. Find it easy to understand how the winner is elected.
6. Support the electoral rule called “Rosatellum”.
7. Feel represented by the available candidates/parties.
8. Are satisfied with the number of parties that manage to make it to the Parliament.
9. Are satisfied with the possibility that coalitions are created to form a government.
10. Believe that small parties are favored by the system.
11. Can provide a great deal of information on your political preferences.
12. Happened to waste my vote by selecting a party that did not reach the quorum.
13. Happened to vote for a party just because it opposes another one I despise.

Voting Methods²²

D3_1–14 [abstain: D3_15 = 1]. Approval voting. Imagine you were to vote in the official elections today: simulate how you would vote with the alternative method “approval voting”. Select the parties²³ you approve of. You can approve as many parties as you want: your vote is considered valid when you approve at least one party. Under this method, each time a party is approved, it earns a point. The party with the most

²² Due to a labeling error in the original Italian questionnaire (*limesurvey_survey_458856.lss*), question numbering skipped from D2 to D4 (missing question D3 question). For clarity, question numbers were recoded starting from D3 onward (e.g. D3 corresponds to the original D4; D4 to the original D5; and so forth). This renumbering affects only the documentation and does not alter the content of survey items.

²³ Parties were displayed using their official symbols, names, and acronyms. Party logos were retrieved from Wikimedia Commons and used exclusively for non-commercial descriptive purposes, in compliance with the *Industrial Property Code* and relevant sector regulations. Their use did not imply endorsement, sponsorship, or promotion by the research team or affiliated institutions.

points wins. Please note: the parties' order is random²⁴ and will change on each screen.

D4_1–14 [abstain: D4_1 = 999]. Ranked voting. Imagine you were to vote in the official elections today: simulate how you would vote with the alternative method “ranked voting”. Rank parties according to your order of preference. You can rank as many parties as you want: your vote is considered valid when you rank at least one party. Under this method, your vote is assigned to the party you ranked first. If your first-ranked party received the lowest number of first preferences overall, that party will be eliminated, and your vote will be assigned to the party you ranked second. The elimination process continues until only one party remains, the winner. To rank a party, drag it from the list of unclassified parties to the list of classified parties. At any time, you can reorder the ranking of parties or bring a party back to the unclassified list by dragging the party in question. Please note: the parties' order is random and will change on each screen.

D5_1–14 [abstain: D5_15 = 1]. Score voting. Imagine you were to vote in the official elections today: simulate how you would vote with the alternative method “score voting”. Assign a score between 0 and 4 to any party by selecting the corresponding button. You can assign a score to as many parties as you want: your vote is considered valid when you assign a score to at least one party. If you do not assign any points to a party, it will receive the minimum (0) by default. Under this method, the score of each party is calculated by summing the points that each voter gives it. The party with the highest score wins. Please note: the parties' order is random and will change on each screen.

D6a_1–14 [randomized for half sample; abstain: D6_15 = 1]. Evaluative voting (qualitative). Imagine you were to vote in the official elections today: simulate how you would vote with the alternative method “evaluative voting”. Assign an evaluation to any party by selecting the corresponding button. You can evaluate as many parties as you want: your vote is considered valid when you rate at least one party. If you do not rate a party, it will receive the minimum (severely insufficient) by default. Under this method, each evaluation will be associated with a score: severely insufficient = 0; insufficient = 1; sufficient = 2; good = 3; excellent = 4. The score of each party is calculated by summing the respective scores that each voter gives it. The party with the highest score wins. Please note: the parties' order is random and will change on each screen.

D6b_1–14 [randomized for half sample; abstain: D6_15 = 1]. Evaluative voting (neutral). Imagine you were to vote in the official elections today: simulate how you would vote with the alternative method “evaluative voting”. Assign an evaluation to

²⁴ To mitigate order effects, parties' order was randomized within three predefined blocks: center-right, center-left, and independent parties.

any party by selecting the corresponding button. You can evaluate as many parties as you want: your vote is considered valid when you rate at least one party. If you do not rate a party, it will receive the minimum (0) default. Under this method, each evaluation will be associated with a score: ●○○○○ = 0; ○●○○○ = 1; ○○●○○ = 2; ○○○●○ = 3; ○○○○● = 4. The score of each party is calculated by summing the respective scores that each voter gives it. The party with the highest score wins. Please note: the parties' order is random and will change on each screen.

