# Seven Imperatives for Improving the Measurement of Party Nationalization with Evidence from Chile[1]

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Abstract
Party nationalization measures are often used to describe and measure the nature of political parties and party systems. However, the term "party nationalization" is imprecise, with little consensus on how to measure it or evaluate its implications. This article advances the literature on nationalization in a number of crucial ways. In it, we make seven concrete suggestions for improving the measurement of party nationalization in theoretical terms and then demonstrate the problems and biases with existing studies through a theoretical discussion and application to Chilean political parties. Given that our theoretical and empirical analyses show there is important weaknesses in all nationalization measures, we argue in favor of approaching the phenomenon with a variety of tools in order to avoid misleading conclusions.

Keywords: Political parties; Party nationalization; Nationalization measurement; Chile

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## 1. Introduction

At least since Schattschneider (1960) raised concerns about local politicking, party nationalization has been a focus of work in political science. Politicians and electoral reformers share these concerns, leading countries as diverse as Peru, Nigeria, and Indonesia to require parties to show broad national support to gain or retain registration. Likewise, Germany, New Zealand, Mexico, Venezuela and many others use two-level electoral systems to balance local and national aspects of representation. Despite its prominence, the term "party nationalization" remains imprecise, with little consensus about how to measure it or evaluate its implications. Even in single country analyses, authors use different methodologies and reach different conclusions about party and party system nationalization. This inconsistency is evident from some conclusions drawn from studies of Chile.

Jones and Mainwaring's (2003) study of the Americas finds that the Chilean party system is "quite nationalized" and that the party coalitions had "consistently had very high [party nationalization scores]" between 1989 and 2001. Similarly, Harbers (2010) shows that the Chilean party system progressively nationalized between 1989 and 2005, and that it has the second-highest average party system score in the region. Nevertheless, these conclusions are not universally shared. Alemán and Kellam (2008) argue that national forces play only a "minor role" in electoral change in Chile from 1989 to 2001, and that the sub-national component of the vote is significantly higher than the national component. They also conclude that swing voters have not responded in a common way across the country, which is indicative of lower nationalization. Morgenstern, Swindle, and Castagnola (2009) support this latter characterization of Chilean parties. They classify the left-wing *Concertación* coalition from 1989 to 1997 as "in

flux," meaning that the coalition's vote share is homogenously distributed across districts, yet shows high volatility from election to election. So, despite using roughly the same legislative electoral returns from 1989 onwards, these four studies reach three very different conclusions about the state of Chilean parties and the Chilean party system. How can this be?

A first reason is that authors differ in their definition of nationalization. Some focus on parties and others on party systems. Further, nationalization has at least two dimensions, one focusing on territorial homogeneity of party's support and the other on the consistency in the change in the district-level vote over time. Second, indicators vary, even where the authors do agree on the definitions. A debate about weighting observations contributes to this problem. Third, authors use different units in their analyses.

In what follows we use a theoretical discussion and a case study of Chile to review these problems and suggest means for improving analyses. Our goal here is not to develop a new indicator of political party nationalization. Rather we evaluate all significant indicators and demonstrate the strengths, weaknesses of each. In the first half of the paper we make seven concrete recommendations about how to handle measurement issues. Our review does not uncover a "best" indicator, but we are able to underscore the minimal requirements for any analysis. Our case study of Chile, then, highlights these issues and substantiates the general arguments about conceptualization and measurement.

## 2.

## Defining Party Nationalization

Characteristics of parties define party systems, but the reverse is not necessarily true. For example, the Spanish party system is composed of some parties that have support throughout the

country plus others that only compete in one region. In this paper, therefore, we focus on the party level, presuming that party system nationalization is a weighted combination of traits of component parties.

The concept of nationalization itself is composed of at least two dimensions, which Morgenstern, et al. (2009) label static and dynamic.[2] Static nationalization—what others have called "party system linkage" (Cox 1997, 1999) or "party aggregation" (Chhibber and Kollman 1998; Chhibber and Kollman 2004)—refers to the degree to which a party has a similar level of support throughout districts. It distinguishes between parties that campaign and win votes across the nation from those that concentrate their support regionally. Dynamic nationalization, on the other hand, implies the degree of homogeneity in the change of a party's support in each district across two or more elections. If a party's support in all districts moves together, then it is dynamically nationalized. But if the party moves up in some districts, while falling (or moving up at different rates) in others, then candidates or local issues must drive electoral decisions. When local-level politics are predominant, parties must act strategically with candidate choice and targeted policies. These voting patterns also imply weaker party labels, at least relative to times or countries when/where there is more homogeneity in the changes in district-level voting patterns. When unmodified, the term "party nationalization" does not distinguish between these phenomena, though Morgenstern, et al. (2009) show that the dimensions are relatively independent.

Therefore, our first imperative is:

> *(1) Analyses of "nationalization" must distinguish between the static and dynamic dimensions. They should also take care to clarify the relationship between nationalization of parties and of the party system.*

[2] Mustillo and Mustillo (2012) add that other potential dimensions may also exist.

These dimensions have been explored by a succession of scholars (Caramani 2004; Bochsler 2010; Mustillo and Mustillo 2012; Cartrite et al. 2013), who have developed myriad indicators for measuring them. Each implies tradeoffs in terms of statistical sophistication and ease of interpretation (see Table 1). The measures are partly distinguished by whether and how they try to capture the frequency of a party's participation, the geographical distribution of a party's support, and the consistency of change across elections in a party's district-level support.[3] They also differ in how they utilize weights in capturing the effects. Bochsler (2010) provides a good review of the indicators and weighting as applied to the static dimension. In what follows, we give only a short review of static measures, focusing on problems of weighting, before moving on to similar concerns with dynamic indicators.

**[Table 1 about here]**

## 2.1

## Static Nationalization Measurement

The most common type of party nationalization explored in the literature is "static". To begin unraveling the differences among some of its indicators, Table 2 shows statistics for five parties across nine different families of indices in a hypothetical five-district country in two election years. The indicators yield widely differing views of the extent of static nationalization for these parties.

**[Table 2 about here]**

[3] Another type, inflation, focuses on system-level characteristics, namely the difference in the number of parties at the district and national level, and is thus not included here. This is summarized in Kasuya and Moenius (2008) and elsewhere.

The most basic indicators, such as Rose and Urwin's (1975) number of uncontested legislative seats or Caramani's (2004) territorial coverage index, measure the percentage of sub-national units in which a party runs candidates. One version of this index created by Bochsler (2010) weighs uncontested districts by population while leaving contested districts unweighted. If parties do not compete in small districts their scores are not affected significantly, while if they fail to field candidates in large districts, their nationalization scores shrink significantly. Still, while these calculations capture the options parties present to voters, they do not differentiate cases where parties receive few votes from those where parties are competitive or dominant.

Subsequent indicators focus on variance in parties' district-level support. Authors have employed the standard deviation (SD) of vote share across districts, the mean absolute deviation (MAD) of vote share across districts (which Rose and Urwin 1975 label the "index of variation"), and the Lee Index, which takes the absolute difference between district scores and the national mean and divides it by two instead of the number of regions (Lee 1988). However, because these indicators are based on deviations from the party's mean vote share, large parties are likely to have higher variances and lower levels of nationalization (Blalock 1972; Allison 1978; Caramani 2004). As a result, the MAD and SD scores suggest that the three larger parties (1, 2, and 4) are much less statically nationalized than Parties 3 and 5, even though the first three maintain significant support in all districts and Party 5 has support in only one. Furthermore, these measures do not take into account the distribution of voters across districts, as Parties 1 and 2 appear equally statically nationalized, even though Party 1 earns zero votes in a 50-person district and Party 2 wins zero votes in a 10,000-person district.

