

Comparative vote switching

A new framework for studying dynamic multi-party competition

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Abstract

Large literatures focus on voter reactions to parties' policy strategies, agency, or legislative performance. While many inquiries make explicit assumptions about the direction and magnitude of voter flows between parties, comparative empirical analyses of vote switching remain rare. In this paper, we overcome three challenges that have previously impeded the comparative study of dynamic party competition based on voter flows: We present a novel conceptual framework for studying voter retention, defection, and attraction in multi-party systems, showcase a newly compiled data infrastructure that marries comparative vote switching data with information on party behavior and party systems in over 250 electoral contexts, and introduce a statistical model that renders our conceptual framework operable. These innovations enable first-time inquiries into the polyadic vote switching patterns underlying multi-party competition and unlock major research potentials on party competition and party system change.¹

Keywords: Vote switching, party competition, multi-party systems, data and methods

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¹Replication files are available in the JOP Data Archive on Dataverse (<https://dataverse.harvard.edu/dataset.xhtml?persistentId=doi:10.7927/H4T9-9Q6M>). The empirical analysis has been successfully replicated by the JOP replication analyst. The authors acknowledge support by the state of Baden-Württemberg through the provision of high-performance computing services via bwHPC.

Information on vote switching between two elections is a core component of how commentators, researchers, and politicians understand political competition in modern representative democracy. Fig. 1 shows two common descriptions of election results as frequently found in election coverage. The left-hand side shows candidate vote shares in the first round of the 2017 French Presidential Election, contrasting parties’ 2017 results with their electoral performances in 2012. The right-hand side shows the underlying voter transitions, highlighting the gains of the first-time competitor and plurality winner Emmanuel Macron of *La République en Marche* (REM). Election night commentary frequently features such descriptive portrayals of voter transitions for the in-depth insights they grant: Unlike vote share changes displayed on the left – which tell us *that* Macron gained massive votes – the voter transitions on the right uncover *at whose expense* Macron gained these votes.

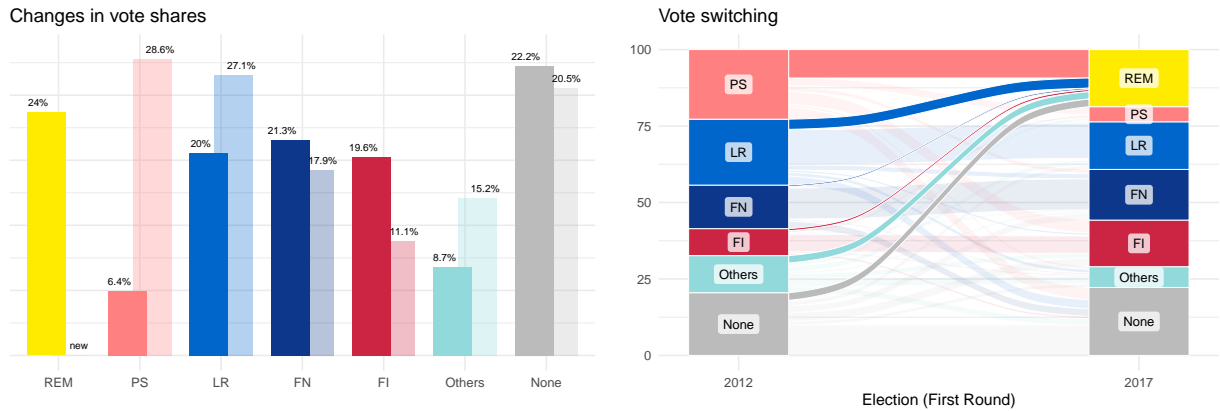


Figure 1: Election results for the French Presidential Election 2017, first round. Left: Vote share changes, normalized such that they sum to 100% without abstentions. Right: Voter transitions, selectively highlighted for La République en Marche (REM).

Whereas election observers and analysts intuitively turn to vote switching data to make sense of the dynamics of multi-party competition for specific elections, political research has so far hardly leveraged this type of data in comparative perspective. This is puzzling, seeing how many political science theories rest on assumptions about micro-level processes of voter de- and realignment that underlie parties’ growth and decline and, more generally, compositional changes in party systems. For instance, theories of economic voting, electoral engineering, or

institutional reform stipulate dynamic voter reactions to these electoral context conditions (e.g., [Nooruddin and Chhibber 2008](#); [Lewis-Beck and Stegmaier 2000](#); [Hernández and Kriesi 2016](#); [Söderlund 2016](#); [Grant 2021](#)); theories of party competition argue that parties' behavior affects their electoral gains and losses (e.g., [Tavits 2008](#); [Fortunato 2019](#); [Klüver and Spoon 2020](#)); and voter transitions constitute a defining feature of electoral volatility and dwindling stability in theories of party system change ([Kristín Birnir 2007](#); [Bischoff 2013](#)).

While researchers increasingly acknowledge the importance of voter transitions for testing theories about the causes and effects of voter de- and realignment (e.g., [Abou-Chadi and Stoetzer 2020](#)), the comparative study of vote switching remains embryonic. Although a few studies offer comparative analyses on the determinants of isolated aspects of vote switching, such as defection from one party family to another (e.g., [Spoon and Klüver 2019, 2020](#); [Krause, Cohen, and Abou-Chadi 2022](#)), none provide systematic analyses of the multidimensional and interrelated voter flows that each party faces in multi-party competition.

