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Party Politics 2006; 12; 5

DOI: 10.1177/1354068806059243

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DUVERGERIAN DYNAMICS IN THE INDIAN STATES

Federalism and the Number of Parties in the State Assembly Elections

Pradeep Chhibber and Geetha Murali

ABSTRACT

Empirical research on voting in electoral districts in single-member, simple-plurality electoral systems has demonstrated the general validity of Duverger's law. This article shows that while the law is generally valid for state assembly elections in India, there are exceptions. In a significant number of electoral districts, more than two parties secure votes. We attribute these non-random deviations from Duverger's law to the influence of federal arrangements. The article provides evidence that more than two parties will get votes in an electoral district when either more than two national parties or a combination of national and regional parties compete for votes in a state. We show that an increase in the number of regional parties alone at the state level would not have the same effect on district-level results.

KEY WORDS ■ Duverger's law ■ federalism ■ India ■ number of parties ■ state assembly elections in India

Introduction

Duverger's law predicts that two parties will capture all the votes in district-level elections in countries with single-member, simple-plurality rules. Research has shown that, at its heart, Duverger's law relies on the assumption that district-level elections are characterized by strategic voting. Following a standard definition of 'strategic voting' – that voters prefer not to waste their votes if meaningful and potentially consequential votes can be cast – the implication of such an assumption in single-member, simple-plurality elections is that voters prefer to vote for a candidate who has a chance of winning the election, all else being equal.¹

1354-0688[DOI: 10.1177/1354068806059243]

In this article, we assume that, all else being equal, citizens prefer to vote for candidates and parties that have a chance of winning, or that other like-minded citizens are voting for, or that have *familiar names or party labels*. We show that Duverger's law accounts for most of the electoral results at the district level for state assembly elections in India.² There are, however, significant exceptions to Duverger's law in state assembly elections in India. In a large number of districts, more than two parties often secure most of the votes. This article develops an explanation for why more than two parties obtain votes in some districts for state assembly elections in India. More than two parties can get votes in a district if voters cannot decide which two parties are the most competitive. In such cases, the second and first losers can get an equal number of votes. Cox (1997) calls this a non-Duvergerian equilibrium, albeit an equilibrium that is consistent with the logic of strategic voting. In this article, we show that there are districts in India where Duverger's law does not hold, nor is there a non-Duvergerian equilibrium. We attribute this to the federal nature of the Indian polity and argue that in states where either more than two national parties or a combination of national and regional parties compete for votes, more than two parties can get votes at the district level because voters can look to both levels of government for addressing their concerns. However, if only two parties or multiple regional parties vie for control of the state government, Duverger's law stands.

In the first part of the article, we demonstrate that two partyism dominates elections to the state assemblies in India. In the second section, we examine deviations from Duverger's law and develop an explanation for why these deviations occur. In the third section, we test the validity of our claims using district-level data from state assembly elections held since 1978 in 14 major Indian states.³ After examining the implications of this research for understanding contemporary Indian party politics, we conclude with caveats and suggestions for further research.

Number of Parties in State Assembly Elections

To determine the number of parties that compete in each constituency, we collected electoral data at the district level for state assembly elections in 14 major Indian states. The dataset includes election data from 1967 to 2001 as collected by the Election Commission of India. Since the final delimitation of parliamentary and assembly constituencies occurred in 1976 (Election Commission of India, 1976), we used the data from 1978 onwards in the primary analyses to maintain consistency in district-level comparisons (see Appendix A for states and years included in the dataset used for the analysis in this article).

The number of competitive parties in a constituency was calculated using a measure for the effective number of parties (N), which is calculated using

the following formula (Laakso and Taagepera, 1979) – where p_i represents the proportion of votes received by party i :

$$N = \frac{1}{\sum_{i=1}^n p_i^2} \tag{1}$$

Figure 1 displays a histogram of the effective number of parties at the district level in elections held after 1978. The majority of districts (38.57 percent) are in the 2.0–2.5 category, with a total of 67.18 percent of districts falling within the first three categories combined (i.e. 1.5–2.0, 2.0–2.5, 2.5–3.0), demonstrating that Duverger’s law holds quite well at the district level. We count all numbers up to three effective parties as consistent with Duverger’s law, since it is only when the number of parties is greater than three that the vote share of the second loser is greater than the difference between the votes received by the winner and the first loser (Figure 3a). The data broken down by state appear in Appendix C.

