

CEWP 20-06

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May 2020

CARLETON ECONOMICS WORKING PAPERS



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On the Structure of the Political Party System in Indian States, 1957 - 2013

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April 26 2020

Abstract

What accounts for the large and ever-changing number of political parties that contest Indian state elections? In this paper we examine this question by testing an equilibrium model of political party numbers where the number of parties depend on the average size of state constituencies, voter turnout, the heterogeneity of the state's electorate, constitutional and legislative rules that directly affect party numbers and per capita state incomes while controlling for a series of discrete political events that have influenced political parties. The analysis compares this model with one explaining the effective number of parties (ENP) and extends the analysis to consider the effect of political factors such as the openness and competitiveness of the upcoming election on the timing of the decision of political parties to enter and exit (and thus the rate of political party turnover). The analysis is further extended by allowing the level of development to interact with their party structures.

JEL Code: D72, D73, P16, H70

Key words: number of political parties, Indian states, entry and exit of political parties, ENP, fixed effects poisson panel estimation

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1.. Introduction

In this paper we model the changing structure of political party equilibrium and test for its predicted effects on the number, entry, exit and turnover of political parties across a subset of major Indian states since Independence.¹ In general, new parties form to promote parts of the political spectrum not represented by existing parties (Meyer and Miller, 2015) or to break from existing parties whose platforms, leadership or regional representation are insufficiently representative of sub-group aspirations (Brancati, 2008; Lago and Martinez, 2011; Larose, 2017). The dimensionality of the issue space relative to the set of policies that any political party can hold means that it is unlikely that existing parties will generate the policy mix desired by all groupings within the electorate. In themselves, new parties are valued because they bring different ideas and new policies to the electorate and because of the threat this poses to established parties. They help ensure the responsiveness of the political process to the evolving wishes of the electorate (Aldrich, 1995; Mulligan and Tsui, 2015). What is more difficult to explain, however, is why an unsatisfied group chooses to pursue its political and economic goals outside of the structure of existing political parties, particularly when the likelihood of success diminishes with the number of established competitors. With the arrival of new ideas, the resurgence of older grievances, the arrival of new political agents and the always changing social economic landscape, groups wishing to promote change face the choice of merging their proposals and policies within the existing political structure or starting their own party based on these ideas. This choice will in turn be a function of the rules governing entry/exit, the receptivity of the electorate and established parties and the attention they can bring to the proposed cause versus the cost and likelihood of success as a new party dedicated to these ideas. In all these dimensions India exhibits interesting differences that can contribute to an explanation of its particular structure.

India, like Canada, has never had a political party structure that has conformed to Duverger's law—the dictum that in a state with a first-past-the-post voting rule, the number of political

¹ The 14 states included in our analysis are: Andhra Pradesh, Bihar, Gujarat, Haryana, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Odisha, Punjab, Rajasthan, Tamil Nadu, Uttar Pradesh, and West Bengal. Although Assam has held elections since 1951, its division in the 1960s and 1970s resulted in variations in the number of electoral constituencies and instability in the party system over the first three decades. In Jammu and Kashmir elections are held every 6 years as opposed to 5 years, and are often held amid heavy security, usually with low voter turnout. We have therefore omitted these states from our sample.

parties will converge on 2.² Even at the constituency level, according to Diwakar (2007), “there is no unequivocal support for it” (p. 557).³ Explanations for India’s ‘exceptionalism’ are many and include Chhibber and Kolman’s (1998) argument that the number of parties depends upon the distribution of power between the central and state governments, with greater centralization decreasing the incentive to aggregate parties across states and encouraging the growth of local and regional parties. Others have pointed to the complexity of social cleavages across India (Chhibber and Petrocik, 1989; Yadav and Palshikar, 2003), the presence of a strong centrally positioned party (Congress) that encompassed the median voter (Riker, 1982, p. 271) and the importance of electoral institutions, such as the anti-defection rule (Nikolenyi, 2008). In this paper we re-examine the structure of political parties from a broader public choice perspective, arguing that a number of complementary political and economic influences go into the determination of an equilibrium party structure and test these hypotheses empirically.

Much of the empirical work on political party structures has used cross country analysis (Hamel and Robertson, 1985; Hug, 2001; Travits, 2006; Brancati, 2008; Nishikawa, 2010; and Bolleyer, 2011). Here cross country differences in political institutions, threshold setup requirements, election rules, registration costs and/or party subsidies provide the observables to explain why the number of parties and/or rate of party entry/exit has differed across countries.⁴ More recently, a specialized branch of cross country analysis has focussed on post-communist emerging economies, seeking to isolate sources of political instability in entry-exit conditions (Sikk, 2005; Travits, 2008; Powell and Tucker, 2014). In this paper, however, we follow authors like Chhibber and Kollman (1998), Lago and Martinez (2011), Lucardie (2007), Chhibber, Jensenius and Suryanarayan(2014), Laroze (2017) and Ferris and Voia (2020) by applying the Cox (1997) analysis to party structure within a single country, in our case India, one that has had a political constitution that has remained fundamentally the same since Independence. Facing a largely unchanged institutional setting for party formation and electoral participation, changes in economic and political circumstance become the

² See Duverger (1954) and Grofman, Bowler and Blais (2009) for a contemporary reassessment.

³ Note that it is not unusual for an Indian state constituency to feature more than 100 parties. See the descriptive statics of the Data Appendix.

⁴ It is well known, for example, that democracies with proportional representation as opposed to first-past-the-post majority or plurality voting generate a larger number of active political parties (Hamel and Robertson, 1985).

variables used to reflect changes in the benefits and cost of party participation.⁵ By choosing Indian states, we can supplement the election data from the relatively short duration of India's democracy (1949-present) with a panel of economic and political state data. Our data set includes 14 of the largest Indian states and covers the 178 state elections that were held in these 14 states between 1957 and 2013. Because Indian states also vary widely by a number of development indicators, we also investigate whether the party structure is conditional on whether the state is viewed as more or less developed.

This paper is organized as follows. Section 2 presents a rational choice model that predicts the changing structure of political party equilibrium and its implications for party entry and exit. Section 3 discusses the measurable proxies that would explain the structure of political party equilibrium, entry and exit decisions of parties, and the empirical strategy that becomes our basis of testing the model's predications on Indian states.⁶ In section 4 we discuss the results. The final section concludes by summarizing the major findings of the paper.

2. An Equilibrium Model of Party Structure with its implications for Party Entry and Exit:

Cox (1997) provides the general methodology used most often to explain the entry of new parties and, implicitly, the number of political parties that arise in a stable political equilibrium. In his approach new parties form to enter the electoral arena when the benefits a new party can expect to receive from its electoral support exceed the costs of setting up the party and contesting an election. Party formation and entry will then continue until the party specific benefits of electoral participation fall into line with common entry costs and this implies an equilibrium number of political parties. Once equilibrium has been reached, entry and exit will follow from changes in the model's underlying determinants. Variables that proxy participation benefits, entry costs and the likelihood of achieving threshold political support are then used to test the predictions of the entry/exit hypotheses. This forms the conceptual basis of the empirical test described below.

⁵ Note, however, that we will use two important discrete constitutional changes in our analysis.

⁶ The data for this paper will be made available in Dataverse where it is titled Replication Data for the structure of political parties in Indian states.

More formally, a potential party i in state j at election time period t will register as an entrant into the electoral process if the net benefit of entry exceeds the expected cost of entry, that is, if

$$\text{Prob}(\text{successful entry}, N_{jt-1}) \times \text{Present Value of the expected benefits of participation} > \text{Party setup costs} - \text{Present Value of expected participation costs}, \quad (1)$$

where N_{jt-1} represents the number of parties in state j that are continuing from the previous election held in time period $t-1$. With the likelihood of success falling as the number of parties participating in the election increases, the entry of new parties will stop when the net benefit falls to zero. If in each election there is a flow of potential party entrants for whom the value of participating and probability of success differ, the existence of similar setup and participation costs will divide the number of potential entrants into two sets where the marginal entrant will be the one whose expected benefit just exceeds its expected costs. The number of entrants plus the number of continuing parties then determines a temporary equilibrium number of political parties participating in the election at time period t . It follows that a change in any of the underlying factors that increases the value or likelihood of a new party's electoral success and/or decreases the cost of participation will increase the expected number of parties entering and hence the equilibrium number of parties.