We see three reasons for this lack of comprehensive comparative inquiries into vote switching. First, analyses of comparative vote switching require complex data pre-processing: Survey-based voter transitions merely indicate switches between nominal parties in idiosyncratic party systems, which does not immediately lend itself to generalized comparative inquiries. Secondly, we lack conceptual parameters that allow us to derive intuitive quantities of interest from the complex multidimensional voter transitions. As a result, existing research has not been able to leverage the full breadth of insights that the study of voter transitions can produce. Thirdly, we lack a statistical method to produce reliable estimates of the relationships between these conceptual quantities and their presumed causes in an integrated methodological framework.

To overcome these limitations, this article proposes three contributions that, jointly, enable the comparative study of the micro-dynamics of electoral change: An original conceptual framework, a newly compiled data infrastructure, and a novel statistical model. We introduce five quantities of interest based on voter transfers between parties: *gross gains*, *gross losses*,

trade volumes, *trade balances*, and the *voter retention rate*. Our data infrastructure augments vote switching data from 35 OECD countries with contextual information on 1685 parties-within-elections and 254 elections. Using this data within our custom statistical framework, we can model variation in our conceptual quantities across a large number of elections and party systems. These innovations allow for an integrated assessment of the micro-dynamics underlying party competition and thereby enable new research opportunities for the study of parties' records of voter retention, attraction, and defection.

We showcase our approach by studying a question that has received much attention in the public and scholarly debate. We investigate how mainstream party convergence affects vote switching between established and challenger parties and thereby contributed to mainstream party decline and challenger party growth. This application highlights the benefits of our proposed framework for the study of comparative vote switching between party families in response to party repositioning. However, our approach offers a general toolkit that can be used for a variety of research questions in comparative politics and political behavior. For instance, researchers can equally use our framework to analyze the effects of issue-specific pledge fulfillment on vote switches between different government and opposition parties, or whether the election-level salience of gender equality issues prompts vote switching between male and female-led parties.

Our article is accompanied by the open-source R package `voteswitchR` ([Cohen 2023](#)), which allows users to execute our data-processing routine, estimate our statistical model, and retrieve estimates of our conceptual quantities of interest. This enables researchers to apply our framework for their own inquiries into the micro-dynamic underpinnings of electoral competition. This unlocks large potentials for novel research on democratic representation, party competition, and party system change, and allows political science scholarship to get the most out of the ever-growing comparative data sources on voting and party behavior.

The empirical study of dynamic multi-party competition

The macro-level: Tests based on aggregate vote shares

Questions about the electoral consequences of party behavior have traditionally been studied at the macro-level based on vote shares. For instance, many empirical contributions have investigated the electoral consequences of policy shifts (see, e.g., Meguid 2008; Adams and Somer-Topcu 2009; Ezrow et al. 2011; Adams 2012; Williams 2015; Abou-Chadi and Wagner 2019; De Vries and Hobolt 2020). This approach comes with an inherent tension. On the one hand, theoretical arguments stipulate dyadic or polyadic voter flows – i.e., they formulate expectations about one party’s gains from or losses to (a) specific competitor(s). On the other hand, applied empirical tests usually remain strictly monadic: They involve the analysis of vote shares of a single party at a time, either as a function of its own policy strategies (e.g., Adams and Somer-Topcu 2009; Krause 2020) or of those of specific competitors (e.g., Meguid 2008; Spanje 2018).

The macro-level approach, thus, focuses on the evolution of parties’ overall electoral support in isolation. It usually neither explicitly models concurrent gains and losses of other parties, nor does it take into account the underlying patterns of vote switching that presumably drive the observed party-level variation. Despite this, macro-level relationships between party behavior and vote shares are often interpreted as indicative of a proposed micro-level mechanism.² We caution against two types of ecological fallacy associated with this approach.

False positives mistake an association between party behavior and parties’ vote share gains or losses as indicative of a presumed pattern of underlying voter transitions – even though it is partly or entirely driven by different voter flows. For instance, according to the much-debated accommodation hypothesis, one would expect that a mainstream party’s positional shift towards a radical party result in voter defection from the radical party to the accommodating mainstream party (Downs 1957, 131). This hypothesis is typically tested by regressing the vote shares of radical parties on the policy positions of one or several mainstream competitors

²While we situate our discussion in the literature on electoral shifts in response to party behavior, the points we raise equally apply to other causes of electoral change, like economic conditions or institutional reform.

(e.g., [Meguid 2008](#); [Spanje 2018](#)). Yet, other underlying switching patterns may produce aggregate-level results that seemingly support this hypothesis. One such example is electoral mobilization in response to the mainstream party’s policy shift: We may see increased turnout among previous non-voters who either support the mainstream right’s repositioning (and therefore vote for it) or oppose it (and therefore vote for progressive parties). An apparent relationship between accommodation and a decline in radical parties’ nominal vote share would then be a mere artifact of this entirely different micro-mechanism.

False negatives, on the other hand, mistake stability in parties’ vote shares as indications of stability in parties’ electorates. This occurs when there is significant switching into and out of parties’ voter bases that cancel out in aggregation. In the 2019 Danish Parliamentary Election, for instance, the Social Democrats’ rightward shift resulted in the loss of about as many voters to other left-wing parties as gains from the right-wing bloc. An isolated focus on the vote share change of the Social Democrats, however, would miss these significant voter flows. A possible remedy for this problem is to move beyond monadic approaches: Philips, Rutherford, and Whitten ([2016](#)) introduce an aggregate-level approach for analyzing dynamic multi-party competition as a polyadic zero-sum game, which models the effects of a presumed cause on the aggregate gains and losses of *all* parties. However, even this approach cannot capture the simplest case of false negatives – namely a situation in which two parties exchange large but balanced numbers of voters.