In another variant, Jones and Mainwaring (2003) use a value of 1 less the Gini coefficient to measure the inequality in vote shares across territorial units, which they call the Party

Nationalization Score (PNS). In contrast to the variation indicators, the PNS has an upper limit of one, making it useful in cross-national comparisons. However, it too fails to account for party or district size (Kasuya and Moenius 2008: 131). Again, in our example, Parties 1 and 2 have equal PNS, even though Party 1 earned a large share of the vote in in the large district (1) while Party 2 did not win any support, and the reverse is true in the tiny district (5). Moreover, this type of model produces equal results for a party that wins a single vote in one district and none elsewhere, as a second party that wins thousands of votes in one district but none elsewhere. Failure to adjust for district vote shares also suggests that small parties are more statically nationalized than larger ones, since small parties necessarily have little variance in their vote shares. It can be highly misleading, therefore, to calculate static nationalization scores without adjusting for heterogeneity in party or district size.

This discussion suggests that variance in party size, district population, and the number of electoral districts can produce nonsensical static nationalization scores. As a remedy, several authors suggest weighting systems. Caramani uses the Variability Coefficient (CV) to correct for the difference between large and small parties by dividing the standard deviation of the vote score by the national mean vote share. Dividing by the party size, however, will lead to coding small parties with small absolute deviations as poorly nationalized. Table 2 highlights this problem in its comparison of parties 1, 2, and 3. Party 3 is small, and all its votes fit into a range of just 10 percent. However, it has a CV that indicates much poorer static nationalization than Parties 1 or 2, whose scores range over 40 percent. This outcome is misleading if static nationalization is meant to capture the consistency in support.

As Bochsler's (2010) review of the literature notes, several authors, including Ersson, Janda, and Lane (1985) and Rose and Urwin (1975), have proposed weighting systems to

account for the difference in the population of districts. Bochsler's solution, the Weighted Party Nationalization Score (wPNS), weights the district-level vote by the log of the district population and then applies the Gini-based index.[4] In our hypothetical example this measure discounts the small District 5; as a result, the wPNS is much higher than the PNS for Parties 1 and 4, because they had consistent representation in all districts except District 5. For Party 2, the wPNS falls from the PNS, because the process puts more weight on lack of votes in the large district.

Bochsler also adjusts the wPNS in an attempt to correct for insensitivity to the number of regions in the country, producing the "Standardised Party Nationalization Score" (sPNS). The justification is most evident in a country with a single national electoral district, like Israel, which necessarily would have perfect static nationalization. As the number of districts rises, the probability increases for separating different types of constituencies (rural/urban or one ethnic group from another) and both types of nationalization should decrease.

As he does with regards to population, Bochsler proposes a logarithmic transformation of the data to indicate an increasing heterogeneity of the vote as the number of districts rises, but with a decreasing marginal effect of the number of districts. For example, splitting a single district into two should almost always have a greater effect on decreasing static nationalization than moving from fifty to fifty-one districts (or even fifty to sixty). The sPNS (and by extension the wPNS) has one important problem, however; since the Gini index is curvilinear, the weight has a differential impact on parties depending on their level of static nationalization. In the example, even though all the calculations are based on five districts, the sPNS changes more sharply relative to the wPNS for some parties than for others. Note, too, that some results do not provide an intuitive view of the system. For Party 2, the sPNS yields a value below .01—not a

[4] On is website Bochsler provides an Excel file with a built-in macro that calculates the TC, the wPNS and the sPNS (which we discuss below).

value that clearly identifies a regional party with significant support covering about one-third of the country. Other distributions also fail to yield intuitive values.

In sum, weighting mechanisms have justification for static nationalization scores, but they are imperfect solutions. With regard to the number of districts and the population of the districts, there are questions about the functional form of the weights, their differential impacts at different levels of nationalization, and whether the weights distort the concepts. The problems are most evident with regards to weighting by party size, where transformation can change small absolute deviations in a party's vote percentages across districts into large relative differences. This suggests that it is perhaps more reasonable to compare parties that are all of at least moderate size and countries with a similar number of districts than to apply weights.

The final indicators in the table are unweighted, and add the burden of requiring at least two years of data with consistent district boundaries for analyses. Both Morgenstern and Potthoff (M&P) and Mustillo and Mustillo (M&M) develop techniques based on Stokes' (1965, 1967) original components-of-variance model, which parsed the vote into its national, state, and district components for the United States and the United Kingdom. Morgenstern and Potthoff (2005) adapt the model for comparative analysis, while Mustillo and Mustillo (2012) show that it is equivalent to a hierarchical linear model that predicts vote share using random effects for district and time.[5] The former argue that their technique is less biased than other methods because it holds constant and measures volatility and dynamic nationalization, as well as the static component; the latter has the advantage of accounting for other sources of variance. These

[5] The Stata command for the M&P model is: -xtmixed *vote* || _all: R.*districts* || *year*:, var-, where *vote* is vote share per party per district, *district* is each electoral district, and *year* is the year. M&M propose several models. We apply Model 2, their best fit for these cases, -xtmixed *vote time* || *district*:, mle variance-. They include a time squared term in the fixed effects, which we eliminate due to having only two years of data in the example.

statistics also have the extra value of interpretability, since the statistics approximate the standard deviation of variance in a party's cross-district support (holding constant other types of variance).

In our example, Party 2's results imply that for about two-thirds of the districts, the party's support falls within about 15.9 points of the mean. With only two years of data, this model does not perform well, suggesting that Party 1 (as well as Parties 3 and 4) is nearly perfect on the static dimension. Adding a third year of data that parallels the vote in year 1, however, yields a reasonable estimate for static nationalization of about 64. Still, even using two years of data provides reasonable estimates for Parties 2 and 4. Mustillo and Mustillo (2012) add several important modifications, most notably adding fixed effects to the time trend for a party's support, using year and year-squared for a model of three electoral years. They also discuss the possibility of nesting districts within time in the model, and consider other possible sources and patterns of variance in the party's vote. In this example the results are similar to those of M&P (only Party 5 has a slightly different score), but as they show, their results sometimes provide more reliable estimates.

Despite the important statistical and theoretical advances that hierarchical models provide, they have two weaknesses: 1) higher data requirements (at least two years of data with consistent district boundaries), and 2) a lack of control for biases in party size, district size, and number of districts, as the example illustrates. While the first limitation is offset by the improved estimation produced by using more data, the latter is only corrected through weighting. Simple commands in statistical programs like Stata and R allow frequency weighting, but due to the problems noted above regarding the validity of comparing relative rather than absolute differences in the party's vote across districts, we are unsatisfied with the results.[6]

[6] The Stata weighting command for the M&M model is -xtmixed *vote year year*$^2$ ||*district*: , mle var fw(*pop*)-, where *pop* is the number of voters in each district. For M&P, we use -xtmixed *vote* || _all: R.*district* [fw=*pop*] || *year*:, var-.