The data in Figure 1 suggest that while the Duvergerian equilibrium is widely prevalent at the district level in Indian state assembly elections, there are significant exceptions, and almost a third of the districts have more than

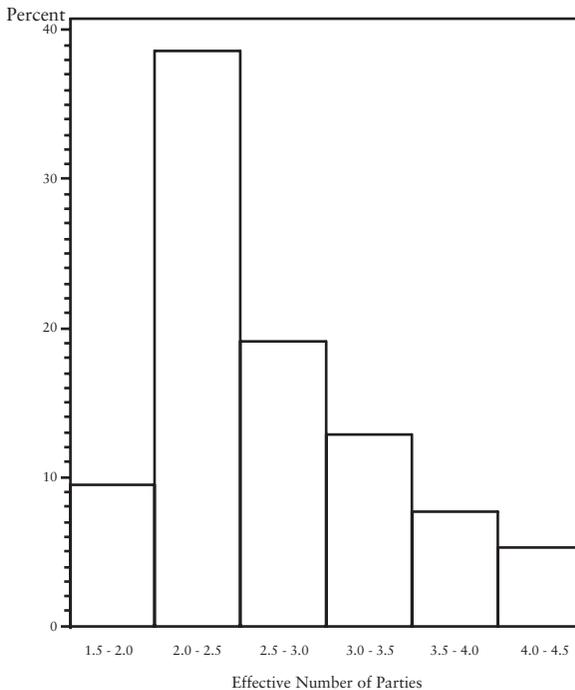


Figure 1. Effective number of parties in the state assembly elections in India

three effective parties competing in elections to the state assembly. Cox (1997) suggests that merely examining the effective number of parties is not sufficient for determining the extent of strategic voting in an electoral district. It is possible for more than two parties to obtain votes in a district if voters cannot predict the top two candidates in that district. In such situations, the vote share of the third-placed party would be very close to the vote share of the second-placed party.

To better understand this phenomenon and its relationship to strategic voting, Cox introduces the SF ratio – or the ratio of the second loser’s vote total to the first loser’s vote total. In cases where the voter cannot determine the top two candidates, the SF ratio would approximate 1 and the non-Duvergerian equilibrium (Cox, 1997) could yield more than two parties in a district. An examination of the peaks in the distribution of the district-level SF ratios can highlight the presence (or absence) of strategic voting and identify deviations from the logic of strategic voting that underlies Duverger’s law. Thus, in a single-member district where elections are held under plurality rules, there are two equilibria – the ratio of the second to the first loser is close to 0 (two parties receive most votes – Duvergerian equilibrium) or is close to 1 (the third-placed party receives as many votes as the second-placed party – non-Duvergerian equilibrium).

We calculated the SF ratios at the district level for elections to the state assemblies, and Figure 2 presents a histogram of these SF ratios in elections held after 1978. As would be expected in a single-member, simple-plurality system tending towards Duvergerian equilibria, the peak is near zero, indicating that the second loser is being deserted in favor of the winner or first loser, and strategic voting is occurring at significant levels. The data on SF ratios broken down by state appear in Appendix D. Although the patterns for the effective number of parties and SF ratios are as expected when calculated across states, there are enough exceptions to warrant an explanation (e.g. the histogram patterns for Bihar and Uttar Pradesh illustrate clear deviations from Duvergerian equilibria).

We also present histograms of the district-level election data from 1967 onwards in Appendix B, and a comparison of Figures 1 and 2 with Appendix B suggests that the distributions of the effective number of parties and SF ratios in the truncated and complete datasets are consistent.

Federalism and the Effective Number of Parties at the District Level

Why are there exceptions to Duverger’s law in so many instances? We argue that these exceptions exist because in a federal system political parties seek to form the national government in addition to controlling state governments. Why should federalism influence the number of parties that compete in a district?