D7_1–14. Opinion on a continuous scale. Express your opinion about the parties by clicking on the gray scrollbars and dragging the button to the desired position of the scale. The left pole of the scale [hostile emoji] means “very negative”. The right pole of the scale [favorable emoji] means “very positive”. You are free not to express an opinion on a particular party: simply do not click on the corresponding scale or, if necessary, select “Cancel” to delete the corresponding opinion on a particular party. Please note: the parties' order is random and will change on each screen.

D8. Voting intentions. If the official elections were held today, for which party would you vote? [1–14 parties, 15 = center-right coalition, 16 = center-left coalition, 17 = invalid vote/abstain].

Satisfaction, Change, and Imaginary Referenda

D9_. During this survey, you experienced four alternative voting methods. If you no longer remember how a method works, you can find its description on this page [voting methods' screenshots]. How satisfied were you with [1 = Not at all; 5 = Completely]:

1. Approving parties (approval voting).
2. Ranking parties (ranked voting).
3. Attributing points to parties (score voting).
4. Evaluating parties (evaluative voting).

D10. Considering instead the current Italian voting method, how satisfied were you with using an “X” to vote for a party or a coalition? [1 = Not at all; 5 = Completely].

D11. Would you like to change the way of voting? [1 = Yes; 2 = No; 3 = I do not know].

D12_. If a referendum were held on the way of voting, what would you choose between [1 = The current method; 2 = I do not know; 3=]:

1. Approval voting.
2. Ranked voting.
3. Score voting.
4. Evaluative voting.

Sociodemographic Questions

D13. Gender [1 = Woman; 2 = Man; 3 = Prefer not to answer].

D14. Age [1 = 18–29; 2 = 30–39; 3 = 40–49; 4 = 50–59; 5 = 60–69; 6 = Over 70].

D15. Highest level of education [1 = Elementary school; 2 = Secondary school; 3 = High school; 4 = University (bachelor, master, PhD)].

D16. Occupation [1 = Entrepreneur, craftsman, freelance; 2 = Private employee; 3 = Public employee; 4 = Retired; 5 = Student; 6 = Unemployed; 7 = Other].

D17_. City of residence [drop-down menu].

1. Postal code [the following variables were automatically generated given this input].
2. Region of residence.
3. Province of residence.
4. City of residence.
5. Provincial chief town [“Capoluogo” = Yes; “Non Capoluogo” = No].
6. Inhabitants [numerical].
7. Inhabitants [categorical].

D18. Comments and feedback [optional open-ended question].

Appendix C

This appendix reports supplementary results for party rankings and vote shares under tested voting methods.

C.1. Weighted Results

Tables C1 and 2 present the official and weighted alternative results. For each party and voting method, we report final ranking (“R”) and vote share (“%”). Percentages for SV, EV1, and EV2 were normalized by dividing totals by four. Table C1 expresses vote shares as a percentage of *total respondents*, whereas Table C2 expresses vote shares as a percentage of *total approvals, scores, or evaluations*.

C.2. Proportion of Votes

Table C3 reports the normalized totals under the tested voting methods. For each category pair, the table also reports the ratio between the first and second category.

Table C1: Results under alternative voting methods (ranking and share of respondents).