In sum, our review of static nationalization measures suggests tradeoffs among techniques. The hypothetical data, further, suggests that the choice of techniques is consequential, since there is little statistical relation among the results. Therefore, in addition to considering the range of values different techniques require:

> *(2) Measures of static nationalization should consider and account for:*
> *a) party size. Since relative vote shares can sometimes yield misleading indicators (especially for small parties), however, analysts might find more reasonable results by comparing like-sized parties rather than weighting indices by party size.*
> *b) district population (or magnitude), especially for intra-country analyses; and*
> *c) the number of districts, especially for cross-country analyses. For these, the functional form of the weight requires careful consideration.*

**2.2**

**Dynamic Nationalization Measurement**

Though less analyzed than static nationalization measures, there are also various methods to measure dynamic nationalization. We discuss five techniques with similar tradeoffs in application: the SD of the district-level swing (Butler and Stokes 1969; Johnston 1981; Kawato 1987), correlations in coattails from different levels of elections (Converse 1969; Hoschka and Schunck 1978), the components-of-variance model (Stokes 1965; Katz 1973; Bartels 1998; Morgenstern and Potthoff 2005) Mustillo and Mustillo's (2012) multilevel model, and Alemán and Kellam's (2008) compositional algorithm. We explain these different measurement techniques using the results displayed in Table 3, with the same hypothetical parties as above.[7]

**[Table 3 about here]**

The SD of party support across districts provides a measure of static nationalization, and in a similar manner the SD of a party's district-level "swing" provides a measure of dynamic

[7] Results from Alemán and Kellam's algorithm are not included as we were unable to reproduce its code.

nationalization (Butler and Stokes 1969; Johnston 1981). The first five rows of Table 3 detail the swing for our hypothetical parties. The average swing for Party 2 was -0.2%, but since the party gained in four districts and lost in only one, the SD gives a better sense of the (in)consistency of change in its support. In this case, the SD of 5.7 suggests that the less than one-point loss resulted from district-level swings that were typically as low as -5.9 or as high as +5.5, with one-third falling out of this range. A related method measures the correlation of the district level vote across two elections (Converse 1969; Hoschka and Schunck 1978). Table 3 shows that this method produces a different ranking among parties than the SD. A related method could use a regression of the district vote on the vote in previous elections.[8]

As in the case of static nationalization, it is possible—and perhaps reasonable—to apply weights based on party size, district population (or magnitude), and/or the number of districts. Again, the last of these is only important for comparing countries with different numbers of districts, but in the table we show results for one method for weighting the SD measures in order to highlight other concerns. Specifically, to weight by party size we multiply each swing calculation by twice the percent of the party's vote in the related districts before calculating the SD.[9] To adjust for district population, we simply multiply the swings by the relative size of the population and then re-calculate the SD.

These adjustments yield starkly different results. First, because small parties necessarily have small variance in their vote returns and hence small swings (and high correlation

[8] Adding a time element to the regression provides information about both types of nationalization. Still, Wittenberg (2008) argues that the results are misleading unless the regression line between the two sets of data yields a slope close to 1 and an intercept close to 0. His alternative is the "concordance correlation coefficient" (Lin 1989, 2000). Yet it has a drawback, since restricting the intercept to zero ignores potential volatility where all districts move together with a similar magnitude (i.e. high dynamic nationalization). When there is volatility, the concordance statistic is inapplicable. One could subtract the average vote change before running the analysis, but this creates other biases. For concerns about dynamic nationalization, then, the correlation coefficient seems superior to the concordance measure, assuming analysts consider the effects of outliers and the slope of the regression line.

[9] We chose to multiply by twice the vote, such that a party winning about 50% would have a full weight. Of course this only adjusts the scale; there are other methods for a weighting.

coefficients), the SD for Party 5 is small and that for Party 3 is also constrained. However, the swing for Party 5 weighted by party size is large, suggesting the party is regional. Yet this is misleading given that the party never wins more than ten percent. When weighting by population, the results emphasize district 1 over district 5. Therefore the large swing for Party 1 in District 5 is discounted and the indicator shrinks from 21 to 10. This also means that Party 4 gets a low score, despite a 60 percent fall in District 5. This is less problematic than the weights based on party size, but still suggest that care is needed when applying them.

The next systems are more involved computationally, but offer some analytical advantages. Alemán and Kellam (2008) draw on Katz and King (1999) and King, et al.'s (2000) advances in compositional data analysis to simulate the predicted vote shares for each party in each election and then decompose the predicted vote shares into systematic and random components. They use random draws from parameter estimates to generate a distribution of predicted vote shares for each party across elections, conditional on the district-level outcome in the previous election. They then set the prior vote shares for all parties to their district average at time *t-1* and simulate predictions for a typical district. Following Bartels (1998), they argue that the systematic component of the prediction represents national forces and the idiosyncratic part represents district-level effects.

This method tries to overcome potential bias in correlation among parties' scores for the same election in the same country by taking the logarithmic transformation of parties' vote shares in relation to a base party, and then using seemingly unrelated regression (SUR), which allows correlation of the error terms for units within the same panel. However, the technique's most important contribution is its recognition and use of the compositional nature of data, which is less biased in multiparty settings than the components-of-variance method. This strength can

also be a weakness, since the measure's appropriateness in multiparty contexts limits its applicability to two-party systems. Furthermore, as with other indicators, this algorithm fails to account for heterogeneity in district size or number of districts across countries. Further, like many recent measures, the technique is limited by the complexity of its application (despite the authors' generous provision of their algorithm, we were unable to produce results).

The last measures are based on the techniques of Stokes (1965), Katz (1973), Bartels (1998), Morgenstern and Potthoff (2005), and Mustillo and Mustillo (2012), which assess both static and dynamic nationalization. These models use the residual variance from the cross-sectional time-series analysis as their indicator of dynamic nationalization, arguing that other parameters in the models account for temporal and cross-district variance. These methods have several advantages. First, as noted, they force analysts to simultaneously consider dynamic and static nationalization, holding constant temporal (volatility) movements in the vote. Second, results are directly interpretable, with the square root of the variance component providing a SD for the magnitude of the inter-district movements.[10] For example, Party 1's result in Table 3 implies that approximately two-thirds of the districts would have a variation in the change in their vote of -16.8 ± 13.5 percent according to the M&P model or -16.8 ± 12.1 percent according to the M&M model. Parties 2, 3, and 5 have much smaller statistics, indicating a more dynamic nationalization.

As we note in the static nationalization section, these authors make no attempt to adjust for party size or Bochsler's concerns. Still, these models could be adjusted for the first of these problems by restricting comparisons to similar size parties, or adjusting the final scores by the parties' average vote. To account for differences in district population, models can apply

[10] The square root of the variance component for dynamic nationalization is less straightforward in its interpretation than for the static component, but it is still a valid and comparable indicator.

frequency or sampling weights. The weights, however, produce more reasonable estimates for some of the parties than others requiring care in their application.

In sum, and parallel to our recommendation set out above:

*(3) Dynamic nationalization measures should consider weighting systems that account for*

*a) party size;*
*b) district population; and*
*c) the number of districts.*

Similar caveats to those we posed with regard to static nationalization apply.

As this review of indicators has shown, with or without weighting systems, all static and dynamic nationalization measures and imperfect and involve tradeoffs. They also can provide starkly different views of a party's profile. Choice of the measure, therefore, yields different results and will lead to different conclusions about causes and effects. A central recommendation is that:

*(4) Descriptions and analyses should explore relationships with regard to multiple indicators.*

**2.3**

**Institutional Biases and Analytical Choices**

In addition to the specific measurement indicator chosen, statistical results—and thus analytical interpretations—are also driven by institutional factors such as electoral systems and rules, the level of aggregation of the data, the political office under study, and the type of contestation. Some of these factors may be construed as independent variables in explaining static or dynamic nationalization, but because their impact can be mechanical and direct, our final recommendations are that these factors must be part any descriptions of a party's static or dynamic nationalization.