The micro-level: Tests based on comparative survey-based vote switching data

In light of the limitations of studying aggregate changes in party vote shares, an increasing number of contributions now turns to the comparative study of vote switching (e.g., [Spoon and Klüver 2019, 2020](#); [Abou-Chadi, Cohen, and Wagner 2022](#)). Unlike aggregate-level studies of party vote shares, this approach leverages reports of vote switching in subsequent elections from national election surveys. In contrast to ‘classical’ studies of vote switching that analyze which voter characteristics predict inter-individual variation in micro-level probabilities of vote switching, comparative studies of vote switching analyze how contextual variation in

parties' policy strategies, agency, or legislative performance predicts party or election-specific *patterns of vote switching* across electoral contexts. In this type of analysis, the primary level of explanation is party-specific or election-specific but the outcomes of interest are inter-party voter flows aggregated from individual-level data.

With this approach, party strategies are clearly linked to voter transfers. This addresses the inherent tension of macro-level studies, where theories acknowledge the complexities of polyadic multi-party competition but empirical analyses typically adopt monadic perspectives on parties' vote shares. Yet, existing contributions to this emerging literature often rely on conceptual estimands and empirical approaches that fail to capture the theoretical relationships of greatest substantive interest.

To illustrate, Fig. 2 shows hypothetical voter transfers in a three-party system with a leftist party *A*, a centrist party *B*, and a rightist party *C*. We assume that all illustrated voter flows are caused by party *B*'s strategic positioning vis-à-vis party *C*. All plots show the exact same transitions but differ in their selective foci, which reflect existing approaches in the applied literature. Such selective foci capture different parameters of multi-party competition and therefore provide insights into different aspects of the electoral effects of parties' strategic behavior. We explicate three caveats that researchers ought to consider when squaring theoretical arguments with conceptual quantities of interest and empirical strategies.

1. *Unidirectional dyadic defection paints an incomplete picture of dyadic competition:* We caution against drawing conclusions about the effects of party behavior on dyadic voter transfers based on *unidirectional* voter flows alone. The logic of this approach is illustrated in Scenario I in Fig. 2: The scope of the inquiry focuses solely on the effect of party *B*'s behavior on its dyadic losses to party *C*, ignoring all else. This neglects that dyadic voter transfers run both ways and, thus, ignores that party *B*'s behavior may simultaneously catalyze vote gains from and vote losses to its competitors. This is illustrated in Scenario II: Party *B*'s behavior results in equally large gains from and losses to party *C*. Neglecting the concurrent

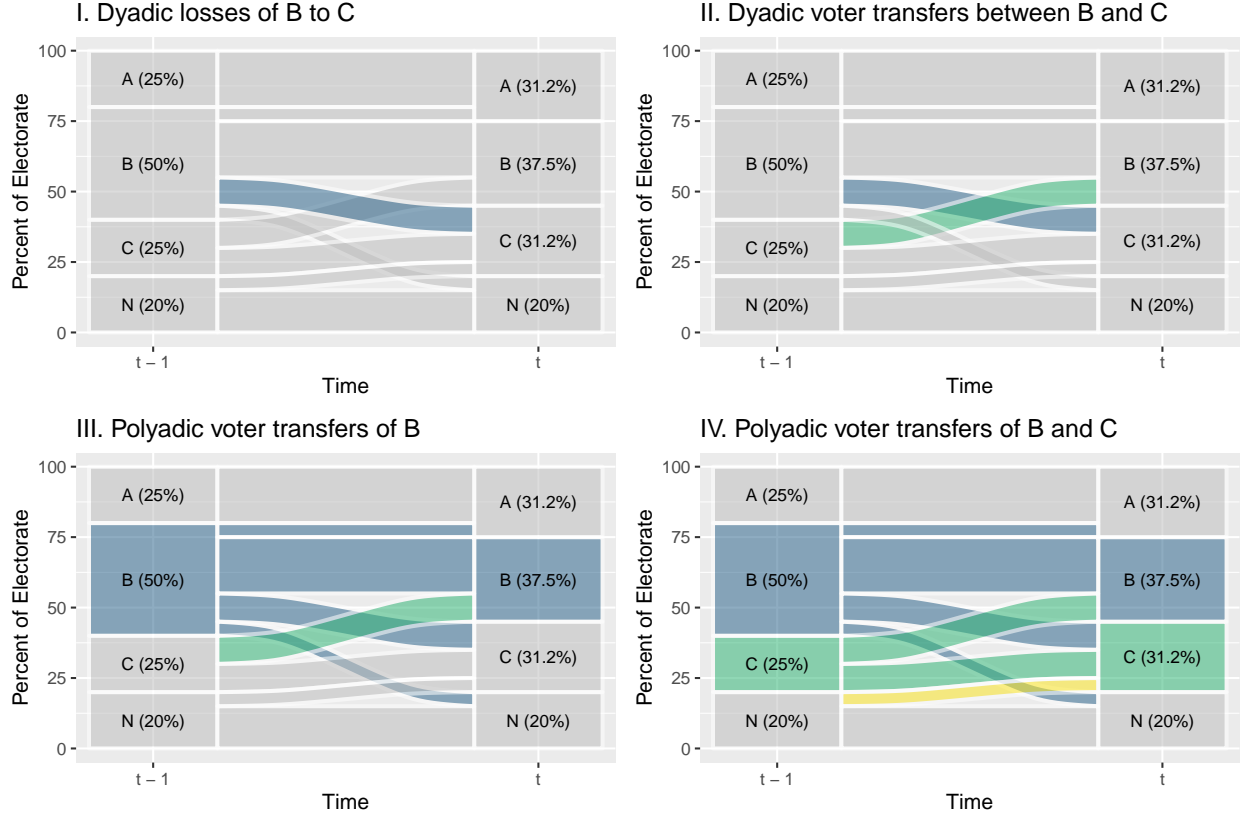


Figure 2: Selective foci on specific aspects of vote switching yield different – and often incomplete – insights.

stream of counter-directional vote switching therefore gives an incomplete answer to questions about the electoral effectiveness of party B 's strategies. While there may be valid reasons for focusing on unidirectional gains or losses alone, analyses of dyadic vote switching can benefit from jointly analyzing gains and losses and weighing these bidirectional transfers against one another.