Party	Official		RV	AV		SV		EV1		EV2	
	R	%		R	R	%	R	%	R	%	R
FdI	1	26.0 %	1	1	34.2 %	1	40.6 %	1	39.2 %	1	35.5 %
PD-IDP	2	19.1 %	2	2	28.6 %	2	34.1 %	5	30.9 %	2	30.5 %
M5S	3	15.4 %	3	4	24.3 %	5	31.6 %	4	31.2 %	4	26.9 %
LSP	4	8.8 %	4	3	27.4 %	3	33.9 %	3	33.4 %	3	28.4 %
FI	5	8.1 %	6	5	23.2 %	4	33.0 %	2	35.3 %	5	25.1 %
Az-IV	6	7.8 %	5	7	12.3 %	8	23.3 %	8	25.1 %	8	20.1 %
AVS	7	3.6 %	7	6	12.7 %	6	25.0 %	6	27.2 %	6	21.5 %
+E	8	2.8 %	8	8	11.8 %	7	23.9 %	7	26.2 %	7	20.8 %
IpI	9	1.9 %	9	11	6.2 %	12	16.0 %	12	21.2 %	12	12.2 %
UP	10	1.4 %	10	12	5.2 %	11	16.9 %	11	21.0 %	10	15.5 %
ISP	11	1.2 %	11	13	3.7 %	13	14.2 %	13	19.1 %	13	10.0 %
NM	12	0.9 %	14	10	6.3 %	10	17.7 %	9	23.3 %	11	12.8 %
Vita	13	0.7 %	13	14	2.4 %	14	12.8 %	14	18.4 %	14	8.8 %
IC	14	0.6 %	12	9	6.9 %	9	17.8 %	10	21.6 %	9	15.6 %
<i>n</i>		844	803		835		839		411 ^a		416 ^a

Because participants could abstain under each method, the number of observations varies across voting rules.

^aRandomized for half sample.

Table C2: Results under alternative voting methods (ranking and share of votes).

Party	Official		RV	AV		SV		EV1		EV2	
	R	%		R	R	%	R	%	R	%	R
FdI	1	26.0 %	1	1	16.2 %	1	11.7 %	1	10.5 %	1	12.5 %
PD-IDP	2	19.1 %	2	2	13.9 %	2	10.0 %	5	8.4 %	2	10.9 %
M5S	3	15.4 %	3	4	11.9 %	5	9.3 %	4	8.4 %	4	9.6 %
LSP	4	8.8 %	4	3	13.4 %	3	10.0 %	3	9.0 %	3	10.3 %
FI	5	8.1 %	6	5	11.3 %	4	9.7 %	2	9.4 %	5	9.1 %
Az-IV	6	7.8 %	5	7	6.0 %	8	6.8 %	8	6.7 %	8	7.0 %
AVS	7	3.6 %	7	6	6.2 %	6	7.3 %	6	7.3 %	6	7.5 %
+E	8	2.8 %	8	8	5.7 %	7	7.0 %	7	7.1 %	7	7.3 %
IpI	9	1.9 %	9	11	3.0 %	12	4.7 %	12	5.5 %	12	4.0 %
UP	10	1.4 %	10	12	2.5 %	11	5.0 %	11	5.6 %	10	5.4 %
ISP	11	1.2 %	11	13	1.8 %	13	4.2 %	13	5.1 %	13	3.3 %
NM	12	0.9 %	14	10	3.1 %	10	5.2 %	9	6.2 %	11	4.3 %
Vita	13	0.7 %	13	14	1.2 %	14	3.8 %	14	4.9 %	14	2.8 %
IC	14	0.6 %	12	9	3.4 %	9	5.2 %	10	5.8 %	9	5.6 %
<i>n</i>		844	803		1,714		11,436		6,480 ^a		4,736 ^a

Because participants could abstain under each method, the number of observations varies across voting rules.

^aRandomized for half sample.

C.3. Two-Factor Repeated Measures Tests

To evaluate whether alternative voting rules systematically alter the distribution of votes across party categories, we conducted two-factor repeated-measures ANOVAs. The assumption of sphericity was satisfied in all models (*Mauchly's* $W = 1$).

Factor 1 (“Alt”) captures the voting rule and compares each cardinal method (AV, SV, EV1, and EV2) to the official voting intentions. Factor 2 (“Type”) represents party-category contrasts. The interaction term (“Alt*Type”) indicates whether changes in vote shares across voting methods differ systematically between the two party categories. Table C4 reports effect sizes as partial eta squared (η_p^2). These values represent the proportion of variance explained by each factor. Because η_p^2 is non-directional, interpretation focuses on magnitude and statistical significance rather than sign. In most comparisons, the second category in each pair receives a larger share of votes under alternative rules. Two notable exceptions emerge for extreme versus centrist parties, where support for extremes increases under all methods, and coalition versus independent parties under AV, where coalition parties retain their advantage.

Table C3: Vote Totals by Party Category.