*2.3.1*

*Electoral Systems and Rules*

Since the measures that we are considering for both types of nationalization are based on electoral data, electoral systems may have a determinant effect on them. In terms of static nationalization, parties operating under a permissive (high magnitude) proportional representation (PR) election system have incentives to put candidates in all districts, while in small magnitude systems it makes sense for parties to refrain from expending resources on candidates who cannot win seats. Such rules may also lead voters to strategically favor larger parties. As such, restrictive electoral systems may dampen static nationalization, because parties will not compete in all districts, despite having some support. As Morgenstern, et al. (2009) argue, a similar electoral system effect does not exist for dynamic nationalization, because electoral rules determine intra-district rather than cross-district relationships. In sum, setting the dynamic dimension aside,

> *(5) Cross-national comparisons of* static *nationalization must account for different types of electoral systems, as well as district magnitude.*

*2.3.2*

*Geographic Divisions and Election Level*

A second aspect of the electoral system relates to the analytical choice of data aggregation. Some U.S. analyses aggregate data at the state or regional level to calculate static nationalization scores (Schattschneider 1960; Sundquist 1973; Sorauf 1980; Jones and Mainwaring 2003), but as Claggett et al. (1984) warn, this masks parties' more heterogeneous support in individual districts. U.S. parties appear more nationalized if the analysis is applied to legislative elections in the 50 states rather than 435 districts, because they compete in all states

but not all districts. For the years 1998 and 2000, we find that the choice of state- over district-level data amounts to a 15% difference in (static) nationalization scores; the sPNS scores were between 0.70 and 0.72 for the two parties in the two years when measured at a district level, but between 0.81 and 0.85 when measured at a state level. Similar differences appear in analyses of dynamic nationalization for the same data.

To test this effect, we broke down our hypothetical five-district country into 15 sub-districts, with each district being represented by a group of three sub-districts. We first calculate the votes for each party in each district, then decompose them into the sub-districts and re-calculate the sub-district vote shares. In this example, the territorial coverage invariably falls, the MAD, SD, variability coefficients rise, and the Gini-based measures shrink in comparison to the scores for the same parties in Table 2 (table and data available in the supplemental appendix). Components-of-variance measures would also indicate a rise.

A related problem occurs in two-level electoral systems; should nationalization be measured for larger proportional districts or smaller single-member districts? Furthermore, there is nothing sacred about the district level. Analysis could consider party support at the precinct or any other level, too. At its extreme, every household could have its own measurement, making parties' support appear heterogeneous (present in some, but absent in many other households). In comparative perspective, this implies that countries with few electoral districts will likely have higher nationalization (on both dimensions) than countries with many.

Lastly, most nationalization studies focus on the national legislature, usually without a defense of this choice. However, adding data from other electoral levels provides analytical heft. First, it may be more reasonable to compare presidential election data to parliamentary election data, since the latter has a direct bearing on the national executive. Second, in a truly

nationalized electorate, parties will have similar support at the federal and local levels. Electoral results that are consistent at different levels suggest a strong national component of the vote, and low correlation would suggest that local effects are important to politics. Claggett, et al. (1984), Chhibber and Kollman (2004), Alemán and Kellam (2008), and Hicken (2009) explore ties between regional and national forces, while Vertz, et al. (1987) are among the few who compare nationalization scores at the different levels of government. Consequently:

> *(6) Analyses should, when possible, consider data for the executive, legislative, and local elections, and carefully consider the level of (dis)aggregation of territorial units.*

*2.3.3*

*Uncontested districts and closed list coalitions*

Especially in systems with strong (formal or informal) electoral thresholds, such as those with single-member districts, parties often refrain from competing in some districts. Should such districts be left out of static nationalization computations, or should they be counted as a zero? If counted as a zero, static nationalization scores will suggest less support than what underlies the electorate's "true" sentiments. On the other hand, by definition a party that has chosen not to compete is not highly nationalized in static terms.

Uncontested districts cause even greater difficulty for studying dynamic nationalization. If the party refrains from competing in the same district in successive years, it reveals no inter-year change. But if the party competes in one year and refrains in a second, the drop in support could look dramatic, even if the party's true support had changed little. In an examination of incumbency advantage in the U.S. and Great Britain, Katz and King (1999) deal with this issue by assuming that if a non-contesting party had nominated candidates in a particular district, it would have received fewer votes than the parties that did nominate candidates. By contrast, in

their analysis of dynamic nationalization in Latin America, Alemán and Kellam (2008) assign parties 0.1% of the vote in districts they did not contest. They conclude that, "this assumption mostly affects only the 'others' category and a few small parties in a few districts in a few years" (Alemán and Kellam 2008: 197), but there are many examples where large parties do not present candidates in all regions.

Coalitions create a related problem. If parties join together (on a closed list) it is not possible to disaggregate voter support for each of the constituent parties.[11] This is especially problematic in cases where coalitions form in some, but not all, of the districts. The Justicialist Party in Argentina, for example, runs with different regionalist parties in legislative elections in some years and in some provinces, while in others provinces or years it runs independently. Calculations based on coalitions rather than parties can provide a consistent time series, but if the composition of coalitions varies, the cross-time analyses can be misleading. A further complication is that analyses may require the assistance of country experts to disentangle the data, since coalitions do not always utilize consistent names.

In summary:

*(7) Analyses must transparently consider and justify their treatment of non-contested district as well as how they deal with coalitions.*

## 3.

## An Application: Parties and the Party System in Chile

To empirically demonstrate our theoretical propositions, we briefly analyze static and dynamic nationalization of Chilean political parties, applying our suggestions above. Although we consider only the most recent electoral cycle, our conclusions hold generally from election to election (see Morgenstern et al. (Forthcoming) for a more comprehensive analysis of Chilean

[11] We would like to thank an anonymous reviewer for raising this point.

party nationalization). Chile's constellation of electoral rules and party system permits comparisons among parties and between regional levels that also employ different electoral systems, making it an excellent case study. Additionally, as the introduction notes, scholars have drawn distinct and even contradictory conclusions about party nationalization in the country.

Chile's post-authoritarian party system is relatively institutionalized, especially in a Latin American context. Since the return to democracy in 1989, elections have been characterized by competition between the center-left *Concertación* coalition, made up of five core parties, and a center-right *Alianza* coalition, comprising two parties. Party competition is profoundly shaped by the country's legislative "binomial" electoral system (Rabkin 1996; Siavelis 1997; Navia 2005). With only two seats available in each district, the alliances are compelled to negotiate electoral slates among their member parties. Unlike the pre-authoritarian legislative or current municipal proportional system (where voters opt for any of the parties running), voter choice is now limited to the two options presented by each alliance. These different electoral systems permit analysis of different nationalization scores on both dimensions and usefully demonstrate the contradictory pictures produced by different measurements.

**3.1**

**Static nationalization in Chile: Legislative Elections**

To illustrate the complexities that a measure of static nationalization would have to capture, Table 4 presents the 2009 presidential and legislative election results. Several facts are pertinent:

- In the second round of the presidential elections the Alianza's candidate Sebastián Piñera won the presidency over Concertación candidate Eduardo Frei 51.3% to 48.6%. The

range of support varied across districts. Frei's scores ranged from 23% to 64% with a SD of 6, and Piñera's from 36% to 77%, also with a SD of about 6.

- In the legislative elections, the Concertación bested the Alianza by a mere percentage point, 44% to 43%. The range of scores across districts was different than for the presidential contests; between 20% and 59% for the Concertación and from a minimum of 21% to a maximum of 64% for the Alianza. The respective standard deviations were 8.3 and 8.1.
- At the party level, the two Alianza parties competed in most of the districts winning a maximum of under 40% and a minimum of less than 10% (in districts where they competed) with a SD of 8.3 for the RN and 8.8 for UDI. In the Concertación, the PDC participated in 39 districts and won a 14% vote share in 2009, while the PS and PPD won 12% and 10% respectively, each competing in 27 districts. Since they competed in relatively few districts, the average vote in only those districts yields higher values: 22% for the DC, 25% for the PS, and 27% for the PPD. Their range in support was similar to that of the Alianza parties, but their SD was higher.