Once a party has entered the electoral arena, the continuation decision will involve a similar stopping rule.⁷ That is an existing party will continue to participate in elections as long as the expected benefit of continuing exceeds the cost of participating in an additional election. Hence the optimal stopping point is to exit when

$$\text{Marginal Benefit from continuing} - \text{the period cost of continued participation} < 0. \quad (2)$$

Note that the exit decision differs from the entry decision not only in the sense that perceptions of the benefits/costs of further participation may be more fully clarified after entry but also because the entry decision involves an additional set of once-and-for-all costs associated with party set up and registration.⁸ Once an entrant has entered, setup costs are

⁷ See Ferris and Voia (2020) for the application of such a stopping rule to party exit and party lifespans in Canada.

⁸ The registration cost of setting up a political party in India is minimal (resulting in over 1600 political parties). Registration requires: a payment of non-refundable 10,000 Rupees (\$140.40 US), support of at least 100 recorded members with affidavits of stamp paper of at least 2 rupees, registration of the party's constitution

sunk and this implies that parties considering continuation face a lower participation cost than entrants. This asymmetry implies that continued electoral presence can be supported even if the benefits of participation are found to be somewhat lower than those that motivated initial entry.⁹

To operationalize these decision rules, we need to identify a set of factors whose levels explain the structure of political party equilibrium and whose changes can alter the probability of electoral success, the benefit of continued party participation, setup and/or continuation costs. Typically, the perceived benefit of electoral participation is private to the party and hence externally unobservable. This implies that a test of the theory requires finding a set of variables that can span our 14 states and 55 years that provide measures of the other three components. In what follows we discuss these measurable proxies in terms of four broad categories: the size and heterogeneity of the electorate, the rules and conventions that have affected party entry and/or exit, the cost of entering relative to continuing in the electoral process, and the role of economic circumstance.

3. Operationalizing the model and Specifying the Tests

We begin with a set of factors expected to affect the demand for political parties. Perhaps the most common indicators of the demand for political parties are the size and heterogeneity of the electorate.¹⁰ In general, the larger is the pool of voters relative to the minimum scale of voter support needed to justify party participation the larger will be the number of political parties that can survive in equilibrium. For any given degree of voter heterogeneity, a larger voter base will support a larger number of distinct voter interests. Similarly, for any given size, the more diffuse are the interests and aspirations of voters, the larger will be number of parties needed to reflect voter interests. In our case this implies that states with larger constituency sizes and more heterogeneous constituents are expected to have a larger

and current operating officers and the annual audit party funds. Amended Guidelines for Party Registration, online at <https://eci.gov.in/candidate-political-parties/political-parties-registration/>. This does not imply that the setup time and personal expenditure costs to party members are not substantial.

⁹ See Forand and Maheshri (2015) and Ferris, Olmstead and Winer (2018) for an analysis of how this cost differential implies an asymmetric short run adjustment process about a longer run equilibrium.

¹⁰ See, for example, Taagepera and Grofman (1985), Hug (2000), Clark and Golder (2006), Spoon and West (2015), Kapoor and Magesan (2018), and Ferris and Voia (2020).

number of political parties. Similarly, changes in these dimensions create opportunities for new political parties to enter and challenge incumbents for electoral support.

Constitution of India, coming into effect in 1950, guaranteed voting rights to every Indian citizen above the age of 21 (later reduced to 18 years).¹¹ Hence in addition to district size and holding other dimensions of India's population demographics constant, the size of a constituency's electoral participation will be larger the larger is its voter turnout. Our analysis then predicts that the larger are both the number of registered voters in each constituency (**con_reg_density**) and the state's voter turnout (**turnout_state**), the larger will be the number of political parties.¹² Similarly, changes in both these variables will be positively related to the entry of new parties and negatively related to their exit.

We turn next to other indexes of state heterogeneity as a measure of demand for parties. In Indian states certain proportions of the seats in state assemblies are reserved for scheduled castes (SCs) and scheduled tribes (STs) (**reservseat_prop**).¹³ In our sample this varies from a low of 9 percent of the seats in Kerala in 1970 to 40 percent of the seats in Odisha in 1971 with an all-state average of 22 percent. The proportion of reserved seats in the legislature is highly correlated (and inversely so) with an index of religious fragmentation ($\rho = -0.51$), implying that states with high concentrations of scheduled castes and tribes are not religiously diverse (**religious_frag**).¹⁴ Because the legislated affirmative action provided by a higher proportion of reserved seats reduces the scale of representation available for general state voters, the expectation is that **reservseat_prop** will be inversely related to the number of political parties that arise in equilibrium. Similarly increases (decreases) in that proportion are expected to lead to the exit (entry) of parties.

To capture heterogeneity among voters more generally, we use two additional measures of voter diversity: **old**, the proportion of the population older than 60, and **urbanization**, the

¹¹ A constitutional amendment, the 61st amendment, was passed in 1989 to reduce voting age from 21 to 18 years.

¹² Heath and Ziegfeld (2018) interpret this causality inversely by attributing the change in voter turnout to entry and exit.

¹³ The percentage of seats reserved for SCs and STs in a state is based on the population shares of SCs and STs. The number of reserved seats and their share in total seats in a state changes only when the state is bifurcated or new delimitation commission's recommendations are implemented. For many states **reservseat_prop** stays constant across multiple elections.

¹⁴ To measure religious diversity, we use the inverse of a Herfindahl index of denominational affiliation shares in the population, interpolated between censuses and averaged over the previous governing period.

percentage of the population in urban areas. An increase in the percentage of older voters is expected to reflect greater conservatism in the electorate and the support of fewer parties while voters in urban areas are expected to embody greater diversity than those in the country and thus may support a larger number of party alternatives.

When we turn to consider governance rules and conventions that may have affected the number of parties by changing the incentives for party entry and/or exit, the 52nd Amendment Act of 1985 stands out. Introduced as a way of countering the extraordinary degree of post-election party switching by legislators,¹⁵ the anti-defection amendment prohibits not only party defections, but also disqualifies a legislator if that legislator votes (or even abstains from voting) contrary to any direction issued by his/her political party (Sethia, 2019, p.28). Somewhat ironically, by suppressing internal party dissent the anti-defection amendment is thought to have spurred the growth of new political parties by requiring internal factions to form an alternative party between elections to allow their voice to be heard. To capture the effect of anti-defection we use a dummy variable, **anti-defection**, that takes the value of 1 in all elections following 1985, 0 otherwise.

A second convention that affects the effectiveness of political parties is party recognition status. That is, in addition to having to be registered as a political party to run in an election, a political party can qualify to be 'recognized' as either a State or a National party if the party meets certain minimum vote criteria.¹⁶ The biggest advantage of being recognized as a State (National) Party is the receipt of a reserved symbol for exclusive use within the state (nation). This facilitates party recognition by all voters and aids candidate coordination by allowing all contesting candidates from that party to be linked by using the same symbol throughout the state.¹⁷ There are other advantages received by recognized parties such as subsidized land for

¹⁵ Between 1967 and 1983, there had been more than 2700 cases of defections, which brought down over 16 state Governments. See Sethia (2019, p.25) who, in turn, acknowledges Stanley A Kochanek, 'Mrs. Gandhi's Pyramid: The New Congress' in Zoya Hasan (ed.), *Parties and Party Politics in India* (Oxford University Press 2004, p78).

¹⁶ The election Symbols Order of 1968 sets any one of five conditions that need to be satisfied for State Party status: secure at least 6% of the valid vote and win at least 2 seats in a (Vidhan Sabha) Assembly Election; secure at least 6 percent of the valid vote and win at least 1 seats in a (Lok Sabha) General Election; win at least 3 percent of the seats or at least 3 seats, whichever is more, in an Assembly Election; win at least 1 out of every 25 seats from a state in a General Election; or secure at least 8 percent of the total valid vote in an Assembly or a General Election. There are a similar set of national conditions set for recognition as a National party.