2. *Transfer balances reveal little about the intensity of dyadic competition:* As a corollary of the balanced voter transfers between B and C in Scenario II, we emphasize the importance of moving beyond net transfers when analyzing the intensity of dyadic competition. Even when a parties' behavior does not affect the net balance of dyadic voter transfers, they can significantly catalyze bidirectional vote switching. An exclusive focus on transfer balances may mask intense dyadic competition. Researchers should therefore explicitly distinguish if the expected effects concern the intensity of dyadic competition, its directionality, or both.

3. *Dyadic transfers reveal little about overall (polyadic) trade-offs*: Even when dyadic competition is convincingly conceptualized and modeled, it still only captures one (potentially small) part of the electoral returns of party behavior, as any given dyad captures merely one avenue for bi-directional voter flows in the complex interplay of polyadic multi-party competition. Even if a strategy maximizes parties' electoral returns in one pattern of dyadic competition, we cannot assume that the same strategy concurrently maximizes their overall electoral returns. This is illustrated in Scenario III in Fig. 2: Party B 's behavior not only causes balanced bi-directional voter transfers with party C but concurrently results in net losses to party A and to non-voters N . As a result, party B 's vote share decreases from $t - 1$ to t . Concurrently, as shown in Scenario IV, party B 's behavior also drives previous non-voters toward party C . Party B 's behavior therefore simultaneously weakens party B and strengthens party C – even though neither effect unfolds via dyadic transfers between the two.

Conceptual framework

This section proposes a comprehensive conceptual framework for reaping the full benefits of comparative vote switching data for the study of dynamic multi-party competition. Our conceptual framework rests on a series of theoretically important parameters that describe the micro-dynamic underpinnings of electoral competition, each of which is defined for any given dyad and can be aggregated up to any desired polyad or to party-specific totals.

Our conceptual framework rests on the established representation of voter transfers in a transition matrix, which cross-tabulates votes for parties in election $t - 1$ (rows) with votes for parties in election t (columns). Its cells contain counts for each possible transfer pattern, which can equally be expressed as cell percentages. We denote the cell percentage in the i^{th} row and j^{th} column as $p_{i,j}$. Table 1 gives an example: An estimate of the voter transition matrix for the 2010 UK General Election, in which three main parties competed: Labour, Liberal Democrats, and Conservatives. Supplemented by residual other parties (e.g.,

Greens and UKIP) and non-voters, voter transfers between the 2005 and 2010 elections can be summarized in a 5×5 transition matrix. The marginal distributions, which show the total vote percentages in 2005 and 2010, reflect the parties' true vote shares.³

	LAB '10	LIB '10	CON '10	OTH '10	NON '10	2005
LAB '05	12.6	2.4	2.2	0.6	3.9	21.6
LIB '05	1.5	8.8	1.8	0.6	0.9	13.5
CON '05	0.8	1.0	14.8	0.9	2.4	19.9
OTH '05	0.6	0.5	0.7	3.5	1.1	6.4
NON '05	3.5	2.3	4.1	2.1	26.6	38.6
2010	18.9	15.0	23.5	7.7	34.9	100.0

Table 1: A voter transition matrix.

The cells of such voter transition matrices constitute the building blocks of our conceptual quantities of interest. They yield direct representations of three basic quantities: Diagonal cells $p_{i,i}$ represent the *voter retention rate*, R_i , of a given party i . The off-diagonal cells, $p_{i,j}$ and $p_{j,i}$, represent the dyadic *gross gains* of party i from party j , $G_{i,j}$, and its *gross losses* to party j , $L_{i,j}$, respectively. We illustrate these quantities by focusing on Labour, the incumbent government party heading into the 2010 election. Retained voters are given by the first diagonal cell, $p_{1,1}$: 12.6% of all eligible 2010 voters voted for Labour in both 2005 and 2010. The remaining entries of the first row capture Labour's gross losses to each of its competitors: 2.4% of the 2010 electorate switched from Labour to the LibDems, 2.2% switched from Labour to the Conservatives, 0.6% to other competitors, and 3.9% to the non-voter camp. Conversely, the remaining entries of the first column show Labour's dyadic gross gains from each competitor: 1.5% switched from LibDems to Labour, and 0.8%, 0.6%, 3.5% switched to Labour from the Conservatives, others, and non-voters, respectively.

Dyadic gross gains and gross losses are the building blocks of two other central quantities of interest: Dyadic transfer volumes and dyadic transfer balances. *Transfer volumes* concern

³Note that party vote shares are reported as percentages of the *eligible electorate* (including non-voters) and are thus not normalized by the percentage of valid votes (excluding non-voters) as typically reported in official election results.

the question of whether a given cause activates voter transfers between parties, irrespective of the resulting net balance. Defined as the *sum* of gross gains and gross losses, $V_{i,j} = p_{j,i} + p_{i,j}$, they capture the *intensity* of dyadic competition for every dyad $\{i, j\}$. In the case of dyadic competition between Labour ($i = 1$) and the Liberal Democrats ($j = 2$), for instance, $V_{1,2} = p_{2,1} + p_{1,2} = 1.5 + 2.4 = 3.9$. This indicates that indicates that 3.9% of the 2010 electorate switched between Labour and LibDems. At a purely descriptive level, transfer volumes can be used for assessing which competitors a focal party competes with most strongly. They also shield us against false negatives: By studying transfer volumes, we avoid interpreting stability in vote shares as stability in parties' electorates.