Party type	Official	AV	SV	EV1	EV2
Right	369	761	1,050	572	434
Left	221	501	846	463	370
Ratio	1.67	1.52	1.24	1.24	1.17
Top 2	382	524	627	308	282
Else 12	448	1,190	2,232	1,312	902
Ratio	0.85	0.44	0.28	0.24	0.31
Quorum	751	1,360	1,859	971	796
Small	79	355	1,000	650	388
Ratio	9.51	3.83	1.86	1.49	2.05
Coalition	591	1,262	1,896	1,035	804
Independent	239	453	963	585	380
Ratio	2.47	2.79	1.97	1.77	2.12
Extreme	43	146	503	341	184
Centrist	66	103	195	108	83
Ratio	0.65	1.42	2.58	3.16	2.22
<i>n</i>	844	835	839	411 ^a	416 ^a

Decreasing ratios indicate that alternative methods expanded the relative difference in vote totals between party types. Increasing ratios indicate that alternative methods decreased the relative difference in vote totals between party types.

^aRandomized for half sample.

Table C4: Two-factor repeated measures ANOVA (η_p^2)

Alt	Factor	Type					
		Top 2 vs. Else 5 ^a	Quorum vs. small	Top 3 vs. Else 4	Extreme vs. center	Coalition vs. indep.	Right vs. left
AV vs off	Alt	0.362***	0.373***	0.362***	0.101***	0.373***	0.338***
	Type	0.107***	0.564***	0.007*	0.001	0.280***	0.035***
	Alt*Type	0.231***	0.121***	0.159***	0.028***	0.177***	0.012**
SV vs off	Alt	0.501***	0.501***	0.501***	0.355***	0.501***	0.512***
	Type	0.368***	0.551***	0.118***	0.093***	0.348***	0.025***
	Alt*Type	0.461***	0.053***	0.459***	0.212***	0.261***	0.003
EV1 vs off	Alt	0.606***	0.518***	0.606***	0.407***	0.518***	0.535***
	Type	0.512***	0.476***	0.255***	0.195***	0.353***	0.026***
	Alt*Type	0.580***	0.000	0.585***	0.317***	0.257***	0.011*
EV2 vs off	Alt	0.465***	0.428***	0.465***	0.272***	0.428***	0.445***
	Type	0.302***	0.565***	0.054***	0.044***	0.345***	0.020**
	Alt*Type	0.426***	0.044***	0.422***	0.160***	0.243***	0.001

The table reads as follows: the voting rule – e.g., AV compared to the official method – explains 36.2 % of the variance in vote shares (Alt), the party category – e.g., the top two compared to other above-threshold parties – explains 10.7 % (Type), and their interaction 23.1 % (Alt*Type). * $p < 0.05$. ** $p < 0.01$. *** $p < 0.001$.

Table C5 reports robustness checks using different baselines for majoritarian and Rae's viability predictions.

Table C5: Two-factor repeated measures ANOVA (η_p^2).

Alt	Factor	Party type	
		Top 2 vs Else 12	Top 3 vs Else 11
AV vs off	Alt	0.373***	0.373***
	Type	0.163***	0.001
	Alt*Type	0.240***	0.153***
SV vs off	Alt	0.518***	0.501***
	Type	0.472***	0.169***
	Alt*Type	0.503***	0.444***
EV1 vs off	Alt	0.518***	0.518***
	Type	0.472***	0.267***
	Alt*Type	0.503***	0.501***
EV2 vs off	Alt	0.428***	0.428***
	Type	0.331***	0.098***
	Alt*Type	0.390***	0.375***
Sincere vs off	Alt	0.568***	0.568***
	Type	0.515***	0.281***
	Alt*Type	0.541***	0.531***

Except under AV, the largest differences between the main effect and the interaction occurs when comparing the top three parties to other above-threshold parties. * $p < 0.05$. ** $p < 0.01$. *** $p < 0.001$.

Appendix D

This appendix reports additional analyses related to party exclusivity.

D.1. Approval Matrix

For each pair of parties X (rows) and Y (columns), the cell indicates the percentage of Y's supporters who approved party X under AV. The diagonal represents the percentage of each party's supporters who also approved their own party. Table D1 reports the approval matrix.