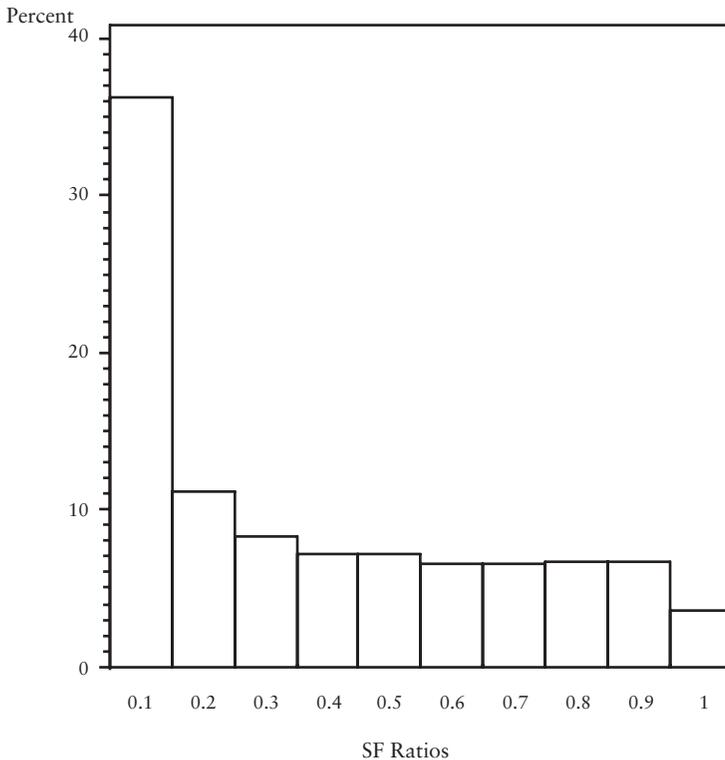


Figure 2. SF ratios for state assembly elections in India

Models of strategic voting assume that when marking a ballot for a candidate or party in the district, voters make decisions based on how their votes will affect their well-being, and they are rational in the sense that they maximize their utility given that information. If voters cared only about the district-level outcomes and national politics were irrelevant, then the party labels of the candidates in the districts might very well be suited only to local conditions. In Uttar Pradesh, for example, candidates could call themselves the Bahujan Samaj Party (BSP) or Congress if these labels communicate to voters that the party they affiliated with would yield some policy or psychological benefit to those resident in a particular district. Or, candidates could contest as Independents if this label were better suited to local conditions (i.e. it would not matter to voters if a candidate were aligned with a particular party or not). If, on the other hand, voters care about national politics because the parliament makes important decisions on taxation, the allocation of resources to various government programs, the location of public projects, and provision of jobs to particular groups, voters would vote for national parties.

Cox and Monroe (1995), in an innovative working paper, discuss voting

equilibria in which voters have preferences over the composition of the national legislature and have well-defined expectations about how parties will fare in the elections nationally. They conjecture that, in equilibrium, voters will often vote for less preferred parties. For single-member, simple-plurality systems, this means they will usually abandon nationally non-competitive parties, even though these may be locally competitive. Furthermore, in such a system, two nationally competitive parties will tend to emerge. As Cox and Monroe summarize their argument:

[T]he net impact of national parliamentary considerations on local Duvergerian dynamics should be clear. . . . There are multiple dynamics that serve to (1) drive down the number of parties, and (2) reinforce the national party system at the district-level. . . . These dynamics . . . are particularly strong in single-member district systems.

(1995: 14–15)

Under most federal arrangements, however, localities depend on state governments for the benefits they can draw from government programs, the location of public projects and the provision of jobs. In India, state governments can change the boundaries of local governments, can dismiss local governments and play a key role in the administration of local governments (Bagchi, 1991). Despite constitutional amendments, local governments are still dependent upon state governments. With increased ‘economic sovereignty’, state governments have, over the years, become more assertive and exercise a fair bit of authority in making decisions regarding private investment and the allocation of resources to localities (Chhibber et al., 2004). Since federalism means that state or provincial politics matters, voters and candidates will have incentives to link across districts within their own states or provinces. These linkages become the basis for whether voters vote for state or national parties. Typically, however, national governments in federal systems negotiate and share authority with states and provinces (Filippov et al., 2004). Voters and candidates may therefore wish to have a voice in *both* state or provincial policy and national policy.

Voters in federations who are tempted to vote for representatives from parties that are strong only in their states or provinces may realize quickly that their representative has little voice in national policymaking, unless the representative’s party joins in an alliance with a major national party. If authority is centralized to the point where the national government dominates the states or provinces, then it is likely that candidates will bypass the state or provincial parties and simply adopt national party labels. In states where all major parties are national, voters are forced to interpret party priorities as each party may differ when weighting national and regional agendas. However, to the extent that states or provinces retain some authority, voters may not want to vote for national parties that have little state or provincial power. It could be advantageous for voters to have state or provincial governments controlled by parties that have national representation and have national representatives who have party affiliations with

state or provincial parties. One way to ensure that a local representative has links to the national government and to the state or province is to have him or her affiliated with a state party that shares a common label (and a common ideology) with a national party.

If voters care about policymaking at the national and state levels, we can expect that first, if there are two parties, be they regional or national or a combination of national and regional party that compete for control of a state government, the effective number of parties at the district level will be two. However, if there are more than two parties that compete for control of the state (and our logic of the federal confusion is valid), then more than two parties would get votes at the district level *only* if the parties that competed for control of the state government represented a combination of national- and state-level interests. This line of reasoning generates two testable hypotheses: if there are more than two regional and national parties competing for control of the state government, the effective number of parties at the district level could be greater than two; and if there are more than two national parties that vie for control of a state government, more than two parties could get votes at the district level, but if there are more than two regional parties that compete in a state then the effective number of parties at the district level should remain close to two since voters do not have to choose between policy interests represented by different levels of government – state and national.

Data Analysis

In order to test our hypothesis that increased national party competition and mixed competition (or competition between national and regional parties) in state politics influences the effective number of parties and SF ratios at the district level, we fit two models, one in which the dependent variable is the effective number of parties and another in which the dependent variable is the SF ratio.