Transfer balances, on the other hand, capture the net balance of *winning* and *losing* electoral support. For each dyad $\{i, j\}$, they are defined as the *difference* between i 's gross gains from, and gross losses to, j : $B_{i,j} = p_{j,i} - p_{i,j}$. For instance, from Labour's perspective, the dyadic trade balance with the LibDems is $B_{1,2} = p_{2,1} - p_{1,2} = 1.5 - 2.4 = -0.9$, which indicates dyadic net losses by the magnitude of 0.9 percentage points. Transfer balances capture the *directionality* of dyadic competition. They allow us to study if parties' behavior results in net gains or net losses with each competitor. Aggregated across all dyads, transfer balances sum to parties' overall vote gains or vote losses from one election to the next.

The dyadic quantities G , L , V , and B can be freely aggregated to match any polyadic quantity of substantive interest. For instance, competition between Labour (i), LibDems (j), and Conservatives (k) can be conceptualized as a manifestation of competition between government and opposition. To study incumbent Labour's *combined* voter transfers with its two main oppositional competitors, we can derive transfer volumes $V_{i,\{j,k\}} = p_{j,i} + p_{k,i} + p_{i,j} + p_{i,k} \approx 6.9$ and transfer balances as $B_{i,\{j,k\}} = p_{j,i} + p_{k,i} - (p_{i,j} + p_{i,k}) \approx -2.3$. These numbers show that roughly 6.9% of all eligible voters in 2010 switched between the governing Labour and the two main opposition parties, with a net loss of 2.3 percentage points for Labour.

Studying these conceptual quantities across many electoral contexts can inform comparative inquiries that unlock research potentials which existing approaches cannot address. These quantities capture key parameters of stability and change in dynamic polyadic multi-party competition. Unlike changes in vote shares, they shield us from erroneously mistaking stability in parties’ overall electoral support for stability in their electorates and offer insights into the intensity and directionality of voter transfers between all available dyads of parties, including the group of non-voters. While the overall electoral gains and losses of a party, captured by (changes in) vote shares, remain important reference points for evaluating the effects of party behavior, testing the micro-logic underlying theories of party competition requires that we uncover the multi-directional transfers between parties as captured by the conceptual parameters we proposed in this section.⁴

Analyzing comparative vote switching data

This section first showcases our data infrastructure. It then introduces a new statistical model. Jointly, these empirical contributions render our proposed conceptual framework operable for broad, comparative inquiries.

Data infrastructure

A key challenge in studying comparative vote switching is that we cannot directly observe voter transition matrices. Unlike the true *marginal* distribution of a voter transition matrix – i.e., the official vote shares and abstention rates in consecutive elections – we never know the true *joint* distribution, i.e., the number or percentage of voters in each cell. We must therefore rely on estimates. To maximize the comparative scope of vote switching analyses across time and space, our approach uses estimates from cross-sectional surveys. We note that doing so rests on stringent assumptions about the representativeness of survey samples

⁴We illustrate this general framework in our empirical application later on but note two conceptual extensions, which we describe in Online Appendix A2: The study of *party electorates*, which focuses on the retention, gains, and losses of a focal party relative to its (current or past) size, and the study of *electorate subgroups* to analyze heterogeneous effects on patterns of voter retention, attraction, and defection within different parts of the electorate.

and the validity of survey-based reports of vote switching, which we address below and in Online Appendices A1 and A6.

Our newly compiled data infrastructure includes a combined total of 557989 respondents from 254 post-election surveys collected across 35 EU and OECD countries, covering comparative survey projects like *The European Voter* (TEV) and the *Comparative Study of Electoral Systems* (CSES) and over 100 national election studies. All surveys include information on respondents’ vote recall in the current and previous general elections. To process this large collection of raw survey data into valid and reliable representations of election-specific voter transition matrices that can ultimately be used for comparative inquiries, we have implemented a generalized five-step data processing routine.⁵

The first step *harmonizes* codings of respondents’ vote recall at t and $t - 1$ as well as political and demographic auxiliary variables. In the second step, these auxiliary variables can be used to inform the *imputation* of missing vote recall information via hot deck imputation. The third step involves the *mapping* of respondents’ vote choices at t and $t - 1$ to party and election IDs from *ParlGov* (Döring and Manow 2018) and the *Manifesto Project* (Volkens et al. 2021). Based on these IDs, we can link each voter transition matrix to external information on its constitutive parties and its electoral context. This external information then informs the final two steps of the routine.

In the fourth step, we augment the vote switching data with official election results to *rake* each voter transition matrix by official vote shares and abstention rates at t and $t - 1$. Raking is an iterative reweighting algorithm commonly used in survey research that “adjusts a set of data so that its marginal totals match control totals on a specified set of variables” (Battaglia, Hoaglin, and Frankel 2009, 2) while incorporating idiosyncratic influences due to sampling or post-stratification weights. This addresses concerns about the data quality related to item and unit non-response, social desirability, and recall bias (e.g., Selb and Munzert 2013;

⁵Per the generalized implementation as part of the `voteswitchR` package, our data-processing routine can be flexibly used for various substantive applications. We provide additional details on the routine, including the results of the raking sub-routine, in Online Appendix A1.