¹⁷ As of 2016 there were 7 National parties and more than 50 State parties versus more than 2300 registered parties that were unrecognized.

party offices, free air time on India's autonomous public service broadcaster, the supply of electoral roll copies free of cost during elections and other incidentals. By lowering the cost of party organization, the introduction of party recognition status in the elections following 1968 is expected to increase the number of viable political parties in state elections. To test this we use a dummy variable, **party_recognition**, that takes the value of 1 for all elections following 1968 and 0 otherwise.

The National Emergency, declared by Prime Minister Indira Gandhi from 25th June 1975 until 21st March 1977, has had a significant impact on Indian politics, at both national and state levels. Its biggest impact, however, was on the elections that followed immediately after its withdrawal. The imposition of emergency made the Congress Party extremely unpopular throughout India leading a group of the major political parties to form a coalition, formally known as the Janata Party, with the sole objective of defeating the Congress Party. The coalition succeeded in defeating the Congress Party at the national level and in most of the states in the elections. Because the first elections following the emergency were anomalous, a binary variable, **emergency**, taking the value of 1 only for these elections was used to account for emergency's impact on the number of parties. Given that most of the parties opposing the Congress Party had forged a pre-election coalition for the first elections after the emergency, we expect the number of contesting parties in these elections to be smaller, resulting in the appearance of a decrease in entry and increase in exit in the number of parties.

In India the government at the center can intervene in the operations of state government through the imposition of President's rule.¹⁸ President's rule typically arises when law and order collapses or when no state party/coalition is in a position to form the government after an election or loses majority in the middle of an electoral tenure.¹⁹ The presence of political uncertainty in a state under President's rule should make new parties feel more optimistic of success. For this reason we expect an increase in the number of parties in the elections after the presidential rule is revoked. A dummy variable, **president**, taking the value 1 in the

¹⁸ Article 356 of the Indian Constitution deals with the imposition of president's rule.

¹⁹ Present's rule had been imposed over 100 times by 2016.

elections following the removal of president's rule (0 otherwise) is used to capture this response.²⁰

During our time period, three new states—Jharkhand, Chhattisgarh, and Uttarakhand—were carved out of three of the largest of our states—Bihar, Madhya Pradesh, and Uttar Pradesh. Our dataset does not include the new states; so that state creation discretely impacts our data through a discrete change in the size and composition of the partitioned states and hence will affect the number of political parties depending affected the overall heterogeneity of the electorate in large states. If state bifurcation influenced the heterogeneity of the electorates in these large states in ways unaccounted for in our variables, a lesser number of parties should be seen in the post state creation elections, and vice versa. A dummy variable, **state_creation**, taking the value 1 for the post state creation elections of these three large states (0 otherwise) is introduced to account for this effect. We have no prior expectation for the sign of its coefficient.

While the number of political parties, the average size of winning seat margin, the duration of a government's survival, and number and likelihood of incumbents re-running for election are likely to be endogenous, codetermined in the political equilibrium, random political events that change the expected outcome of the upcoming election are likely to have a more independent effect on the timing of party entry and exit. In a state where the governing party/coalition is expected to dominate its opposition in the sense that it will likely hold a large portion of the seats in the legislative assembly, the probability that a potential entrant can gain acceptance and/or become part of the governing coalition will be lower. More generally the expected benefit of participating in the election should be lower the larger is the size of government's expected majority. Hence we expect that the larger the proportion of seats won by the governing party/coalition, **seat_prop**, the smaller will be the number of parties choosing to enter in this election.²¹ Similarly, the larger is the proportion of state legislators who choose to run for re-election, **incumbent_prop**, the more difficult it will be for

²⁰ India's governance structure is somewhat unique in that the state Governors are appointed by the President (the federal leader) and thus can be of the opposite party to the party in power at the state level. Since presidential rule required only a letter in support from the state governor, this was often used to frustrate the will of the state government. In a 1994 decision, however, the Supreme Court of India ruled to limit the power of the President to declare an emergency without good reason. See Sethia (2019, pp.13-14).

²¹ This implies that both current and potential entrants are forward looking with unbiased expectations about an election's likely outcome.

competing parties to compete for electoral success. Although in India the share of incumbents running for re-election has traditionally been much lower than in either the United States or the United Kingdom, incumbents still win roughly 50 percent of the time (Uppal, 2009) and their participation is more prevalent at the state than at the national level. Over our sample period, **incumbent_prop** has varied enormously with the share of incumbent candidates running for re-election in the assembly elections varying between 40.65 percent in Karnataka and 72.17 percent in Bihar.²² Differences in **incumbency_prop** across states are then expected to adversely affect the entry and exit calculus. States where more incumbents run for re-election should be associated with fewer parties entering and less successful parties choosing to exit. The entry and exit decisions of small parties are also likely to depend on the duration of the current governing term. In India, an elected governing party/coalition can govern a state for a maximum period of 5 years. For various reasons, however, the governing party/coalition can lose the confidence of the state assembly and this often results in having to hold a mid-term election.²³ Holding an early election is then usually a sign that the incumbent party is in political difficulty and as such should influence favourably the entry and exit decision of small political parties. Hence the shorter the governing term, **years_elapse**, the higher should be the number of new parties contesting the next election and the smaller should be the number of existing parties exiting.

Finally, if the demand for political diversity is a normal good, then the demand for parties offering different policy programs should rise with income. Other things equal, the number of political parties should rise across states with higher levels of incomes and through time as state income levels rise. It follows that higher levels of state real GDP per capita, **srgdppc**, should be associated positively with higher numbers of political parties. Similarly, from the entrant's perspective, the cost of raising funds will be lower when times are good while the cost of maintaining relatively unsuccessful political activity will be increasingly difficult when times are bad. We test for the effects on entry and exit by using the annual average growth

²² Dash et al. (2019) have compiled this statistic for the assembly elections in 14 major Indian states spread over period 1962 to 2013.

²³ There are occasions when a governing party/coalition holds an early election because it believes the overall state of economy is favorable and its chances of winning re-election are high. A notable example is when the National Democratic Alliance (NDA) coalition led by Bharatiya Janata Party (BJP) called an early election at the center in 2004. This, however, is not a common reason for early elections. In India, the more usual reason for an early election is due to the governing party/coalition losing its majority in the legislature.

rates of per capita income calculated over the governing interval of the incumbent government.

Because the number of parties participating in an election is always a discrete number, the analysis that follows uses a fixed effects Poisson count regression model to test for the significance of the proposed set of political, institutional and economic conditions expected to explain the structure of political parties across Indian states. The equation can be written as

$$E(N_{jt}) = \alpha_j + \alpha_1 con_reg_density_{jt} + \alpha_2 turnout_state_{jt} + \alpha_3 reservseat_prop_{jt} + \alpha_4 old_{jt} + \alpha_5 urbanization_{jt} + \alpha_6 anti - defection_{jt} + \alpha_7 party_recognition_{jt} + \alpha_8 emergency_{jt} + \alpha_9 president_{jt} + \alpha_{10} state_creation_{jt} + \alpha_{11} Income\ per\ capita_{jt}, \quad (3)$$

where $\alpha_1, \alpha_2, \alpha_5, \alpha_6, \alpha_7, \alpha_9,$ and α_{11} are expected to be positive while $\alpha_3, \alpha_4,$ and α_8 are expected to be negative; no a priori expectation for α_{10} .

The fixed effects Poisson regression equation used to test the entry and exit decisions (together with their combination in turnover or churning) use the first differences of a number of these variables together with the discrete changes reflecting changes in election rules and conventions. Note that three variables discussed above—**seat_prop**, **incumbent_prop**, and **years_elapse**—and not included in equation (3) are used in the equations testing party entry, exit and turnover. This is because these variables are expected to have independent effects on the timing of and the period specificity of party entry and exit decisions. A table presenting the statistical properties of the variables used in the tests that follow are presented in the data appendix along with data sources.