The key independent variables that designate party types, MIXTYP and NATTYP, are binary. In cases where there are more than two competitive parties that are a combination of national and regional parties at the state level, MIXTYP takes the value 1 for state elections and 0 otherwise. NATTYP takes the value 1 for state elections that had more than two national parties competing and 0 otherwise. State elections that had only two parties competing (i.e. two regional, two national, or one national and one regional) or three regional parties competing were considered a base category. The criterion used to determine whether a party was national or regional is consistent with the definition adopted by the Election Commission of India that lists a party as national if it is competitive in four or more states. The assumption that underlies the categorization of the binary party variables is that states that have only two parties competing

will logically have two parties competing at the district level; but an increase in the number of national parties competing in a state or the presence of national parties participating in states where there are strong regional parties will influence strategic voting. Voters may find it in their interests to vote for parties that are not only competitive in the state but could also be competitive nationally.

It is expected that the effective number of parties at the district level will be affected by an overall increase in competitive parties in the state (we consider a party to be competitive if it secures at least 10 percent of the total vote share). Our coding of MIXTYP and NATTYP allows us to distinguish between the effect on the dependent variables that is the result of increased state-level competition between national parties (i.e. voters find it difficult to interpret party priorities) and the effect of mixed competition (i.e. voters are torn between national and regional considerations). A binary variable, NATELEC, was also included to test if state assembly elections took place during the same year as a national election. This could influence the effective number of parties or SF ratios at the district level. This variable took the value 1 if state assembly elections occurred in the same year as a national election and 0 otherwise. The presence of charged national party campaigns could influence a voter's decision to support a regional or national party in the state assembly elections.

It has been argued that contemporary Indian electoral politics is largely a state-specific affair, and that the politics of the various states varies sufficiently from each other (Yadav, 1996). Any attempt to understand electoral dynamics then has to control for state-specific effects. To this end, state indicator variables were included in the analysis. (Kerala, where the effective number of parties in the district was consistently two, was used as a control.)

Within the literature on Duverger's law, and in the study of party systems in general, the impact of social and economic divisions is considered salient. It is extremely difficult to obtain detailed information regarding relevant social and economic distinctions for each of the constituencies in each of the states. To address this concern we included district-level lag variables (a lag of the effective number of parties or SF ratio from the previous election) in the analysis. This variable, we believe, is a reasonable proxy to account for socio-economic factors and other district-level effects for which data are not available. We also included the lag of the effective number of parties at the state level, which is highly correlated with the effective number of parties using the proportion of seats held in the state legislatures, as an independent variable. This variable was included to account for the effect that voter awareness of party success in previous elections may have had on voter choices in current elections.

Given that our analysis involves a regression of pooled, time-series, cross-sectional data, we must address potential problems caused by autocorrelation and heteroskedasticity (Greene, 2002; Stimson, 1985; Tavitz, 2005). Since our dataset has 3400 cross sections and three to six time points, any

corrections for contemporaneous and serial correlations will not improve estimates and can underestimate variability (Beck and Katz, 1995). In such cases, Beck and Katz (1995) suggest that ordinary least squares (OLS) estimates are appropriate with a correction for standard errors. We report the OLS parameter estimates and, in order to address concerns with heteroskedasticity, the Huber-White sandwich robust standard errors with districts as clusters. This is consistent with the suggestions of Greene (2002) and Tavits (2005).

We fit the models to the post-1978 election data. Table 1 gives the results of fitting the model with a dependent variable equal to the effective number of parties at the district level.⁴

The overall F-statistic is significant ($F = 282.85, p < 0.0001$), indicating that the model explains a significant amount of the variation in the data, and the adjusted $R^2 = 0.30$, showing that the regressor variables predict roughly 30 percent of the variation in the effective number of parties.

Of the state-specific effects, only three states – Bihar, Maharashtra and Uttar Pradesh – have significant results with positive contributions to the

Table 1. The effect of party type and national influence on the effective number of parties at the district level

<i>Variable</i>	<i>Estimate</i>	<i>Robust standard error</i>	<i>P-value</i>
Dependent variable: effective number of parties (district level)			
Intercept	2.318	0.1169	<0.0001
Andhra Pradesh	-0.367	0.0651	<0.0001
Assam	0.121	0.0780	0.123
Bihar	0.613	0.0660	<0.0001
Gujarat	-0.448	0.0692	<0.0001
Haryana	0.157	0.0847	0.064
Karnataka	-0.005	0.0649	0.944
Madhya Pradesh	0.027	0.0662	0.686
Maharashtra	0.150	0.0537	0.005
Orissa	-0.300	0.0746	<0.0001
Rajasthan	-0.089	0.0588	0.129
Tamil Nadu	-0.338	0.0483	<0.0001
Uttar Pradesh	0.472	0.0627	<0.0001
West Bengal	-0.328	0.0576	<0.0001
Lag of effective number of parties (district level)	0.243	0.0161	<0.0001
Lag of effective number of parties (state level)	-0.098	0.0165	<0.0001
NATTYP	0.276	0.0418	<0.0001
MIXTYP	0.287	0.0429	<0.0001
NATELEC	0.244	0.0165	<0.0001

dependent variable. Bihar and Uttar Pradesh are most influential, with estimates of 0.613 and 0.472, respectively. These results highlight the considerable differences between districts in Bihar and Uttar Pradesh and some of the other states examined.