Dassonneville and Hooghe 2017). The final step involves the *generalized aggregation* of the rake-weighted cell counts of each election-specific transition matrix. Instead of retrieving these counts for each nominal party in a given voter transition matrix, we use externally supplied schematic categorizations of parties (e.g., in terms of party family or government status), which makes the data eligible for substantively focused comparative inquiries. With $c = 1, \dots, C$ distinct categories in both rows and columns, this yields a generalized $C \times C$ transition matrix with C^2 rake-weighted cell counts w_{jc} for each election $j = 1, \dots, J$.

Statistical model

Our statistical model uses these processed cell counts w_{jc} to explain variation in all switching patterns captured in the generalized voter transition matrices as a function of contextual covariates across the J elections. It seeks to model *latent election-level cell proportions*, to be estimated as a function of cell counts w_{jc} relative to the total number of voters in each transition matrix, n_j . This constitutes a classic use case for a hierarchical model: The model of primary interest is a contextual model, where an aggregate-level quantity constitutes the outcome of interest but – for a lack of direct measures – has to be estimated from micro-level data (see, e.g., Gelman 2005). For each election $j = 1, \dots, J$, we thus capture the C^2 latent cell proportions via random effects.

The data-generating process must accommodate two characteristics: At the micro-level, the underlying switches are mutually exclusive; at the aggregate election level, the cell proportions are jointly exhaustive (i.e., they sum to one). At the micro-level, this stipulates a categorical likelihood, known from standard multinomial choice models. Rather than estimating idiosyncratic probability parameters that govern a categorical process which produces discrete individual choices $y_i = c$, however, we want to estimate election-level proportion parameters that produce the aggregate counts of these choices in each election j , $n_{jc} = \sum_i^{n_j} 1\{y_i = c\}$ relative to the total number of micro-level observations in each electorate, n_j . We estimate these vote switching proportions per average election-level vote switching probabilities: $\Pr(y_{ij} = c | \mathbf{x}_j) = \Pr(y_j = c | \mathbf{x}_j)$ for all $i = 1, \dots, n_j$. We can then

model variation in these election-cell-specific proportions as a function of contextual covariates, \mathbf{x}_j .⁶ This yields a multinomial quasi-likelihood at the level of electorates.

Additionally, we incorporate the possibility of varying choice sets to make our methods applicable across heterogeneous party systems: When one or more of the C party types in the generalized voter transition matrix are non-existent in an election j , specific cells of the voter transition remain deterministically empty. Vote switches can then only occur within a constrained choice set S_j , a subset of the full choice set S that comprises all C^2 cells. By accommodating such varying choice sets, comparative inquiries neither require the exclusion of electoral contexts with “incomplete” party systems nor the subsumption of “occasional competitors” under a residual “others” category. Following Yamamoto (2014), we implement this feature through an adjustment to the denominator of the softmax function:

$$\Pr(y_j = c | \mathbf{x}_j) = \frac{\exp(\mu_{jc})}{\sum_{c \in S_j} \exp(\mu_{jc})}, \quad (1)$$

where

$$\mu_{jc} = \alpha_c + \mathbf{x}_j' \beta_c + \nu_{jc} \text{ for each } c \in S_j. \quad (2)$$

In Eq. (2), \mathbf{x}_j is a covariate vector that contains all relevant election or country-level predictors for election j . α_c are cell-specific intercepts; β_c are cell-specific coefficient vectors. ν_{jc} represents the election-cell-specific random intercepts and capture election-specific deviations from the respective cell intercepts α_c . Following standard practice in multinomial and mixed logit regression, we set the coefficients for one outcome category to zero to ensure that the model parameters are statistically identified.⁷

⁶Our model, like models for comparative analyses of vote shares, is designed to analyze election-level outcomes as a function of election-specific party behaviors as well as electoral or national context conditions. This precludes the inclusion of individual-level covariates. However, like in vote share analyses, practitioners can control for compositional social and political differences by including election-level aggregate measures.

⁷Note that this baseline category must not be deterministically empty in any of the J voter transition matrices. A solution which always satisfies this criterion is using the non-voter retention cell.

The log-likelihood of the model is

$$\log L = \sum_{j=1}^J \sum_{c \in S_j} w_{jc} \log \Pr(y_j = c | \mathbf{x}_j). \quad (3)$$

Here, J denotes the number of elections and S_j denotes the election-specific choice sets. The frequency weight w_{jc} represents the cell-specific raked counts from the final step of our data processing routine, which multiply the corresponding outcome-specific conditional log-probabilities.

We implement and estimate the model in Stan, a platform for statistical modeling and high-performance statistical computation using full Bayesian inference through Hamiltonian Monte Carlo sampling (Stan Development Team 2021). Online Appendix A3 gives further information on the MAVCL model, including default choices for prior specifications. Functions for model estimation and the post-estimation calculation of quantities of interest, like conditional expected values and average marginal effects, are available as part of the `voteswitchR` package.

Empirical application

This section presents an empirical application of our proposed framework. We illustrate how a comparative vote switching perspective can inform long-standing debates and extend recent advances in the study of the electoral consequences of mainstream party convergence (hereafter: MPC) in Western Europe. Since the 1990s, scholars have prominently argued that MPC enabled the success of new party families at the expense of mainstream parties (e.g., Katz and Mair 1995; Kitschelt and McGann 1995). According to this argument, challenger parties, such as radical right, radical left, and Green parties, benefit from positional convergence: As mainstream parties move away from the classical left and right poles, non-centrist voters defect them in favor of more “radical” competitors. While many empirical studies support the convergence hypothesis (e.g., Carter 2005; Spies and Franzmann 2011; Grant 2021), nearly

all share an important limitation: Due to their focus on macro-level vote shares, they cannot test the underlying assumption that MPC leads to challenger party success *by prompting mainstream-to-challenger defection*.