**[Table 4 about here]**

Figure 1 uses these data to show how various measurement techniques yield significantly different results. We exclude the M&P method, since the results in this case (especially when applied to two years of data) are similar to the M&M analysis. We also follow recommendation 2 and exclude parties with an average vote less than 10 percent, since weighting by party size is problematic.[12] The *y*-axes in the figure are rescaled to better illustrate differences on standardized scale while retaining the relationships among parties for each measure (in this chart, a higher

[12] For Chile district magnitudes are the same, and thus weighting by population or district magnitude has less theoretical validity. We include the wPNS here, however, to illustrate the importance of population weights.

number means higher variation which implies lower static nationalization). Since the scale has been adjusted, absolute numbers are not comparable. Nonetheless, the figure shows that the choice of technique matters, for both the ranking among the parties and even more importantly the magnitude of difference between them. Thus, no one indicator gives a complete characterization of a party's static nationalization. Each measure provides a different perspective, and the best approximation requires multiple measures applied over time and to different levels of office.

As Figure 1 shows, the PS is at or near the top of the standardized scales for most of the indicators, implying lower levels of static nationalization, followed by the PPD, DC, RN, UDI and the Concertación and Alianza. Yet there is no consensus regarding the most or least statically nationalized parties across indicators, and the relative magnitude of differences between parties changes from indicator to indicator.

**[Figure 1 about here]**

Each measure is imperfect, because each puts a different emphasis on mean vote share, distribution of the vote, district size, and the number of districts. Choosing which of these areas to emphasize is more an art than a science, as it needs to reflect the unique dynamics of the binomial system that force parties to negotiate with their coalition partners and abstain from putting forth their own candidacies in some districts. Assigning a value of zero to the party's support in such districts biases parties' scores, but ignoring those districts would also be misleading.

This problem is clear when trying to calculate static nationalization for the PS. Since only two candidates from each coalition can compete in a district, coalition leaders must exclude some parties in each district. The bargaining limited the PS to just 24 districts in 2009, for

example. With no Socialist option, a Socialist voter in the other 36 districts had to opt for one of the other Concertación candidates. Therefore, the Socialist Party seems less nationalized, because it cannot present candidates in every district and party support is registered as zero where the underlying support would be higher. The results are stark: calculations that include only those districts where the PS competed yield high static nationalization scores (0.9 wPNS and 0.95 sPNS), while including the "zero" districts yields a wPNS of 0.29 and an sPNS of 0.49.

A comparison of the PPD and the Alianza highlights some of the other issues related to the choice among methods. As Figure 1 shows, all indicators suggest that the PPD is less nationalized than the Alianza, but the magnitude of the difference ranges from a factor of about two to four. The high variance in the PPD's district-level vote that produces its low static nationalization score is even more remarkable given that it is a small party, with an average vote share of about 12%, while the Alianza won an average of 43% in 2009. Weighting by party size, therefore, would magnify this result.

An alternative approach would be to run the test based only on districts where the competitors had candidates, weighting by the number of districts. Eliminating the "zero" districts would have a minimal effect on the Alianza, since it competes in every district. For the PPD, eliminating the districts where it did not compete reduces the variance in its support, and the weight increases the nationalization score relative to the Alianza. This becomes clear using the sPNS, which weights for number of districts and district population, to compare the PPD and Alianza in all 60 districts against only those districts in which they placed candidates. Because it competes everywhere, the Alianza's static score is 0.94 regardless of whether the analysis uses all districts or just those where the competitors placed candidates. By contrast, the PPD score rises from 0.57 across all districts to 0.96 across all districts in which it placed candidates. On

one hand, the former surely underestimates the territorial reach of the PPD, while the latter may exaggerate the reach of the PPD, placing it as more statically nationalized than the larger Alianza.

Another disagreement in the measures is the relative static nationalization of the right and left coalitions. Some measures rank these as virtually identical, but the M&M method ranks the Concertación far more statically nationalized than the Alianza. This result suggests that the other measures are failing to capture district-level changes in support, especially for the Alianza. Inspection of the data reveals what is happening; independents have frequently taken votes away from the Alianza in some districts. This again underscores the importance of a multi-method approach.[13]

Our sixth recommendation suggests that different levels of elections might provide an alternative perspective on static nationalization. For Chile, municipal elections provide an important window, because these elections use closed-list proportional representation and therefore do not force the intra-coalition bargains that limit parties' participation in some districts.[14] For simplicity's sake, we use a single indicator, the PNS, for our illustration.[15] As expected, the PNS calculated for municipal elections yields much higher static nationalization rates for all the parties than in legislative elections. With one exception (the UDI in 1996), no party registers a PNS below 0.53, and all are between that score and 0.76 in the municipal

[13] In this test, we applied the M&M technique to the years 2005 and 2009. As explained above, since we are applying the analysis to just two years, we do not include a fixed effect for $year^2$. Note that unlike the hypothetical example, there is a relatively high number of districts here which produces more reasonable estimates. With more elections included, confidence levels further improve.

[14] According to the 1992 reforms establishing elected local governments in Chile, mayors were elected indirectly from municipal councils, who were in turn chosen by PR. Reforms in 2004 replaced this system with separate PR council elections and plurality mayoral elections; therefore, we opt to use the municipal returns.

[15] Note that unlike Figure 1, which displays the inverse of the Gini-based indicators, higher numbers in our subsequent discussion and figures imply *higher* nationalization.

elections, while in the legislative elections the PS and PPD are never above 0.34! The two sets of results are also inconsistent for the other parties.

Meanwhile, static nationalization scores at the presidential level, where competition is between coalitions, are consistently higher than for legislative or municipal elections. Between 1989 and 2009, the lowest PNS for a coalition in a presidential race was 0.74 (the Alianza in 1989). By contrast, at the legislative level, the PS had a PNS of 0.24 in 2001. In sum, it is necessary to look at the three levels of elections to get a more complete picture of static nationalization. The comparison suggests that the parties' "natural" static nationalization rates are considerably higher than any of the legislative scores suggest.

**3.2**

**Dynamic Nationalization in Chile**

Dynamic nationalization measures must capture the complexities of parties' changing electoral support from one election to the next. Figure 2 presents bihistograms of the percent swing in the congressional elections from 2005 to 2009 for all parties in all districts (bottom) and in only those districts where the party competed in both elections (top). The overall gains for the RN and UDI and losses for the leftist parties (PDC, PS, and PPD) are evident in the average change of the bihistograms. Reflecting their overall gains, both the RN and UDI have more positive swings, while there are more negative changes for the PPD, PS, and DC. The average of these changes provides a measure of volatility; the distribution of the swings illustrates dynamic nationalization. A perfectly dynamically nationalized party would show leptokurtic distribution, because all districts would be performing in a consistent manner (regardless of where on the scale the mode lies). By contrast, non-nationalized parties, with a wide variety in the change in

district results, would generate a platykurtic distribution. As a result, the PS, appears to be the most nationalized when all districts are included (with a spike at zero, where the party had no support in either election), but no party appears highly nationalized when the analysis uses only the non-zero districts. This also demonstrates the importance of understanding political context, which in this case means considering the reasons why parties fail to field candidates in some districts, to determine whether the analysis should exclude the districts where parties did not compete. For another example, Belgian parties compete in only Flemish or Walloon provinces, owing to constitutional requirements.

**[Figure 2 about here]**

The sample of dynamic nationalization indicators for these elections (Figure 3) reflects some of these basic conclusions, but predictably shows an array of results. Using a standardized scale where high numbers imply low dynamic nationalization, there are different rankings and significant magnitudes of difference among the parties. Using just legislative elections, since there were only coalitional and not party candidates in the presidential election and the reverse for municipal elections, the consensus in ranking from most to least nationalized is the Alianza, the RN and UDI, the Concertación, and then a mix between the PDC, PPD, and PS. The various measures show similar rankings among the parties, but with important variation in the magnitude of differences. The standard deviation of the swing and the mixed model both suggest that the PPD is the least dynamically nationalized, at least in this particular election. On the other hand, the non-zero district swing shows the PDC as the least dynamically nationalized party, while the correlations in the legislative support across the two elections suggests that the Concertación is by far the least dynamically nationalized. This last finding is particularly out of step with other indices.