The lag variables for the effective number of parties at the district and state levels are significant (both p -values < 0.0001). The lag for the district level was estimated at 0.243, showing the impact of other socio-economic factors on the dependent variable. The state-level lag, however, has a negative estimate of 0.098, pointing to the influence of voter awareness of previous elections on current electoral choices. The negative estimate suggests that when the effective number of parties is high in the previous election, voters will tend to vote for fewer parties in the current elections. This finding coincides with theories of strategic voting whereby voters attempt to vote for parties that they perceive as potential winners.

All three primary variables of interest, MIXTYP, NATTYP and NATELEC, are significant, confirming that the type of parties participating in state elections affect district-level vote fragmentation. The coefficient of MIXTYP is 0.287; consequently, the presence of mixed competition in state politics will add 0.287 to the effective number of parties at the district level. The coefficient of NATTYP is 0.276, indicating that the added presence of national parties will contribute 0.276 to the effective number of parties at the district level. The results confirm our hypothesis that increased national party competition or mixed competition in assembly elections has a significant effect on the effective number of parties competing at the district level. Furthermore, the occurrence of assembly elections during a national election year increases the effective number of parties by 0.244. The effect of federal arrangements, therefore, is roughly 0.53 for mixed competition and 0.52 for concentrated national party interest (i.e. more than two competitive national parties). This suggests that interactions between national and regional politics can add up to 0.53 to the effective number of parties, raising the number of parties getting votes in those districts to about three.

Table 2 gives the results of fitting the model with a dependent variable equal to the SF ratio at the district level. The overall F-statistic for this model is also highly significant ($F = 274.44$, $p < 0.0001$), which suggests that the model accounts for a substantial amount of the variation in the data. In addition, the adjusted R^2 of 0.23 signifies that the independent variables explain 23 percent of the SF-ratio variability.

In the SF-ratio model, many more state-specific effects are significant. Nonetheless, Bihar and Uttar Pradesh retain the highest effects at 0.231 and 0.203, respectively. The lag of the SF ratio at the district level is highly significant ($p < 0.0001$) accounting for influential socio-economic factors. Although non-significant, the lag of the effective number of parties at the state level has a negative estimate consistent with findings indicating that a higher level of effective parties in previous elections will increase the level of strategic voting in current elections, pushing the SF ratio closer to zero.

Table 2. The effect of party type and national influence on the SF ratio at the district level

<i>Variable</i>	<i>Estimate</i>	<i>Robust standard error</i>	<i>P-value</i>
Dependent variable: SF ratio (district level)			
Intercept	0.136	0.0352	<0.0001
Andhra Pradesh	0.016	0.0224	0.484
Assam	0.164	0.0197	<0.0001
Bihar	0.231	0.0188	<0.0001
Gujarat	0.072	0.0242	0.003
Haryana	0.155	0.0251	<0.0001
Karnataka	0.147	0.0221	<0.0001
Madhya Pradesh	0.119	0.0228	<0.0001
Maharashtra	0.152	0.0184	<0.0001
Orissa	0.091	0.0254	0.001
Rajasthan	0.077	0.0207	<0.0001
Tamil Nadu	0.037	0.0173	0.031
Uttar Pradesh	0.203	0.0183	<0.0001
West Bengal	0.028	0.0195	0.148
Lag of SF ratio (district level)	0.236	0.0101	<0.0001
Lag of effective number of parties (state level)	-0.008	0.0051	0.129
NATTYP	0.091	0.0117	<0.0001
MIXTYP	0.080	0.0103	<0.0001
NATELEC	0.064	0.0053	<0.0001

The primary variables of interest, MIXTYP, NATTYP and NATELEC, are significant, re-confirming that federalism affects district-level vote distributions. The coefficients of MIXTYP and NATTYP are 0.080 and 0.091, respectively. According to these estimates, the presence of national parties competing with regional parties will add 0.080 to the SF ratio at the district level, and the competition of more than two national parties in state-level politics will add 0.091 to the SF ratio at the district level. In addition, the occurrence of state assembly elections during a national election year will add 0.064 to the SF ratio. These results coincide with the findings from the previous model and point to the effects that the existence of national parties in regional politics can have on voter choices. In particular, the estimates indicate that the effects of these variables can add between 0.14 and 0.16 to the SF ratio, up to 16 percent higher than would be expected in a system representative of Duvergerian equilibria with an SF ratio of zero.

The fluctuation of the effective number of parties and SF ratios on account of national party competition in district elections could be a result of voter preferences on national policy or a function of voters deserting preferred local parties for parties seen as competitive nationally (Chhibber

and Kollman, 1998; Cox, 1997; Leys, 1959). While this is clearly not the case in all Indian states (e.g. Tamil Nadu), it is a definitive factor in states where national parties take an added interest in securing votes (e.g. Bihar and Uttar Pradesh). This analysis speaks to the significance of competition type in dictating voter choices. Locally, competitive parties may be at a disadvantage in certain states where national and regional concerns overlap. The fragmentation of vote share is not only a function of the number of parties competing, but also of the type of parties competing and their relative standing nationally.