4. Results

4.1 The number of parties versus effective number of parties

In Table 1 we present a set of fixed effects Poisson models developing three successive stages of a test of the hypotheses explaining the number of political parties arising in our Indian states. The models build in complexity: column (1) presents the basic model focusing on the size and characteristics of the voter pool together with the level of state per capita income; column (2) adds two of the governance institutions specific to India; and column (3) adds

three of the more dramatic political events that have affected these states together and separately. Column (4) re-runs the full equation model of column (3) on the effective number of political parties (ENP), where ENP weights the significance of each party by its vote share and is measured as the inverse of a Herfindahl index of party vote shares.²⁴ A comparison of the results from columns (3) and (4) provide some of our most interesting results.

From an overall perspective, while all of the models work well as an explanation of the structure of political parties, the variables provide a better fit for the number rather than the effective number of parties. In addition, the doubling of the size of the Chi square statistic as we transition across adjacent models, from (1) through (3), confirms that the additional variables added to the model do significantly increase the explanatory power of the number model. Of the 25 coefficient estimates used to explain party numbers, in columns (1) through (3), all 24 of the predicted coefficient signs conform to expectation with 15 significantly different from zero at the 90 percent level or higher.

--inset Table 1 about here--

Turning to the individual predictions, the variables representing the size of the voting pool have opposing effects on the number versus the effective number of parties. First a larger average number of registered voters in a state constituency, **con_reg_density**, is associated with a larger absolute number of parties (as expected) but with having no significant association with the effective number of parties.²⁵ This is consistent with a larger voting pool attracting an inflow of smaller sized parties that make no discernable impact on the vote shares received by the larger state parties. On the other hand, a larger voter turnout, **turnout_state**, has no long run effect on the equilibrium number of parties but does reduce significantly (at 1 percent) the effective number of parties. This suggests that higher turnout levels tend to reallocate votes towards the smaller sized parties rather than reflect wider

²⁴ $ENP(votes)_j = \frac{1}{\sum v_{ij}^2}$, where v_i is the vote share of each political party, $i = 1, 2, \dots, N$, in state j . We follow Dash et al. (2019) by defining a political party as any registered party that appears in the top ten vote receiving parties over three successive elections or receives more than 8 percent of the vote in any one election (all other parties and individual candidates included in a composite grouping, other). The data used can be found in Winer et al (2019) <https://dataverse.scholarsportal.info/dataset.xhtml?persistentId=doi:10.5683/SP2/N3GJR4>.

²⁵ Note there is some evidence of nonlinearity in that the addition **con_reg_density** squared to model (1) generates a coefficient estimate that is significantly negative, consistent with the diminishing opportunities for parties from larger constituency size.

interests that would support a larger number of parties. Together the results suggest that the voters who appear in elections with larger turnouts are different from the types of new voters that are represented by an increase in the scale of registered participants.

While an increase in the proportion of reserved seats, **reservseat_prop**, is associated with a decrease in the number of parties, it has a significant negative impact only on the effective number of parties.²⁶ That is, the results suggest that while the number of parties is largely unchanged following an increase in the proportion of seats reserved for SCs and STs, the vote is increasingly concentrated on existing dominant state parties.

Our two general heterogeneity measures, **old** and **urbanization**, present sign estimates consistent with their predicted effects. First, an increase in the proportion of the population over sixty is associated with a smaller number of political parties and the contraction of the vote about a smaller number of more established parties (increasing ENP). Second, an increase in the degree of urbanization within a state or through time appears to be associated with larger number of parties (in column (1)), but that association disappears once the effects of **party_recognition** and **anti-defection** legislation are taken into account. On the other hand, the effect of urbanization on ENP(vote) is significant. An increase in urbanization is associated with a greater concentration of the vote among established political parties.

The hypothesis that political diversity through a larger number of political parties is a normal good is strongly supported by the data. The data is consistent with an increase in real state GDP per capita, **srgdppc**, increasing not only the number of parties but the effective number of parties also. This in turn suggests that higher incomes are associated with a greater willingness to support less popular programs and more specialized policies embodied in minor parties.

The effects predicted for the legislative order and the constitutional amendment affecting political parties, **party_recognition** and **anti-defection**, are present in the data. Both are associated with a larger number of political parties but with making no significant impact on ENP(vote). Together these results go some way to explaining the larger number of political parties found in India in comparison with other countries with similar institutional settings.

²⁶ The collinearity of **reservseat_prop** and **religion_frag** led to **religion_frag** being dropped from the analysis.

Lastly, the three instances of dramatic political change impact the states—the **emergency**, the imposition of **president**'s rule, and new **state_creation** through the bifurcation of Bihar, Madhya Pradesh, and Uttar Pradesh—all are found to have had a significant effect on the number of parties but not on ENP(vote). The imposition of presidential rule is associated with increasing the number of parties while the imposition of the emergency reduced party numbers. The significant positive coefficient associated with **state_creation** is consistent with bifurcation increasing the average degree of diversity in the electorate. All three outcomes, however, again suggest that such political events have impacted party structure primarily through changes in the number of smaller parties without having had a significant effect on the overall distribution of vote shares among the larger established parties.²⁷

4.2 Party Entry, Exit and Turnover

Table 2 presents the results for the Poisson models explaining the entry, exit and turnover of political parties. The results are presented in two stages. In the first stage the number of parties entering, exiting and turning over (churning) are viewed as depending upon the change in the variables used to account for the number of parties, together with the dummy variables corresponding to the legislative order, constitutional amendment and political events expected to change political party structure. In the second stage we ask whether entry, exit and/or churning are also affected by the size of constituency (rather than just its stationary rate of change). Overall, all of these models have considerable explanatory power (with large χ^2 values) and with the addition of the constituency scale variable, the models feature a significant increase in both the Wald and log pseudolikelihood functions.

--insert Table 2 about here--

Changes in the size of the voting pool, measured by **dcon_reg_density** and **dturnout_state**, both are associated positively with party entry but vary in opposite directions with respect to both exit and turnover. That is, increases in constituency density are associated with reduced exit, an increase in overall party numbers and a reduction in party turnover. A similar increase in voter turnout, on the other hand, increases both entry and exit, significantly increasing political party turnover while having no significant effect on total party numbers. Larger

²⁷ This does not imply that the vote shares of individual parties did not change dramatically during any of these episodes.

constituency size, **con_reg_density**, is not only associated with more parties overall (from Table 1) but with a significant increase in party entry, exit and turnover.

The other heterogeneity measures produce mixed results. An increase in the proportion of seats reserved for SCs and STs, **dreservseat_prop**, does not affect entry, but does significantly affect exit, tending to produce a small decrease in party churning. The effect goes away, however, when the model accounts for the size of constituency. Increases in the percentage of the population that is old, **dold**, has a much stronger effect on discouraging entry than encouraging exit, reducing both turnover and total party numbers. A change in urbanization, **durban**, is one of the few variables in the data that is found to have no discernable effect on entry, exit or the turnover of parties.

The data is consistent with the average annual increase in real income per capita over the incumbent government's tenure, **growth_real_inc_tenure**, increasing new party entry, discouraging exit and thus increasing party numbers (with an ambiguous effect on party churning). Party numbers then vary pro-cyclically as well as following the growth trend of per capita income across time.

The two legislative changes are both positively associated with entry but have differing effects on party exit and turnover. The anti-defection amendment, **anti-defection**, is strongly associated with higher levels of both party entry and exit, increasing the churning of parties as well as their absolute number. On the other hand, the granting of party recognition, **party_recognition**, is associated with increased entry and reduced exit, resulting in an overall increase in party numbers and a lower rate of party turnover.

Of the three discrete political events arising in our data, the data indicates that the period of the **emergency** was associated with a significant increase in the exiting of political parties and, as Table 1 indicates, an overall reduction in the number of parties. **Emergency** had a positive but a weaker impact on party churning. The imposition of **President's rule**, on the other hand, is associated with a weak positive effect on entry but has no significant association with party exit or turnover. The creation of new states in our time period, **state_creation**, had a significant positive impact on party entry, exit and turnover. State creation, however, loses significance once the scale of the constituency is included in the model.