**[Figure 3 about here]**

These differences reflect the different weights implicit in the measures, and suggest that other weights or measures may be necessary. As with the static nationalization, the dynamic scores are also biased by the electoral system that forces ideologically similar parties to negotiate about where they will place candidates. In Chile's 2005 and 2009 legislative elections there were about 240,000 voters in Santiago's 20th district while only 40,000 people voted in Patagonia's 59th district. In these two elections, the RN lost nearly 8,000 votes in District 20, or around 4% of the vote share, while it lost a quarter of that—a mere 2,000 votes—in District 59. Nonetheless, the competitive dynamic of the binomial system allowed the UDI to knock the RN out of competition and to pick up the Alianza seats in both districts. Fewer voters in a rural district ended up having the same effect on party performance as a much greater number of urban voters, and these unweighted statistics miss that result. More emphatically, while the PPD in District 58 and the PS in District 20 both had swings of about 20 points, the explanations are distinct. In District 20 the PPD continued to compete but fewer voters supported it in the second election, while in District 59 the PS was not allowed to compete in 2005 but won 20 percent in 2009. This again suggests that it may be more valid to drop districts where a party did not compete, though this would probably overstate dynamic nationalization. The population difference in these two districts complicates the analysis even further.

The M&M method orders the parties in the same way as the swing, giving confidence in the results. However, weighting by vote share changes the ordering significantly, with the Concertación becoming more nationalized and the parties of the left becoming exponentially less nationalized along the dynamic dimension. This does not imply that the weighting provides a

better estimate, but it does suggest that analyses will change significantly dependent on the measure used.

The divergent results of the coattails measure reinforce the contention that all measures have important weaknesses. This measure uses the correlation coefficient to estimate the consistency in electoral results between municipal and legislative elections under the presumption that when voters choose the same party across offices, national forces drive vote choice rather than district characteristics or candidate qualities. The distinct Concertación statistic is likely a product of outlying districts and independent candidates. For example, the Concertación's congressional vote in District 34 dropped by 41% from 2005 to 2009, while the right's dropped 3%. Meanwhile, Independent Regionalist Party (PRI) candidate Alejandra Sepúlveda garnered 46% of the vote, roughly equal to the two major coalitions' loss. This shows the sensitivity of the correlation measure to outliers. However, it is indicative of important substantive issues, too. At first glance the data suggests a dramatic shift toward the PRI in 2009 in District 34. However, its candidate, Sepúlveda, was actually a Concertación candidate in 2005. In essence, the voters did not leave the Concertación—the candidate did, and voters followed her. This underscores two important realities in terms of nationalization measures. On the one hand, it suggests the importance of local- over national-level factors in this election. Voters cared who the candidate was and followed her. On the other hand, if we wanted to measure the Concertación's "true" level of dynamic nationalization this would be deceptive: voters may remain loyal to the Concertación at other election levels, and this district's particular context and status as an outlier leads to an underestimation of dynamic nationalization.

Like the swing and cross-sectional time series models, correlations of the district-level vote in different years can underestimate "true" dynamic nationalization, because of "zero

districts." Partially because it competes in more legislative districts, correlations of the district-level vote, for example, are higher for the PDC than the PPD and PS. Focusing just on the municipal elections eliminates the zero districts problem, but the perspective that these elections provide of dynamic nationalization is different. On one hand they suggest that the results from using legislative elections underestimate dynamic nationalization, because the correlations for the municipal elections are higher for every party except the PPD.[16] Further, this is a conservative test, because a) the higher number of parties competing at the municipal level could depress these correlations and b) local factors could have a more determinative impact on municipal votes. But, if the goal is to estimate the impact of national factors in politics, municipal elections may not be the best marker. Perhaps, then, data using presidential elections, which return high values (using the second round, but not the first), are more indicative of dynamic nationalization.

In sum, by using multiple methods, the analysis confirms that Chilean parties and coalitions do not score high in terms of dynamic nationalization, except when considering the second round of presidential elections, a finding that is overlooked in most studies of Chilean politics. At the same time, the inconsistency in the measures highlights the importance of a multi-methods approach to the study of dynamic (and static) nationalization.

[16] The respective legislative (2005 and 2009) and municipal (2004 and 2008) correlation coefficients are as follows: DC, 0.56 and 0.67, PPD 0.73 and 0.60, PS 0.72 and 0.78, RN 0.59 and 0.75, and UDI 0.62 and 0.71. Tests of the correlation between legislative and municipal voting patterns also suggestion low dynamic nationalization. Aggregating party results for the municipal elections into coalitional results, the correlations between the 2008 municipal elections and the 2009 legislative elections are only 0.60 for the Alianza and 0.36 for the Concertación. Results for the individual parties were below 0.50 for all parties except the PDC (0.64).

**4.**

## Conclusions and Implications

Nationalization is increasingly recognized as a crucial and understudied characteristic of parties and party systems. Caramani underscores the importance of measures of (static) nationalization as indicators of the transformation of democratic representation from the "fragmented and clientelistic" toward "national representation" (Caramani 2004: 2). Also using a measure that relates to our static dimension, Jones and Mainwaring note the centrality of party nationalization to "voters' orientations, legislative careers, executive-legislative relations, public policy and democratic stability in multi-ethnic societies, suggesting that high levels of nationalization have positive implications for democracy" (2003: 159). Similarly, Alemán and Kellam argue for the importance of nationalization for "constituent representation, partisan behavior, and government policy priorities" (2008: 193). Nonetheless, because there are at least two dimensions of nationalization, and many measurement techniques, scholarship using the same post-1989 Chilean electoral data, for example, has reached many different conclusions (Jones and Mainwaring 2003; Alemán and Kellam 2008; Harbers 2010; Morgenstern et al. 2009). Analyses of other countries are also dependent on the choice of measures.

Given this dependence and the growing use of nationalization for characterizing parties and systems, we have provided a series of recommendations to improve future studies. Overall the recommendations suggest that researcher distinguish between the dimensions of nationalization and consider the biases of each measure. We also suggest employing multiple measures to balance drawbacks and assure that methods do not drive conclusions.

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**Table 1: Summary of party nationalization indices and abbreviations used[17]**

| Indicator/abbreviation | Description | Relevant use |
|---|---|---|
| **Static Indicators** | | |
| Uncontested Legislative Seats | Proportion of constituencies in which only one candidate competes | Urwin (1982) |
| Territorial Coverage Index (TC) | Percentage of territorial units where a political party runs a candidate (here weighted by vote share) | Caramani (2004) |
| Mean Absolute Deviation (MAD) | Mean absolute deviation of vote across districts from the party's mean vote share | Rose and Urwin (1975) |
| Standard Deviation (SD) | Standard deviation of vote across districts from the party's mean vote share | Caramani (2004) |
| Lee Index | Absolute difference of vote share across districts from party's mean national share, divided by two | Lee (1988) |
| Variability Coefficient (CV) | Standard deviation of vote divided by party's mean vote share | Caramani (2004) |
| Standardized and Weighted Variability Coefficient (SCVw) | Adjusts the CV by district size | Ersson, Janda, and Lane (1985) |
| Cumulative Regional Inequality Index (CRII) | The percentages of vote distribution by district | Rose and Urwin (1975) |
| Party Nationalization Score (PNS) | Gini coefficient of party vote subtracted from one | Jones and Mainwaring (2003) |
| Weighted Party Nationalization Score (wPNS) | PNS correcting for unequal sizes of territorial units | Bochsler (2010) |
| Standardized Party Nationalization Score (sPNS) | PNS correcting for unequal sizes of territorial units and unequal number of units across countries | Bochsler (2010) |
| Static Nationalization (M&P) | Cross-district variance in cross-sectional time series model | Morgenstern and Potthoff (2005) |
| Static Nationalization II (M&M) | Equivalent to M&P, but computed with using multilevel model; also allows for other variance sources. | Mustillo and Mustillo (2012) |
| **Dynamic Indicators** | | |
| Swing | SD of change in the vote for each district across two elections | Butler and Stokes (1969), Johnston (1981) |
| Correlation/Coattails Effect | Correlation in party's vote for each district across two elections | Converse (1969), Hoschka and Schunck (1978) |
| Dynamic Nationalization (M&P) | Residual variance in party's vote for each district across elections in components of variance model | Morgenstern and Potthoff (2005) |
| Dynamic Nationalization II (M&M) | Residual variance across districts and time in multilevel model, capturing more sources of variance | Mustillo and Mustillo (2012) |
| Nationalization of electoral change (A&K) | Decomposition of predicted vote shares into systematic and random components | Alemán and Kellam (2008) |

[17] See Bochsler (2010) for a comprehensive overview of static party nationalization indices, including descriptions and calculations.