Implications for Indian Politics

Based on our analysis, we can say that the presence of national party competition in regional party politics will affect the vote shares of the parties that receive the highest number of votes. Figures 3a and 3b demonstrate the empirical value of analyzing the effective number of parties and the vote shares of the first-, second- and third-placed parties.

Looking at the comparison of the difference in vote share between the winner and first loser and the vote share of the second loser in Figure 3a, it is clear that the third party only becomes effective (i.e. it influences the outcome of the election) once its vote share exceeds 11 percent, which happens when the effective number of parties approaches three. In other words, when N approaches three, the vote share of the third party could have influenced the outcome of the election. As the effective number of parties increases the parties receiving the highest proportion of vote share will lose votes at a higher rate than the other parties in the system. In other words, strategic voting will decrease, and voters will tend to vote for their preferred parties. Voting preferences may be based on a combination of national and local interests, and the availability of a national party (or parties) as an option may hinder the voter's ability to determine which parties have the best chance of winning.

As Figure 3b shows, the most competitive parties will tend towards equal vote share as the number of effective parties increases. This tendency is indicative of the need to form coalition governments or develop pre-election alliances in order to secure seats in the legislative assembly. In Tamil Nadu, there has been a progressive emergence of a multiparty, alliance-based system, though the parties now prominent are all regional parties. Smaller parties, many with geographically concentrated support, have eaten into the vote shares of the two large, regional parties (EPW Editorial, 2004). Consequently, a new system has developed in which the major and minor parties negotiate seat allocation and form pre-election alliances. 'Alliance arithmetic' determines election outcomes (Harriss, 2002; Thirunavukkarasu, 2001; Yadav, 2001).

Recent increases in the effective number of parties at the state level (4.2

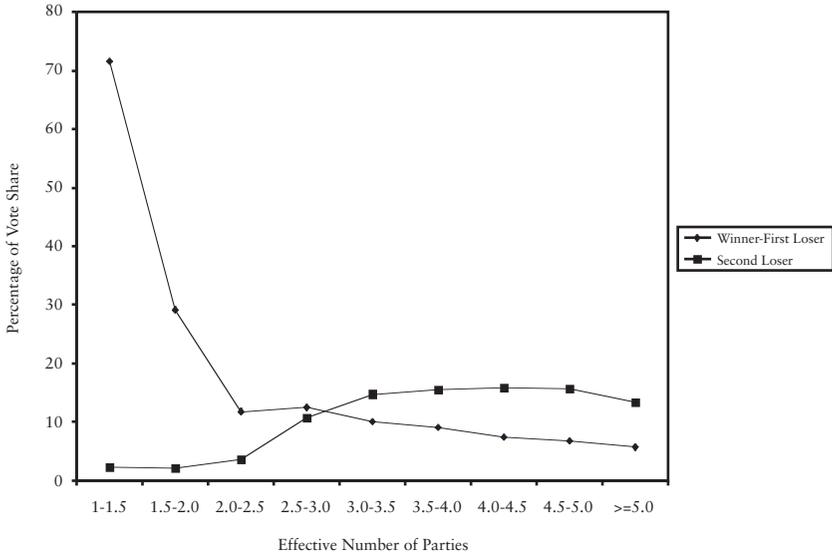


Figure 3a. The appropriateness of N (the difference between the vote share of the winner and first loser and the vote share of the second loser [third-placed party])