Finally, the three characteristics of election outcomes that we argued would be endogenous in the long run but whose expectation might influence the timing of party entry and/or exit do add explanatory power to the relationship. The data are consistent with the hypothesis that the larger is the expected size of winning party's victory, **seat_prop**, the smaller will be both new party entry and existing party exit and through this a reduction in the turnover rate within the political party structure. A larger number of incumbent candidates running for re-election, **incumbent_prop**, on the other hand, discourages new entry while increasing existing party exit, reducing the number of parties rather than its composition. Finally, an increase in the tenure of the incumbent government, **years_elapse**, leads to higher party exit, but has no significant impact on party entry or turnover.

4.3 Level of Development and Party Structure

In a country the size of India, average outcomes at the aggregate (national/all-state) level often mask the distinctive characteristics of some subgroupings of states. For some dimensions of difference, then, it may be insightful to consider whether the effects on party structure differ systematically by state groupings. Doing so for India leads to no loss in significance since India's major states are already comparable in size to many of the world's developed and emerging countries.²⁸ In this section we use one state grouping to examine the differential effect of our variables on party structure by level of development. Many studies examining the role of development have used the binary grouping--BIMAROU versus Non-BIMAROU—to subdivide Indian states by level of development.²⁹ The acronym BIMAROU, resembling the Hindi word *bimar*, meaning 'sick', is often used to characterize the state of development held by the five poorest of our Indian states – (Bi)har, (Ma)dhya Pradesh, (R)ajasthan, (O)disha, and (U)ttar Pradesh. These five states lag behind the others in our sample in terms of per capita income, literacy, access to public health, education, tap water, electricity, toilets and so on. In a recent study applying various measures of electoral competitiveness, Dash et al. (2019) found that the evolution of electoral competitiveness in the BIMAROU states has been distinctively different from that in the more developed states.

²⁸ In terms of population size, Uttar Pradesh's is comparable to Brazil, Maharashtra and Bihar to Japan, Madhya Pradesh to Germany, and Karnataka and Gujarat to France and Italy.

²⁹ Ghosh (2016), Mishra and Mishra (2018), Prakash et al (2019), and Dash et al (2019) have used this criterion for grouping Indian states.

Here we ask whether the determinants of the number of parties and their entry, exit and turnover in the BIMAROU states are different from that of the more developed states.

--insert Table 3 about here--

The full equation fixed effects Poisson model (3) from Table 1 is estimated for the BIMAROU and Non-BIMAROU subsample states and the results presented in columns (1) and (2) of Table 3. The same exercise was carried out for ENP with the results for the BIMAROU and Non-BIMAROU states presented in columns (3) and (4). While both explain the equilibrium number of parties well, the model fits the data better for the subsample of BIMAROU states with all determinants found to be statistically significant. In terms of the explanatory variables, **state_creation** is applicable only to the BIMAROU states, as the three states affected by new state creation are part of the BIMAROU grouping. These events had a significant impact on party proliferation in post state creation elections. All 10 of the remaining 10 variables were found to be statistically significant for the BIMAROU states versus 5 of the 10 variables for the Non-BIMAROU states. The results then suggest that party structure in the BIMAROU states responds somewhat differently from that in the more developed states.

When the results from Table 3 are compared with the all-state sample results in column (3) of Table 1, the inconclusive findings for three insignificant variables – **turnout_state**, **reservseat_prop** and **urbanization** – can be better understood. As Table 3 makes apparent, all three variables are significant only for the subsample of the BIMAROU states: in the Non-BIMAROU states **turnout_state** has the same expected sign but is insignificant, whereas **reservseat_prop** and **urbanization** are found to have the opposite sign. The averaging that arises in the all-state case then hides the differential type or intensity of response that arises within these two groups. Similarly, despite **party_recognition** and **president** being found significant in the all-state case of Table 1, the two variables are found to be significant only for the BIMAROU states despite the similarity in sign found for Non-BIMAROU states. Both variables point to specific characteristics within the BIMAROU states for which these factors have greater significance. Finally despite the remaining five variables being found significant in all separate and combined cases, the averaging out of the BIMAROU and Non-BIMAROU coefficients can be seen to hide differences in the intensity of response across the two state groupings.

In the all-state case of Table 1, we saw that the determinants explaining the equilibrium number of parties sometimes worked differently when used to explain ENP. In Table 3 we can see that the effects on the number and the effective number differ within and between the BIMAROU and Non-BIMAROU states. For example, the two variables that represent the size of the voting pool, **con_reg_density** and **turnout_state**, affect the ENP of developed states significantly, whereas only the later affects significantly the ENP of the BIMAROU states. The coefficient of **con_reg_density** in BIMAROU states is insignificant with a sign opposite to that of Non-BIMAROU states. This helps to explain the insignificance of **con_reg_density** in the all-state ENP results of Table 1. Determinants such as **reservseat_prop**, **old**, and **srgdppc** which were found to be significant in the all-state ENP results now lose their significance when states are grouped by level of development. This happens despite all three variables possessing their expected signs in both groups of states and suggests that these variables work well with ENP only when the sample size increases. **Urbanization**, on the other hand, has a significant impact on ENP irrespective of the sample size. None of the remaining variables affect the ENP of the Non-BIMAROU states, whereas all three special political events – **president**, **emergency**, and **state_creation** – impact the ENP of the BIMAROU states in the expected manner significantly.

To study the impact of the level of development on party entry, exit and turnover, the full model of Table 2 was run on the subsamples of BIMAROU and Non-BIMAROU states. These results are presented in Table 4.

--insert Table 4 about here--

The results suggest that constituencies that are larger in scale, **con_reg_density**, experience greater party entry, exit and turnover in both groupings of states. However, increases in size between elections, **dcon_reg_density**, are associated with different responses between entry and exit that result in different churning results for the BIMAROU and Non-BIMAROU states. Entry increases and exit decreases in response to an increase in voter constituency size in both with the significant effect on exit in Non-BIMAROU states producing a significant fall in party turnover. In BIMAROU states the impact on churning is insignificant. Increases in voter turnout, **turnout_state**, significantly affect only Non-BIMAROU states, increasing party entry, churning and total party numbers. The significance found for party entry and turnover in the

all-state case of Table 2 is then driven by the outcomes arising in the more developed states. Among the measures of voter heterogeneity, and like the results found in the all-state case, changes in the proportion of reserved seats in state assemblies, **dreservseat_prop**, and in the rate of urbanization, **durban**, do not play a major role in inducing party entry, exit and turnover for either group of states. An increase in the proportion of the population that is old, **dold**, tends to reduce party entry, exit and party turnover, but is found to be significant only for the Non-BIMAROU developed states. The average growth rate arising over the previous governments tenure does not appear to make much difference to party entry and exit decisions once states are broken down by levels of development. Higher growth rates are associated significantly with higher party entry only for the Non-BIMAROU states (and only at the 10 percent level).

The anti-defection law, **anti-defection**, has had a strong impact on both party entry and exit, resulting an increase in the churning of parties for both categories of states. However, its impact has been more consistent and stronger in BIMAROU states. Parties getting electoral recognition, **party_recognition**, has made a significant impact on party entry and churning only in the BIMAROU states. These results suggest that both legislative interventions had disproportionately larger impact on party structure in the BIMAROU states.

The imposition of presidential rule, **president**, and the **emergency** affect party exit in both BIMAROU and Non-BIMAROU states. The elections held after the emergency produced higher party exits in both groups of states, whereas elections following the president's rule experience higher party exits in BIMAROU states and lower exits in Non-BIMAROU states. This helps to explain the insignificance of president's rule and the significance of emergency found in the results of Table 2. The effect of the creation of new states out of the old, **state_creation**, is applicable only to the group of BIMAROU states. These events resulted in significantly higher levels of party entry and exit.