**Table 2: Examples of Static Nationalization Measures**

| | | Vote Share | | | | |
|---|---|---|---|---|---|---|
| **Election 1** | **Voters** | **Party 1** | **Party 2** | **Party 3** | **Party 4** | **Party 5** |
| **District 1** | 10000 | 44 | 0 | 10 | 10 | 0 |
| **District 2** | 1000 | 42 | 42 | 2 | 12 | 0 |
| **District 3** | 1000 | 30 | 40 | 1 | 12 | 4 |
| **District 4** | 1000 | 40 | 44 | 5 | 10 | 0 |
| **District 5** | 50 | 0 | 30 | 0 | 70 | 0 |
| **Mean vote share** | | 31.20 | 31.20 | 3.60 | 22.80 | 0.80 |
| **TC** | | 1.00 | 0.23 | 1.00 | 1.00 | 0.08 |
| **MAD** | | 12.96 | 12.96 | 3.12 | 18.88 | 1.28 |
| **SD** | | 18.25 | 18.25 | 4.04 | 26.40 | 1.79 |
| **CV** | | 0.59 | 0.59 | 1.12 | 1.16 | 2.24 |
| **PNS** | | 0.74 | 0.74 | 0.47 | 0.57 | 0.20 |
| **wPNS** | | 0.97 | 0.23 | 0.83 | 0.95 | 0.08 |
| **sPNS** | | 0.85 | 0.00 | 0.44 | 0.81 | 0.00 |
| **Election 2** | **Voters** | **Party 1** | **Party 2** | **Party 3** | **Party 4** | **Party 5** |
| **District 1** | 10000 | 50 | 2 | 0 | 10 | 0 |
| **District 2** | 1000 | 40 | 45 | 0 | 12 | 0 |
| **District 3** | 1000 | 55 | 30 | 0 | 12 | 10 |
| **District 4** | 1000 | 45 | 48 | 0 | 10 | 0 |
| **District 5** | 50 | 50 | 30 | 10 | 10 | 0 |
| **M&P Static** | | 0.00 | 15.91 | 0.00 | 0.00 | 2.46 |
| **M&M Static** | | 0.00 | 15.91 | 0.00 | 0.00 | 2.53 |

Note: M&P and M&M statistics are the square root of the results. The M&M data is run without a year$^2$ term.

**Table 3: Example of Dynamic Nationalization Measures**

| | Swing of vote share | | | | |
|---|---|---|---|---|---|
| | **Party 1** | **Party 2** | **Party 3** | **Party 4** | **Party 5** |
| **District 1** | 6 | 2 | -10 | 0 | 0 |
| **District 2** | -2 | 3 | -2 | 0 | 0 |
| **District 3** | 25 | -10 | -1 | 0 | 6 |
| **District 4** | 5 | 4 | -5 | 0 | 0 |
| **District 5** | 50 | 0 | 10 | -60 | 0 |
| **Mean vote (2 years)** | 39.6 | 31.1 | 2.8 | 16.8 | 1.4 |
| **Mean swing** | 16.8 | -0.2 | -1.6 | -12 | 1.2 |
| **SD Swing** | 21.1 | 5.7 | 7.4 | 26.8 | 2.7 |
| **Correlation yr1-yr2** | -0.4 | 0.9 | -0.5 | -0.4 | 1.0 |
| **Swing weighted by party size** | 30.5 | 8.4 | 131.6 | 58.8 | 95.8 |
| **Swing weighted by district pop** | 9.8 | 4.1 | 16.8 | 0.5 | 1.0 |
| **M&P dynamic** | 13.5 | 3.6 | 3.9 | 17.8 | 1.9 |
| **M&M dynamic** | 12.1 | 3.6 | 3.8 | 16.7 | 1.7 |

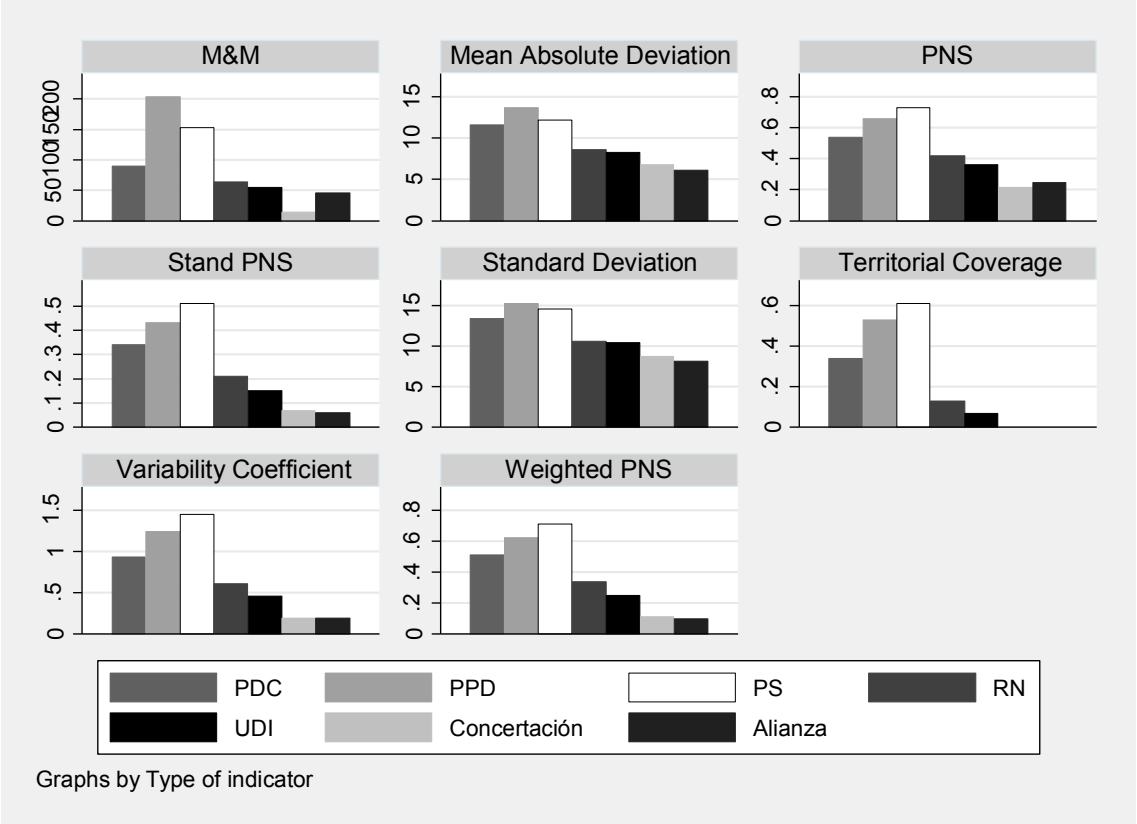
Note: M&P and M&M statistics are the square root of the results. The M&M data is run without a year$^2$ term. These results calculated from the hypothetical districts used in Table 2.