A recent study by Spoon and Klüver (2019), however, uses comparative vote switching data to study mainstream parties’ unidirectional gross losses to challengers. While the study finds a positive effect of MPC on mainstream-to-challenger defection, it does not consider mainstream parties’ concurrent gains *from* challengers. As a result, the effect on net transfer balances in mainstream-challenger switching remains unknown: Mainstream parties’ gross losses could be aggravated by concurrently decreasing gains or, at least in part, compensated by simultaneous vote gains from challengers. Additionally, MPC may have secondary electoral effects which contribute to mainstream party decline and challenger party growth beyond mainstream-challenger voter transfers, for instance by demobilizing erstwhile mainstream party voters or prompting challenger vote gains from non-voters and other parties. Lastly, we do not know yet if these potential mechanisms underlying mainstream party decline and challenger party growth affect different mainstream and challenger party families equally.

Empirical setup

Given that the existing debate has focused on multiparty systems in Western Europe, we study the electoral consequences of MPC across 156 electoral contexts from 18 West European countries.⁸ We model vote switching across $C = 7$ marginal categories: Next to the mainstream left and mainstream right, we include three challenger party families (radical left, green, and radical right parties) as well as residual “others” and non-voters.

For each election, we retrieve vote switching counts from the cells of the 7×7 transition matrices and model the corresponding cell proportions as a function of MPC, measured as left-right distances: $MCP_j = LR_{l,j} - LR_{r,j}$. Here, j denotes elections, l denotes the mainstream left (social democratic parties), and r the mainstream right (conservative, Christian democratic, and liberal parties). In case of multiple mainstream left and/or mainstream right parties

⁸The country sample as well as summary statistics are reported in Online Appendix A4.

per electoral context, the measure reflects the positions of the strongest party in each camp. Left-right positions LR are log-ratio scales (Lowe et al. 2011) based on MARPOR data (Volkens et al. 2021). The resulting measure of MPC ranges from -4.14 to 0, where negative values indicate positional divergence and 0 indicates perfect convergence.⁹ As convergence is typically conceptualized as a dynamic process that unfolds within party systems over time, we include country fixed effects in our model.

Findings

We now showcase how a single comparative vote switching model allows us to study the electoral effects of MPC at unparalleled levels of rigor and detail. Our application stresses the immunity of our approach to ecological fallacies by separating effects that would remain inseparable in macro-level analyses. We isolate *primary effects* on mainstream-challenger switching from *secondary effects* on residual voter flows that can affect mainstream party decline and challenger party growth, such as gains from, and losses to, other parties and non-voters. Initially, we pool effects from across various cells of the underlying 7×7 voter transition matrix to draw broad inferences about competition between the two mainstream party families on the one hand and the three challenger party families on the other. Eventually, we show how we can leverage the fine-grained structure of the transition matrix to obtain nuanced insights about the dyadic foundations that underlie this pooled mainstream-challenger competition.

Primary effects: In Fig. 3, we turn to the *primary effects* of theoretical interest: We show how MPC affects vote switching between mainstream and challenger parties. Panel A of Fig. 3 reports average marginal effects on mainstream parties' gross gains (G), gross losses (L), transfer volumes (V), and transfer balances (B) with challenger parties. Since balances are the key parameter for understanding parties' growth and decline, we not only need to understand when they become more or less favorable for a party in response to MPC (as

⁹In two elections where the mainstream left stood to the right of the mainstream right, the measure produced positive values. We recoded these to 0 as positional leapfrogging is functionally equivalent to positional convergence.

captured by the average effect) but also the sign and magnitude of their expected *levels*. Panel B therefore shows the expected values of transfer balances as a function of MPC.

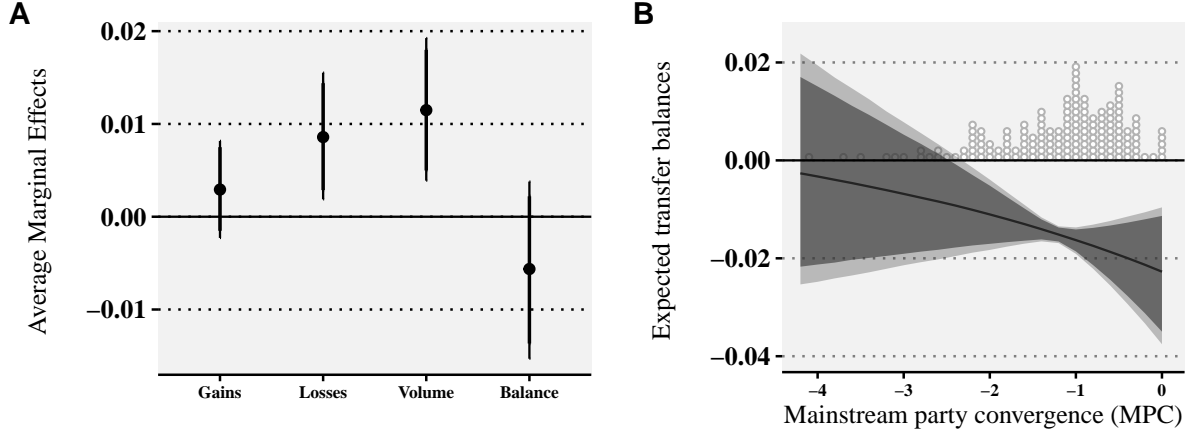


Figure 3: A: Average marginal effects of mainstream party convergence (MPC) on mainstream party gains, losses, volumes and balances with challenger parties. B: Expected mainstream party transfer balances with challenger parties as a function of MPC. Posterior medians with 90% and 95% credible intervals.