For the electoral variables expected to have an effect on the timing of entry and exit, the results find first that when the governing party is expected to win a higher proportion of seats in the state assembly, **seat_prop**, party entry, exit and churning are reduced for both groups of states. On the other hand, a higher number of incumbents running for re-election, **incumbent_prop**, is associated with reduced party entry and increased exit, but an unclear

impact on party turnover. While these results are statistically significant only for the BIMAROU states, they have an overwhelming impact on the all-state findings of Table 2. Finally, an increase in the duration of a government's tenure, **years_elapse**, has an effect only in increasing party exits significantly for both groups of states. The all-state sample results align with these results.

5. Conclusion

In this paper we have used data from 14 Indian states to test an equilibrium model of political party structure in the spirit of Cox (1997) where the number of parties depend on the average voting size of the state's constituencies, voter turnout, the heterogeneity of the state's electorate, constitutional and/or legislative rules that directly affect party numbers and per capita state incomes while controlling for discrete differences across states and a series of political events that were expected to have influenced political parties. The factors that stand out as significant in the analysis are: the average size of the voter pool in state electoral constituencies (positive), the percentage of the state's population that is above 60 (negative) and real GDP per capita (positive). The data also confirm the importance of the Anti-Defection constitutional amendment, as hypothesized by Nikolenyi (2008) and others, and the importance of acquiring official party recognition in Indian party politics. Both of these institutional innovations in the electoral system are consistent with producing a significant increase in the number of political parties. The occurrence of significant political events—the incidence of presidential rule, the calling of the national emergency and the bifurcation of Bihar, Madhya Pradesh, and Uttar Pradesh—all are found to have played a significant role in relation to party numbers.

A comparison of the model explaining the number of political parties to one explaining the vote weighted effective number of parties (ENP) is also insightful. Many of the variables that were significant in explaining the absolute number of parties are found to lose significance when used to explain the effective number of parties (and vice versa). In particular the data suggest that a larger sized voting pool and the adoption of the anti-defection and party-recognition legislation, while associated with a significant increase in the number of parties, have had no significant effect on ENP. On the other hand, increases in both voter turnout and the proportion of reserved seats for SC and ST are found to be associated significantly with a decrease in ENP (concentrating the vote on larger more established parties) while having no

significant effect on the total number of state parties. Together these suggest that the factors that explain the proliferation of parties are different from those that explain the concentration of the vote among parties.

The analysis also considers the effect of changes in these variables, together with period-specific political factors such as the openness and closeness of the upcoming election, on the timing decision by political parties of whether to enter and exit (and thus the rate of political party turnover). Of particular significance in explaining party entry were: changes in constituency size (positive), voter turnout (positive), the proportion of the population that is over 60 (negative), per capita income growth (positive), party recognition (positive) and the anti-defection amendment (positive). Voter turnout, which was found to have no significance effect on the total number of parties, is found to be highly significant in relation to entry and turnover through its change (rather than level). That is, an increase in turnout across elections is associated not only with new party entry but with greater exit and hence a higher level of party turnover. Good times, as reflected in higher growth rates during the previous governing tenure, are reflected in greater party entry, fewer parties exiting and hence larger party numbers. Interestingly, the data also suggest that while increases in constituency size work as expected in increasing entry, discouraging exit and hence lowering party turnover, a large constituency is itself associated not only with larger party numbers but with greater new party entry, older party exit and turnover. That is, larger scale is associated with proportionally more electoral variation and turnover, particularly among the smaller sized political parties. Lastly, the perception of the party's election prospects, as proxied (inversely) by the proportion of incumbents running for re-election and the size of the winning seat margin, is highly significant in its association with party entry, exit and turnover.

By grouping our 14 Indian states by BIMAROU (lesser developed) and Non-BIMAROU (more developed) states, we investigated whether the nature of party structure depends on the level of development arising between these states. The results indicate that the determinants of party structure in BIMAROU states differ somewhat from those in Non-BIMAROU states and these differences help to explain why some determinants were found to be statistically insignificant when the all-states sample is used. While the all-state model used earlier explains successfully the evolution of the number of parties in both groupings, the model fits the data better for the BIMAROU states. All variables are significant in the BIMAROU case while only

half are significant for the more developed states. Measures of the size of the voting pool, the number of registered voters in constituencies and voter turnout, are the major determinants of both the number and the effective number of political parties in the developed states, whereas in addition to these factors party-recognition and special unsettling events such as the imposition of presidential rule, the emergency, and events leading to new state creation have played major role in determining both measures in the BIMAROU states. Party entry and exit decisions in the BIMAROU states are sensitive to factors such as change in the size of registered voters, implementation of the anti-defection law, creation of new states, and percentage of incumbents seeking reelection, whereas factors such as constituencies with large sized registered voters, change in the size of older population, and the size of government's majority affect the entry and exit decisions in the Non-BIMAROU states. Impacts of different factors on party entry and exit decisions play out differently in different groups of states, results in varying net impact on party turnover. The party turnover model works better with the subsample of Non-BIMAROU states.

Overall we have found that the data for Indian states are consistent with the use of a rational choice model of political party structure to explain the evolving number of political parties in Indian states together with its entrants and exits. The analysis works less well as an explanation of ENP. The results suggest that the structure of Indian state political parties is highly responsive to changes in constituency characteristics, economic conditions, electoral rules and the likelihood of success and that that response arises primarily through the active participation, entry, exit and turnover of small aspiring political parties.

Table 1
Fixed Effects Poisson Models of the Number and Effective Number of Indian State Parties:
14 Indian States, 1957 – 2013

Variable	Predicted Sign	Number of parties (1)	Number of Parties (2)	Number of Parties (3)	Effective Number of Parties (vote shares) (4)
con_reg_density	+	0.012*** (23.06)	0.009*** (18.94)	0.008*** (13.68)	0.001 (1.13)
turnout_state	+	0.316 (0.86)	0.004 (0.01)	0.105 (0.28)	-0.691*** (3.03)
reservseat_prop	-	-0.573 (1.13)	-0.837 (0.98)	-0.708 (0.77)	-1.42* (1.83)
old	-	-0.104*** (3.08)	-0.164*** (4.75)	-0.154*** (5.01)	0.036** (1.99)
urbanization	+	0.014** (2.20)	0.001 (0.03)	0.001 (0.09)	-0.017** (2.52)
srgdppc	+	0.004** (2.11)	0.009*** (4.92)	0.01*** (4.97)	0.003** (2.1)
party_recognition	+		0.165* (1.74)	0.201** (2.06)	0.013 (0.17)
anti_defection	+		0.411*** (4.92)	0.417*** (4.84)	-0.001 (0.00)
president	+			0.083** (2.12)	-0.009 (0.35)
emergency	-			-0.212*** (3.82)	-0.101 (1.56)
state_creation	?			0.131*** (4.1)	-0.024 (0.29)
Statistics					
No. of States		14	14	14	14
Observations		167	167	167	167
Log pseudolikelihood		-451.2	-433.3	-427.7	-238
Wald $\chi^2(6, 8, 11$ variables)		1300.5	2782.3	11013	483.7

Notes: All models include state fixed-effects. ***(**)[*] = significant at 1% (5%) 10%. ? = just misses significance at 10%. Absolute value of robust z-statistics in brackets below coefficient estimates.