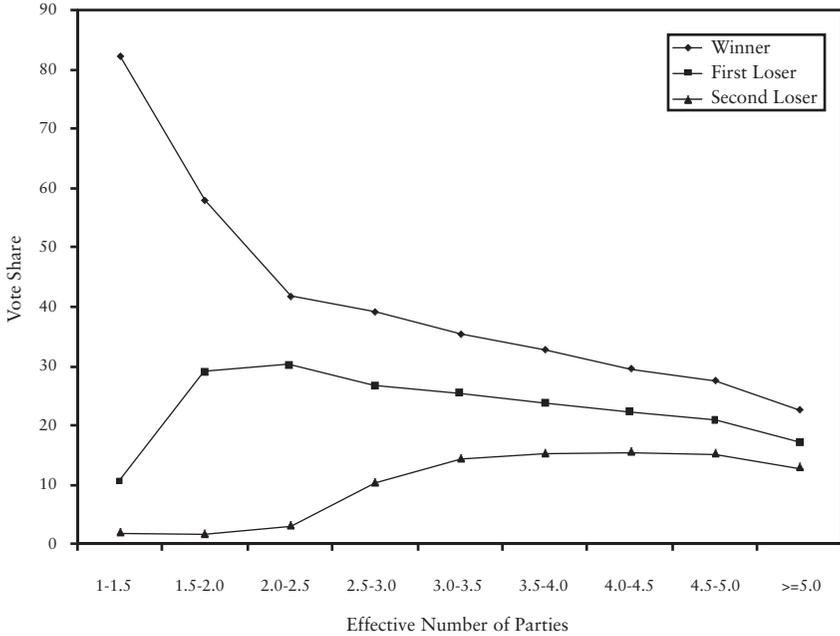


Figure 3b. Vote share trends for the top three effective parties

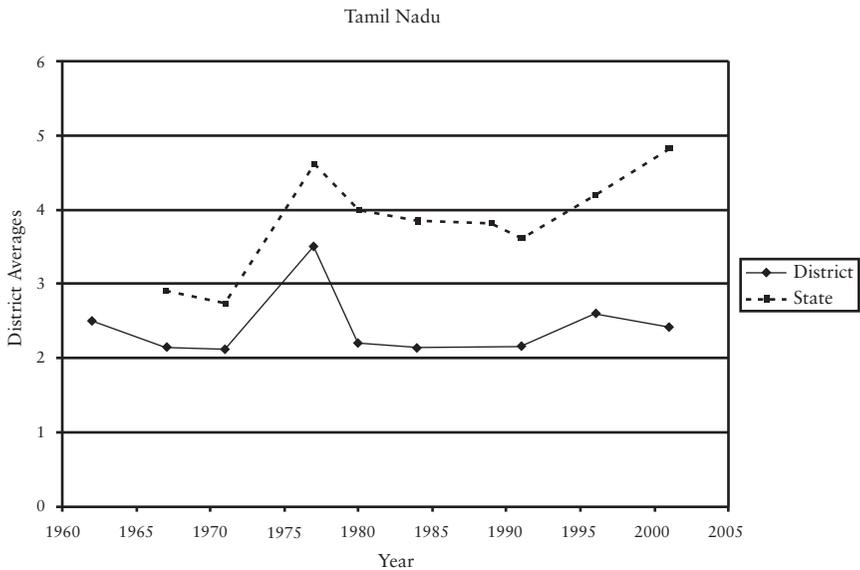


Figure 4a. Distribution of effective number of parties in Tamil Nadu

in 1996 and 4.8 in 2001) in Tamil Nadu have not affected district-level results (district average was 2.6 in 1996 and 2.4 in 2001). The district averages of the effective number of parties have remained close to 2, except for the 1977 election when the district average rose to 3.5 due to the ADMK's success in capturing vote share from both the Dravida Munnetra Kazhagam (DMK) and Congress (see Figure 4a). The increase in the number of parties at the state level is largely due to new regional parties – the Pattali Makkal Katchi (PMK), Marumalarchi Dravida Munnetra Kazhagam (MDMK), etc., that are now competitive in the state. These changes in the party system in Tamil Nadu and the fact that the effective number of parties at the district level remains close to two are consistent with our expectation that if only regional parties compete for control of a state government the effective number of parties getting votes at the district level need not be greater than two. Based on our argument, one of the reasons that the district averages have remained close to two is that the most competitive new parties (PMK, MDMK, etc.) are alliance partners with strong regional parties.

Distinctively national parties have limited presence in Tamil Nadu. In recent decades, the Congress has remained a modest force in state-level politics, i.e. not strong enough to form the state government but able to affect election outcomes through its choice of alliance partner. With the recent emergence of a multiparty system, Congress is no longer the only significant alliance partner. The Bharatiya Janata Party (BJP), with varying success, has attempted to increase its presence in Tamil Nadu. While its recent defeat in the Lok Sabha elections presents a blow to its image, future

success in gaining seats in the legislative assembly could affect the nature of district-level politics. The Communist Party of India (CPI) and the Communist Party of India (Marxist) (CPM) have had stagnating support in the state and oscillate between the major parties when forming pre-election alliances.

In effect, the number of regional parties that have emerged and the strikingly regional nature of successful party alliances in state assembly elections have helped to limit voters' district-level decisions. The pre-election alliances tend to focus around two major regional parties (DMK and AIADMK [All India Anna Dravida Munnetra Kazhagam]); voters seem focused on state-level competition (Subramanian, 2003) and therefore need not give priority to regional and national issues. The effects of federalism are curtailed, and district-level election results tend towards Duvergerian equilibrium with high levels of strategic voting (see Figures 4b and 4c).

Tamil Nadu's regional parties are increasingly interested in national government formation, and national parties attempt to form winning alliances in state assembly elections (Wyatt, 2002). Narendra Subramanian (2003) has noted that voter preferences regarding state-level competition affected voter decisions in the 1991 and 1996 parliamentary elections. These trends suggest that studies regarding the effects of federal arrangements on district-level electoral politics in Tamil Nadu will become more relevant with reference to parliamentary elections as well.