D.2. Distributional Shapes

Figure D1 presents the distribution of non-recoded sincere opinions about each party. Each party's non-recoded distribution of sincere opinions, while Figures D2–4 display the raw distributions of grades assigned under SV, EV1, and EV2. For this analysis, responses indicating no opinion or insufficient information about a party were excluded. Unlike the computation of election outcomes, these responses were not recoded as the lowest possible grade.

Appendix E

This appendix provides additional figures to facilitate the interpretation of the t-SNE voter map. Figures E1–3 display the resulting map of voters in relation to (1) voting intentions, (2) coalition affiliation, and (3) respondents' average opinion about parties.

Supporters of the same party tend to cluster spatially. In particular, M5S supporters form a relatively distinct cluster, located somewhat closer to the center-left coalition than to the center-right. This pattern reflects respondents who expressed a positive evaluation primarily of M5S, as well as voters who evaluated M5S positively while holding diverse views about other parties.

Supporters of parties belonging to the same coalition tend to occupy similar regions of the map. The horizontal dimension partially resembles a left-right alignment, although it does not represent a continuous ideological scale. In particular, supporters of centrist parties do not necessarily occupy intermediate positions.

Table D1: Approval matrix (% of Y's supporters approving party X).

Party	LSP	FI	FdI	NM	PD-IDP	IC	AVS	+E	MSS	Az-IV	UP	ISP	Ipi	Vita
LSP	93%	33%	49%	25%	3%	27%	3%	4%	3%	15%	17%	22%	32%	0%
FI	37%	89%	38%	0%	3%	36%	0%	4%	4%	12%	17%	0%	13%	0%
FdI	31%	35%	95%	0%	3%	9%	0%	7%	5%	12%	8%	33%	39%	0%
NM	6%	6%	9%	50%	2%	0%	5%	0%	1%	18%	8%	0%	13%	0%
PD-IDP	6%	5%	3%	50%	95%	18%	32%	15%	19%	42%	17%	0%	0%	0%
IC	4%	2%	2%	0%	15%	45%	16%	11%	10%	0%	17%	0%	0%	0%
AVS	3%	2%	1%	0%	28%	9%	87%	26%	12%	0%	42%	11%	13%	0%
+E	4%	0%	1%	25%	23%	0%	37%	93%	4%	18%	17%	11%	3%	0%
MSS	7%	6%	5%	25%	15%	36%	29%	22%	97%	12%	33%	33%	13%	0%
Az-IV	4%	2%	4%	0%	11%	0%	5%	15%	3%	85%	17%	22%	16%	0%
UP	3%	0%	1%	0%	8%	9%	24%	0%	6%	0%	67%	22%	16%	0%
ISP	3%	0%	1%	50%	1%	0%	3%	0%	3%	0%	17%	100%	23%	33%
Ipi	1%	2%	10%	0%	0%	9%	3%	4%	3%	6%	0%	22%	81%	33%
Vita	1%	0%	1%	0%	0%	0%	3%	7%	1%	3%	0%	22%	26%	100%

Parties are presented following the official ballot order. Outlined rectangles highlight the two coalitions. Most inconsistencies – cases where respondents intended to vote for a party but did not approve it – occur among parties with small numbers of supporters, particularly NM and IC.

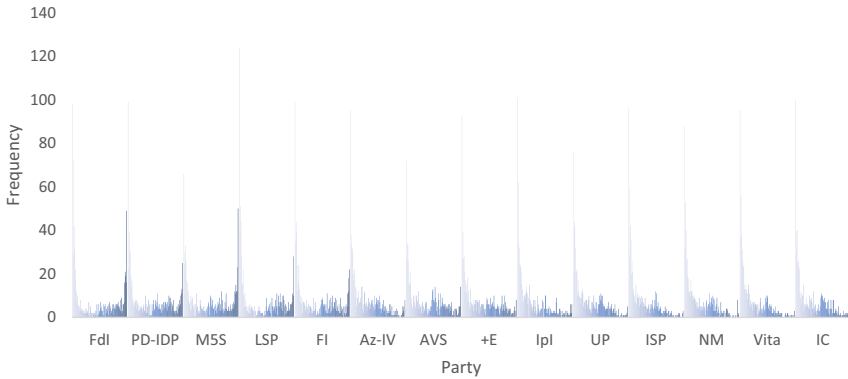


Figure D1: Non-recorded sincere opinion distribution. *Note.* Most respondents expressed negative opinions, reflected by the concentration of responses near the lowest value on the scale.