Table 2
Fixed Effects Poisson Models of Party Entry and Exit
14 Indian States: 1957 – 2013

Variables	Parties Entering (1)	Parties Entering (2)	Parties Exiting (3)	Parties Exiting (4)	Churning (5)	Churning (6)
con_reg_density		0.007*** (6.70)		0.02*** (6.52)		0.012*** (9.66)
dcon_reg_density	0.01** (2.49)	0.008*** (2.81)	-0.016** (2.01)	-0.026*** (7.59)	0.001 (0.02)	-0.004 (1.52)
dturnout_state	1.12*** (4.06)	0.94*** (4.55)	0.79* (1.93)	0.15 (0.48)	1.06*** (3.76)	0.725*** (6.39)
dreservseat_prop	-0.005 (1.09)	0.001 (0.22)	-0.015*** (2.74)	0.001 (0.03)	-0.009*** (3.35)	0.001 (0.26)
dold	-0.244 (1.19)	-0.419*** (3.01)	0.047 (0.14)	-0.369 (1.53)	-0.13 (0.54)	-0.393*** (2.78)
durban	0.027 (0.51)	0.019 (0.47)	-0.001 (0.02)	-0.017 (0.47)	0.014 (0.26)	0.003 (0.08)
growth_real_inc_tenure	0.035** (2.00)	0.023* (1.74)	0.01 (0.5)	-0.027* (1.72)	0.027* (1.70)	0.006 (0.72)
party_recognition	0.479*** (3.10)	0.292** (2.05)	0.11 (0.71)	-0.388*** (4.03)	0.28* (1.86)	-0.016 (0.20)
anti-defection	1.17*** (11.29)	0.73*** (6.12)	1.02*** (8.43)	-0.181 (0.94)	1.12*** (12.5)	0.409*** (4.27)
president	0.067 (0.89)	0.126* (1.84)	-0.151 (1.38)	-0.024 (0.25)	-0.018 (0.24)	0.07 (1.14)
emergency	-0.291 (1.38)	-0.3 (1.47)	0.528*** (4.94)	0.551*** (5.15)	0.144? (1.63)	0.14* (1.69)
state_creation	0.703*** (5.06)	0.156 (1.11)	0.865*** (9.87)	-0.493 (1.34)	0.772*** (8.35)	-0.081 (0.64)
seat_prop	-1.29*** (3.91)	-0.795** (2.22)	-1.48*** (4.94)	-0.287 (0.99)	-1.38*** (5.11)	-0.614*** (2.36)
incumbent_prop	-0.754** (2.15)	-0.454* (1.71)	-0.019 (0.04)	0.66*** (2.62)	-0.473 (1.32)	-0.023 (0.16)
years_elapse	-0.021 (0.40)	0.013 (0.24)	0.053 (1.08)	0.118*** (2.64)	0.007 (0.15)	0.055 (1.46)
Statistics						
No. of States	14	14	14	14	14	14
Observations	152	152	152	152	152	152
Log pseudolikelihood	-390.4	-373.9	-410.9	-343.1	-462.4	-395.2
Wald $\chi^2(14, 15 \text{ variables})$	29490.2	4260.2	8675	2751.5	439346.3	683.6

Notes: All models include state fixed-effects. ***(**)[*] = significant at 1% (5%) 10%. ? = just misses significance at 10%. Absolute value of robust z-statistics in brackets below coefficient estimates.

Table 3

Fixed Effects Poisson Models of the Number and Effective Number of Indian State Parties:
14 Indian States, 1957 – 2013 (BIMAROU (5) versus Non-BIMAROU (9) States)

Variable	Number of parties		Effective Number of Parties (vote shares)	
	BIMAROU States (1)	Non-BIMAROU States (2)	BIMAROU States (3)	Non-BIMAROU States (4)
con_reg_density	0.004*** (2.60)	0.008*** (5.96)	-0.001 (0.15)	0.004** (2.30)
turnout_state	0.544* (1.81)	-0.334 (0.58)	-0.432*** (2.87)	-0.453** (2.32)
reservseat_prop	2.03*** (3.88)	-1.94 (1.23)	-1.88 (1.45)	-0.811 (0.96)
old	-0.354*** (8.66)	-0.098*** (5.48)	0.01 (0.48)	-0.006 (0.24)
urbanization	-0.049*** (2.72)	0.001 (0.05)	-0.025* (1.74)	-0.01** (2.00)
srgdppc	0.036*** (5.87)	0.01*** (3.87)	0.006 (1.46)	0.001 (0.28)
party_recognition	0.697*** (5.53)	0.081 (0.61)	-0.01 (0.23)	-0.03 (0.30)
anti_defection	0.836*** (7.02)	0.382*** (3.65)	0.061 (0.62)	-0.09 (1.16)
president	0.081*** (5.05)	0.088 (1.19)	0.043*** (4.33)	-0.003 (0.10)
emergency	-0.367*** (5.71)	-0.121* (1.70)	-0.365*** (7.76)	0.025 (0.57)
state_creation	0.181*** (9.79)		0.075** (2.33)	
Statistics				
No. of States	5	9	5	9
Observations	60	105	60	105
Log pseudolikelihood	-140.1	-266.4	-85.5	-147.6
Wald $\chi^2(10, 11 \text{ variables})$	99.5	724	484	187.4

Notes: All models include state fixed-effects. ***(**)[*] = significant at 1% (5%) 10%. ? = just misses significance at 10%. Absolute value of robust z-statistics in brackets below coefficient estimates.

Table 4
Fixed Effects Poisson Models of Party Entry and Exit
14 Indian States: 1957 – 2013 (BIMAROU (5) versus Non-BIMAROU (9) States)

Variables	Parties Entering		Parties Exiting		Churning	
	BIMAROU	Non-	BIMAROU	Non-	BIMAROU	Non-
	States (1)	States (2)	States (3)	States (4)	States (5)	States (6)
con_reg_density	0.002 (1.08)	0.008*** (3.66)	0.024*** (9.57)	0.017*** (4.50)	0.01*** (9.97)	0.011*** (4.50)
dcon_reg_density	0.014*** (4.36)	0.006 (1.07)	-0.019*** (4.86)	-0.032*** (7.64)	0.003 (1.24)	-0.008** (2.17)
dturnout_state	-0.164 (0.32)	0.906*** (4.26)	0.379 (0.42)	0.52 (1.79)	0.17 (0.50)	0.845*** (5.64)
dreservseat_prop	0.001 (0.18)	-0.012 (0.63)	-0.004 (0.54)	0.019 (1.38)	-0.002 (0.44)	0.002 (0.26)
dold	-0.361 (0.91)	-0.472** (2.41)	0.335 (1.28)	-0.56*** (3.15)	-0.06 (0.19)	-0.484*** (3.07)
durban	0.06 (0.56)	0.022 (0.48)	-0.105 (1.33)	-0.001 (0.04)	-0.075 (1.05)	0.011 (0.28)
growth_real_inc_tenure	-0.014 (1.17)	0.034* (1.69)	-0.005 (0.15)	-0.009 (0.41)	-0.013 (1.51)	0.019 (1.50)
party_recognition	1.02*** (3.06)	0.114 (0.78)	-0.559 (1.11)	-0.179 (0.95)	0.48* (1.73)	-0.075 (0.65)
anti-defection	1.06*** (5.54)	0.674*** (3.74)	-0.449*** (2.56)	-0.042 (0.18)	0.518*** (6.24)	0.447*** (3.58)
president	0.04 (0.63)	0.166 (0.95)	0.14** (2.51)	-0.218* (1.72)	0.069 (1.41)	0.022 (0.21)
emergency	-0.727 (1.59)	-0.127 (0.68)	0.638*** (3.07)	0.434*** (2.83)	-0.031 (0.24)	0.164 (1.37)
state_creation	0.514** (2.38)		0.751*** (3.65)		0.25 (0.24)	
seat_prop	-1.58*** (2.71)	-0.696* (1.66)	0.224 (0.36)	-0.667* (1.76)	-0.877* (1.93)	-0.784** (2.32)
incumbent_prop	-1.68*** (4.12)	-0.283 (0.67)	1.49* (1.82)	0.171 (0.84)	-0.505 (1.39)	-0.118 (0.53)
years_elapse	-0.054 (1.16)	0.04 (0.40)	0.158*** (3.92)	0.123** (2.20)	0.039 (1.55)	0.068 (0.93)
Statistics						
No. of States	5	9	5	9	5	9
Observations	55	97	55	97	55	97
Log pseudolikelihood	-126.4	-239.8	-121.2	-210.6	-132.3	-255.3
Wald $\chi^2(14, 15 \text{ variables})$	195.4	657.9	20.8	38.5	24.5	443.4

Notes: All models include state fixed-effects. ***(**)[*] = significant at 1% (5%) 10%. ? = just misses significance at 10%. Absolute value of robust z-statistics in brackets below coefficient estimates.