**Table 4: Summary Statistics for 2009 Presidential and Congressional Elections**

| | Average Vote (%) | Average Vote in Competed Districts (%) | Number of Districts Competed | Maximum District Vote (%) | Minimum District Vote (%) | Standard Deviation (in all districts) |
|---|---|---|---|---|---|---|
| Alianza | | | | | | |
| President (Piñera) | | | | | | |
| First round | 44 | 44 | 60 | 71 | 31 | 6.5 |
| Second round | 51 | 51 | 60 | 77 | 36 | 6.2 |
| Congress | 43 | 43 | 60 | 64 | 21 | 8.1 |
| RN | 18 | 21 | 51 | 39 | 7 | 8.3 |
| UDI | 23 | 24 | 56 | 38 | 5 | 8.8 |
| Concertacion | | | | | | |
| President (Frei) | | | | | | |
| First round | 30 | 30 | 60 | 47 | 14 | 5.9 |
| Second round | 49 | 49 | 60 | 64 | 23 | 6.2 |
| Congress | 44 | 44 | 60 | 59 | 20 | 8.3 |
| PDC | 14 | 22 | 39 | 43 | 4 | 10.1 |
| PS | 12 | 25 | 27 | 51 | 7 | 12.3 |
| PPD | 10 | 27 | 27 | 47 | 8 | 9.9 |

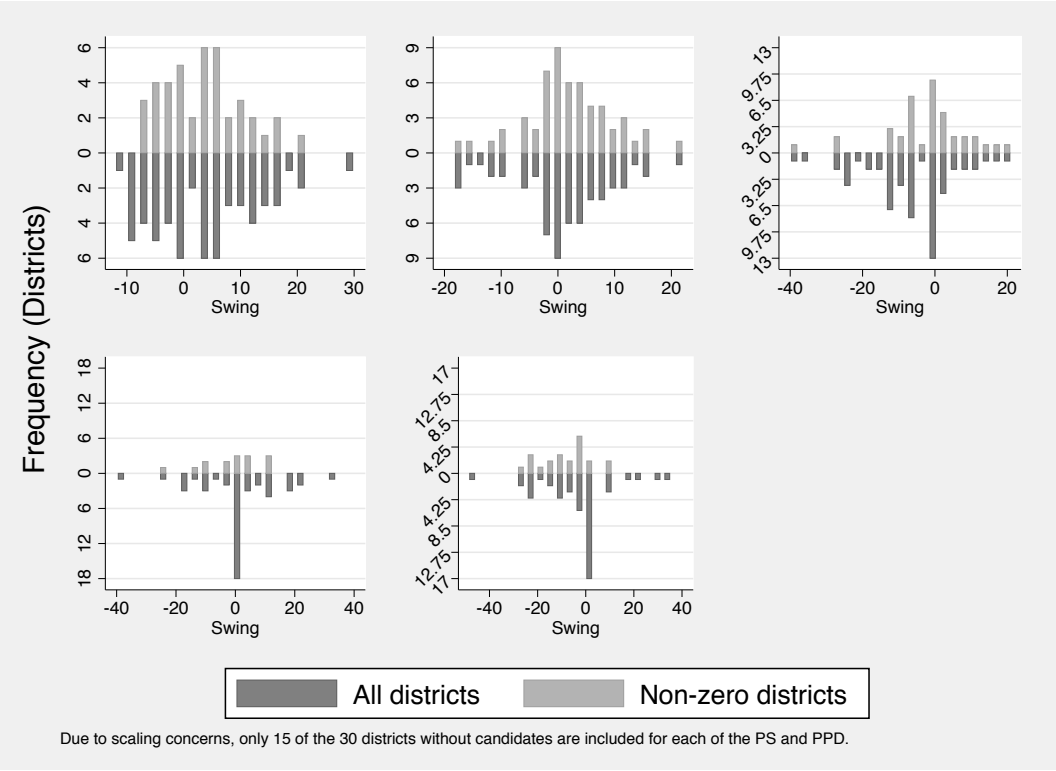
Source: *Tribunal Calificador de Elecciones de Chile*, www.tricel.cl/

**Figure 1: Comparative Measures of Static Nationalization in Chile (2009 Legislative Elections)**



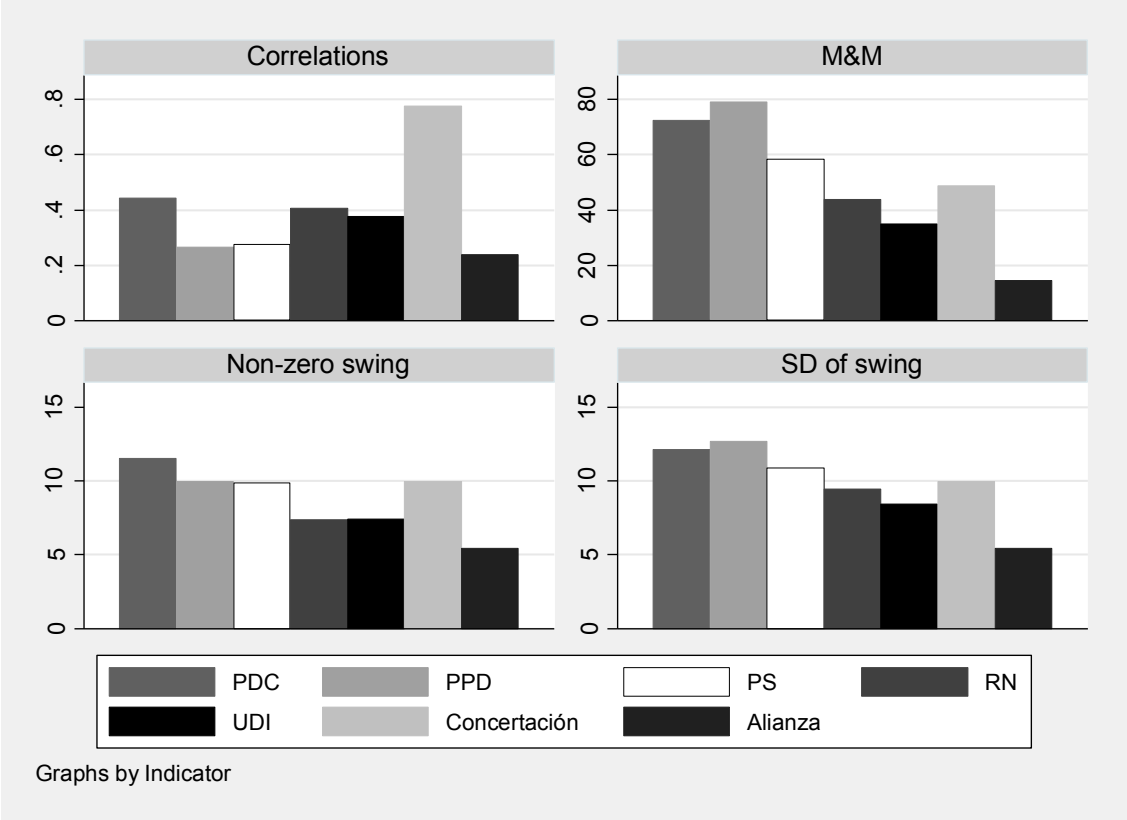

Note: For directional consistency with other indicators, Territorial Coverage, PNS, wPNS, and sPNS levels are equal to one minus the raw score.

**Figure 2: Bihistograms of party vote swing (2005-2009 Legislative Elections), comparing "non-zero districts" to all districts**




Note: Fifteen districts with "zero" swing cut from bottom half of PS and PPD figures for scaling purposes.

**Figure 3: Standardized Comparative Measures of Dynamic Nationalization in Chile (2005-2009 Legislative Elections)**




Note: For directional consistency with other indicators, correlation levels are equal to one minus the raw score