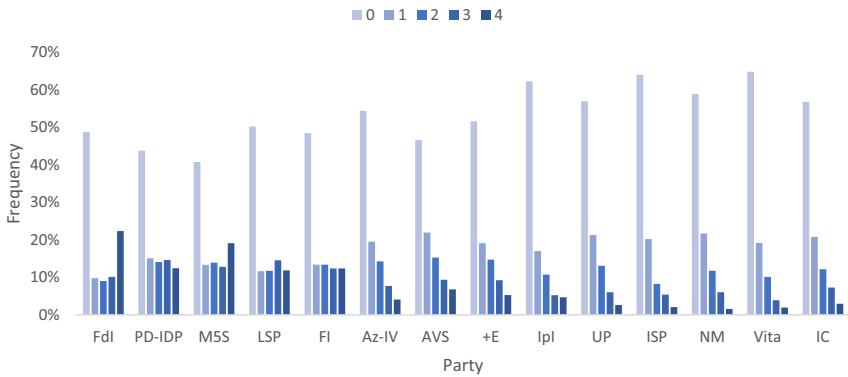


Figure D2: SV distribution. *Note.* After excluding extreme grades, most party distributions become negatively skewed under SV.

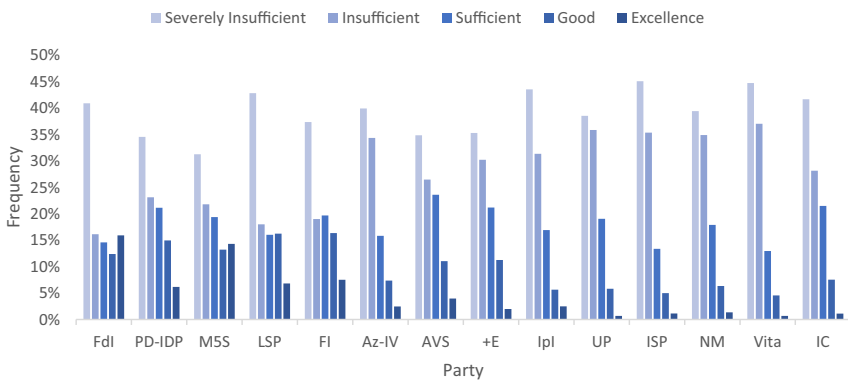


Figure D3: EV1 distribution. *Note.* The qualitative labels used in EV1 generate a different distributional pattern. The extreme categories (“severely insufficient” and “excellent”) are selected less frequently than their numerical counterparts in EV2.

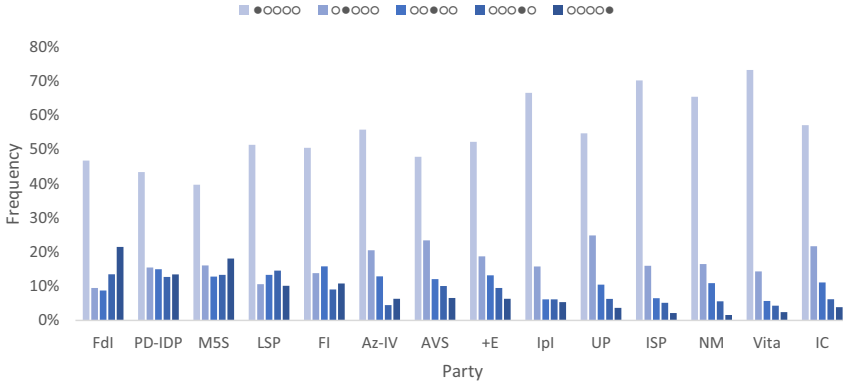


Figure D4: EV2 distribution. *Note.* The neutral labels used in EV2 generate similar distributional patterns to SV.