In line with Spoon and Klüver (2019), we find a pronounced positive effect on gross mainstream-to-challenger defection (L): Per one-unit increase in MPC, mainstream parties lose an additional 0.86 (0.19, 1.55) percentage point to challengers. At the same time, and in contrast to existing insights, we find an effect of 0.29 (-0.23, 0.82) on challenger-to-mainstream switches (G). Albeit comparatively small and positive with a posterior probability of only 85.6%, this effect pulls the effect on net transfer balances (B) toward zero. Consequently, we find only limited support for the hypothesized effect on *net defection* from mainstream to challenger parties with a posterior probability of 87.5% – even though the expected levels of mainstream-challenger trade balances are generally in line with the theory, ranging from null when MPC is low to -2.27 (-3.76, -0.96) percentage points when MPC is high. While we can safely infer that MPC increases the *intensity* of mainstream-challenger competition (V), we should thus reserve some skepticism as to whether mainstream-to-challenger defection due to MPC can credibly serve as an explanation for mainstream party decline and challenger party growth.

Secondary and overall effects: The evidence presented in Fig. 3 prompts the question if existing macro-level analyses may have mistaken secondary effects as support for the existence of primary effects. Fig. A5.3 in the Online Appendix does not support this concern: For mainstream and challenger parties alike, MPC does not systematically predict any residual switching patterns. Therefore, the overall effects on mainstream and challenger parties' records of voter attraction, defection, and retention (cf. Fig. A5.4) are dominated by the primary effects. MPC unambiguously increases the intensity in voter transfer between mainstream and challenger parties and, thereby, also decreases mainstream party voter retention. Its effects on mainstream party decline and challenger party growth, however, come with considerable uncertainty.

Party-family-specific effects: Whereas we have so far discussed pooled effects on mainstream-challenger competition, we now forego effect pooling and study detailed effects on dyadic vote switching between the two mainstream and the three challenger party families. This nuanced perspective yields important insights. Fig. A5.6 in the Online Appendix shows that MPC systematically predicts mainstream right decline, a pattern that can be almost exclusively attributed to systematic effects on dyadic net losses to the radical right. Thus, although MPC does not generally contribute to mainstream party decline and challenger party growth by prompting mainstream-to-challenger net defection, the theory applies selectively to right-wing competition in West European party systems.

In contrast, as we find in Fig. A5.5 in the Online Appendix, the theory does not apply to left-wing competition. Even though mainstream left parties, on average, experience greater net losses than their mainstream right counterparts, their decline is not systematically linked to MPC. We do, however, find that MPC catalyzes bidirectional switching into and out of social democrats' electorates and thereby lowers their records of voter retention. While MPC thus cannot explain mainstream left parties' decline (nor green or radical left growth, as shown in Figs. A5.7 and A5.8), it systematically predicts increasing turnover in their electorates.

Conclusion

Virtually all theories of representation and political competition are based on assumptions about the dynamic behavior of voters. Yet, few empirical approaches to date do these assumptions justice. Existing comparative studies have either analyzed vote shares at the party-level or adopted highly selective perspectives on vote switching. As we have shown, these practices fall short of unlocking comprehensive insights into the underlying patterns of voter reactions to election contexts or party behaviors. To understand parties' growth or decline and the resulting compositional changes in party systems, we must study comprehensive patterns of vote switching instead. To overcome various obstacles that previously impeded the comparative study of vote switching, we have introduced a conceptual and statistical framework along with a newly compiled data infrastructure. Using these tools, political scientists can analyze the underlying micro-dynamics of electoral competition in so far unparalleled depth and detail.

We have presented an empirical application of our approach to the question of how mainstream party convergence affects the patterns of competition between mainstream and challenger parties. While our application has illustrated the effects of an election-level phenomenon — positional similarity of mainstream parties — on vote switching between various party families, our approach can equally be applied to the analyses of *party electorates*, which allows studying how individual parties' behavior affects their own electorates.

Given its flexibility and comprehensiveness, researchers can use our framework to assess many of the underlying assumptions of behavioral theories of party competition and party system change. Concerning the vivid academic and public debates about what constitutes “successful” programmatic party strategies, our framework provides a more differentiated perspective on electoral trade-offs. For instance, the question if a strategy that wins back voters from one party comes at the cost of lower retention and concurrent losses to other parties, is of great relevance for researchers, pundits, and party strategists alike. Aside

from these perspectives from the party competition literature, our approach can be applied to many other comparative research agendas. These include the study of the electoral consequences of institutional designs, changing economic conditions and shocks, or media attention. Additionally, analyses of national and party electorates can be stratified across *electorate subgroups* and thereby integrate insights from electoral sociology: Researchers can study vote switching across groups with different socio-structural characteristics, such as gender, age, or education.

Beyond such potential applications of our conceptual framework, our data infrastructure can benefit other research. First, it provides an unparalleled scope of mappings of core variables from election studies – including vote choice, party identification, left-right party-placements, and party like/dislike scores – to party-level and election-level information. This can be used for ‘classical’ comparative analyses of political behavior. Secondly, our mapped estimates of election-specific voter transition matrices can not only be studied as outcomes but also as *predictors* of party behavior. Studying how political elites respond to selective gains and losses allows researchers to study important phenomena such as accountability, responsiveness, and representation.

By implementing our data processing routine, statistical model, and quantities of interest in the open-source software `voteswitchR`, we provide future academic work with all the tools necessary to apply our framework. This unlocks vast new research potentials and enables political science scholarship to get the most out of the existing and ever-growing body of data on voters, parties, and elections.

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