Data Appendix

Table A1
Descriptive Statistics (14 State averages: 1957-2013)

Variable	Mnemonic	Obs.	Mean	Standard Deviation	Min	Max
Average number of registered constituency voters (1000's)	con_reg_density	178	120.32	52.38	39.2	316.1
Change in constituency's density	dcon_reg_density	164	10.61	10.58	-36.9	35.9
Voter turnout rate by state	turnout_state	178	0.618	0.107	0.24	0.86
Change in voter turnout	dturnout_state	164	0.017	0.083	-0.43	0.44
Number of registered Parties contesting election	election_parties	178	23.43	24.10	3	222
New parties entering state election	entering_parties	171	12.82	15.75	0	147
Parties exiting following election	exiting_parties	171	8.25	8.38	0	55
Turnover of political parties	churn	171	21.07	22.74	1	202
Proportion of legislative seats that are reserved	reservseat_prop	178	0.221	0.076	0.09	0.4
Change in the proportion of reserved seats	dreservseat_prop	164	0.002	0.017	-0.11	0.079
Inverse of Herfindahl Index of religious fragmentation	religion_frag	167	0.278	0.133	0.05	0.6
Proportion of seats won by the governing coalition/party	seat_prop	178	0.632	0.103	0.5	0.848
Proportion of incumbents running for re-election	incumbent_prop	153	0.557	0.177	0.125	0.959
Proportion of the state population over 60	old	167	6.83	1.19	4.97	12.6
Change in population old	dold	153	0.257	0.268	-0.52	1.35
Percentage of the population in Urban areas	urbanization	167	24.7	9.14	6.32	48.4
Change in urbanization	durban	153	1.31	1.49	-3.32	10.87
State real GDP per capita (1000's)	srgdppc	167	10.67	17.19	1.85	87.17
Growth rate of real income per capita over previous government's tenure	growth_real_inc_tenure	165	2.86	3.26	-6.42	16.43

References

- Aldrich, J.H. (1995). *Why Parties? The Origin and Transformation of Political Parties in America*. Chicago, Illinois: The University of Chicago Press.
- Berrington, H. (1985). Why some live and most die. *International Political Science Review*, 6(4): 441-461.
- Bolleyer, N., and E. Bytzek (2017). New party performance after breakthrough: Party origin, building and leadership. *Party Politics*, 23(6): 772-282.
- Brancati, D. (2008). The Origins and Strengths of Regional Parties. *British Journal of Political Science*, 38(1): 135-159.
- Chhibber, P.K., and J.R. Petrocik (1989). The Puzzle of Indian Politics: Social Cleavages and the Indian Party System. *British Journal of Political Science*, 19(2):191-210.
- Chhibber, P.K., and K. Kollman (1998). Party aggregation and the number of parties in India and the United States. *American Political Science Review*, 92(2): 329-342.
- Chhibber, P.K., R.J. Jensenius, and P. Suryanatayn (2014). Party Organization and Party Proliferation in India. *Party Politics*, 20(4): 489-505.
- Clark, W.R., and M. Golder (2006). Rehabilitating Duverger's theory: Testing the mechanical strategic modifying effects of electoral laws. *Comparative Political Studies*, 39(6): 679-708.
- Cox, G. (1997). *Making Votes Count: Strategic Coordination in the World's Electoral Systems*. Cambridge: Cambridge University Press.
- Dash, B.B., J.S. Ferris, and S.L. Winer (2019). The measurement of electoral competition, with application to Indian states. *Electoral Studies*, 62: 102070.
- Diwakar, R. (2007). Duverger's Law and the size of the Indian party system. *Party Politics*, 13(5): 539-661.
- Duverger, M. (1959). *Political Parties: Their Organization and Activity in the Modern State*. Second English Revised. London: Methuen & Co.
- Ferris, J.S., and M. Voia (2018). Political Parties in Canada: What determines their entry, exit and turnover?. *Party Politics* (forthcoming); online at <https://doi.org/10.1177/1354068818793659>
- Ferris, J.S., S.L. Winer, and D.E.H. Olmstead (2018). A Dynamic Model of Political Party Equilibrium. *Carleton Economic Papers* #18-04.
- Forand, J.G., and V. Maheshri (2015). A dynamic Duverger's Law. *Public Choice*, 165: 285-306.
- Ghosh, S. (2016). A quality of growth index: evidence from Indian States. *South Asia Economic Journal*, 17(1): 133-148.
- Grofman, B., S. Bowler, and A. Blais (2009). *Duverger's Law of Plurality Voting the logic of party competition in Canada, India, the United Kingdom and the United States*. New York: Springer Publishing.
- Harmel, R., and J.D. Roberston (1985). Formation and success of new parties: A cross-national analysis. *International Political Science Review*, 6(4): 501-523.

- Heath, O., and A. Ziegfeld (2018). Electoral volatility and turnout: Party entry and exit in Indian Elections. *Journal of Politics*, 80(2): 570-584.
- Hug, S. (2000). Studying the electoral success of new political parties. *Party Politics*, 6(2): 187-197.
- Kapoor, S., and A. Magesan (2018). Independent candidates and political representation in India. *American Political Science Review*, 112(3): 678-697.
- Lago, I., and F. Martinez (2011). Why new parties?. *Party Politics*, 17(1): 3-20.
- Laroze, D. (2017). Party collapse and new party entry. *Party Politics*, 25(4): 559-568.
- Lucardie, P. (2007). Pristine purity: New political parties in Canada. *American Review of Canadian Studies*, 39(3): 283-300.
- Meyer, T.M., and B. Miller (2015). The niche party concept and its measurement. *Party Politics*, 21(2): 259-271.
- Mishra, A., and V. Mishra (2018). Is there conditional convergence in the per capita incomes of BIMAROU states in India?. *Economic Modelling*, 70(3): 429-437.
- Mulligan, C.B., and K.K. Tsui (2015). Political entry, public policies, and the economy. *Research in Economics*, 69(3): 377-397.
- Nikolenyi, C. (2008). Recognition Rules, Party Labels and the Number of Parties in India. *Party Politics*, 14(2): 213-222.
- Nishikawa, M. (2010). Electoral and party system effects on ruling party durability. *Party Politics*, 18(5): 633-652.
- Powell, E.N., and J.S. Tucker (2014). Revisiting electoral volatility in Post-communist countries: new data, new results, and new approaches. *British Journal of Political Science*, 44(1): 123-147.
- Prakash, N., M. Rockmore, and Y. Uppal (2019). Do criminally accused politicians affect economic outcomes? Evidence from India. *Journal of Development Economics*, 141: (102370).
- Riker, W. (1982) The Two-Party System and Duverger's Law: An Essay on the History of Political Science. *American Political Science Review*, 76: 753-766.
- Sethia, A. (2019) Where's the party? Towards a constitutional biography of political parties. *Indian Law Review*, 3(1): 1-32.
- Sikk, A. (2005). How Unstable? Volatility and the Genuinely New Parties in Eastern Europe. *European Journal of Political Research*, 44(4): 391-412.
- Spoon, J., and K.J. West (2015). Alone or together? How party institutions affect party entry in presidential elections in Europe and South America. *Party Politics*, 21(3): 393-403.
- Taagepera, R., and B. Grofman (1985). Rethinking Duverger's Law: Predicting the Effective Number of Parties in Plurality and PR Systems – Parties Minus Issues Equals One. *European Journal of Political Research*, 13(4): 341-352.
- Tavits, M. (2006). Party System Change. *Party Politics*, 12(1): 99-119.

- Tavits, M. (2008). Party Systems in the Making: The emergence and success of new parties in New Democracies. *British Journal of Political Science*, 38(1): 113-133.
- Uppal, Y. (2009). The disadvantaged incumbents: estimating anti-incumbency effects in Indian state legislatures. *Public Choice*, 138(1-2): 9-27.
- Winer, S.L., J.S. Ferris, and B.B. Dash (2019). Replication data for *The measurement of electoral competition, with application to Indian states*. At Scholars Portal Dataverse: <https://doi.org/10.5683/SP2/N3GJR4>.
- Yadav, Y., and S. Palshikar (2003). From hegemony to convergence: party system and electoral politics in the Indian States, 1952 – 2002. *Journal of Indian School of Political Economy*, 15(1-2): 5-44.