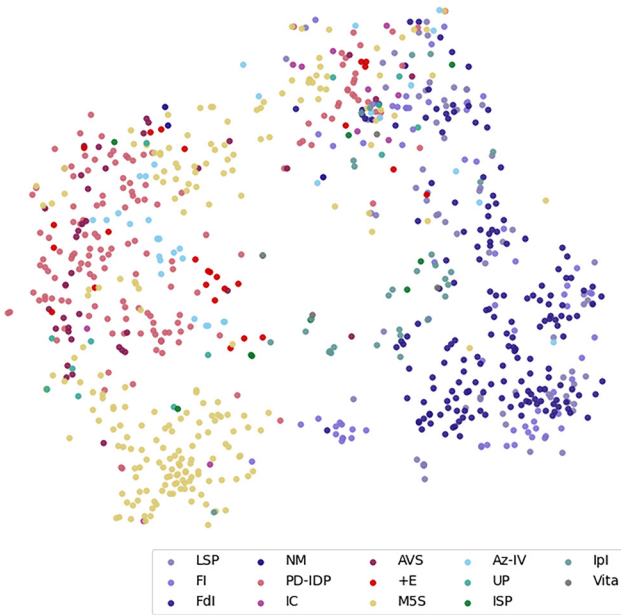


Figure E1: Voter map by voting intention. *Note.* Positions on the left or right edges of the map do not correspond directly to ideological extremity. They indicate maximum relative distance in the multidimensional space of party evaluations.

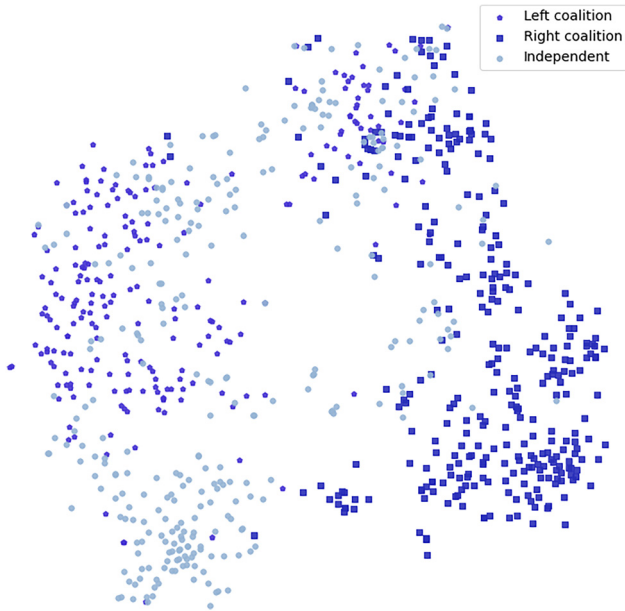


Figure E2: Voter map by coalition affiliation. *Note.* The axes correspond to the two dimensions identified by the t-SNE algorithm and do not have predetermined substantive meanings.

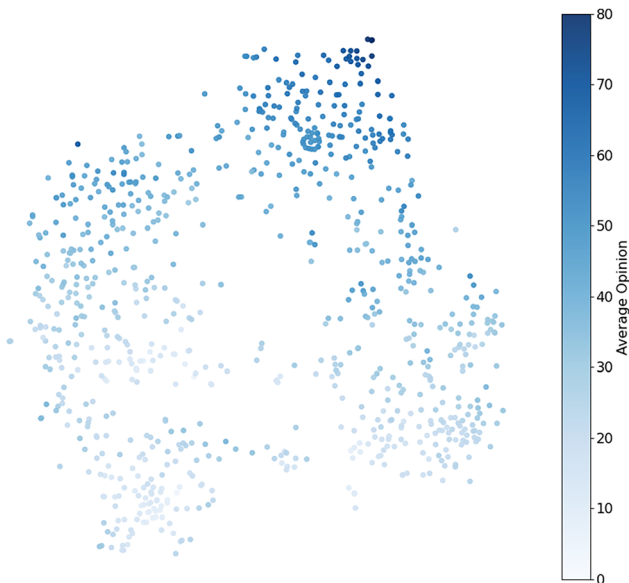


Figure E3: Voter map by respondents' average opinion. *Note.* Colors represent each respondent's average opinion of parties.

The vertical dimension largely reflects respondents' overall opinion tendencies. Respondents who tend to assign above-average opinions appear in the upper part of the map, whereas those giving below-average opinions cluster in the lower region.

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