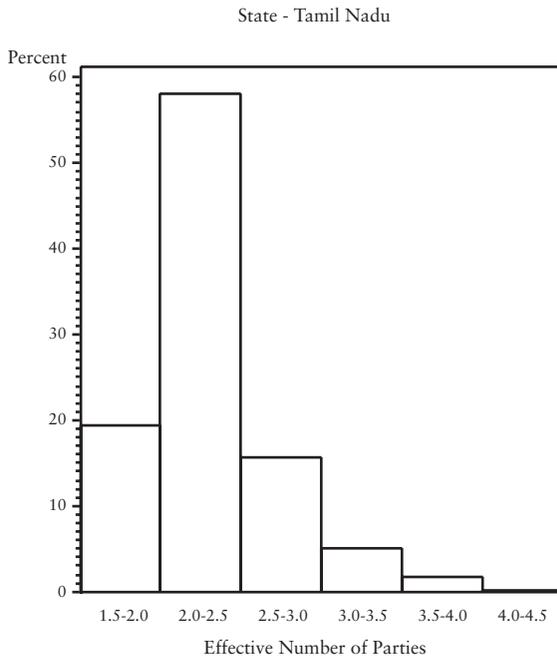


Figure 4b. Distribution of effective number of parties in Tamil Nadu

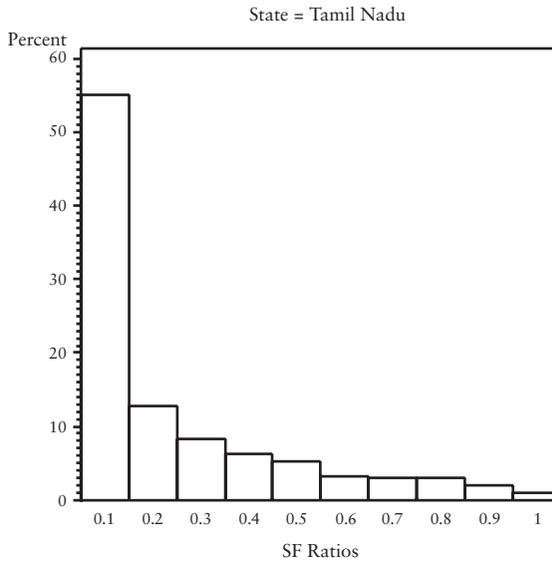


Figure 4c. Distribution of SF ratios in Tamil Nadu

In contrast to Tamil Nadu, Bihar and Uttar Pradesh present striking differences from Duvergerian patterns. Figures 5a and 5b are histograms of the effective number of parties for Bihar and Uttar Pradesh, respectively. Uttar Pradesh and Bihar are clear exceptions to Duverger's law and to the reformulations of researchers that have limited Duvergerian dynamics to the district level (Cox, 1997; Cox and Monroe, 1995; Gaines, 1997; Leys, 1959; Sartori, 1986; Wildavsky, 1959).

The effective number of parties at the district level in Bihar and Uttar Pradesh has long remained close to three. Figures 6a and 6b are histograms of the SF ratios in Bihar and Uttar Pradesh. The patterns in these figures indicate the difficulty that voters face when trying to predict election outcomes. In such cases, strategic voting decreases, voters vote for their preferred party and the SF ratio tends towards unity.

Electoral results in Bihar and Uttar Pradesh indicate that the type of state-level party competition has an effect on district-level voting decisions. Arguments, such as those of Chandra (2004), that attribute the high number of parties in Uttar Pradesh to ethnic identity are at best partial explanations for why so many parties get votes at the district level. The rise of ethnic (caste) parties in Uttar Pradesh is a phenomenon of the 1990s. Uttar Pradesh (and Bihar) has a long history of more than two parties getting a significant share of the vote in district elections. In both states, since the 1950s, the effective number of parties is close to three. Furthermore, in both states the SF ratio is neither close to zero (thereby yielding a Duvergerian equilibrium)

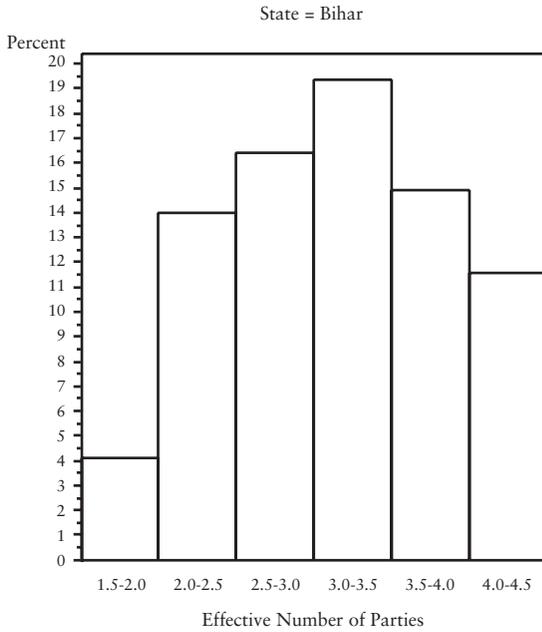


Figure 5a. Distribution of effective number of parties in Bihar

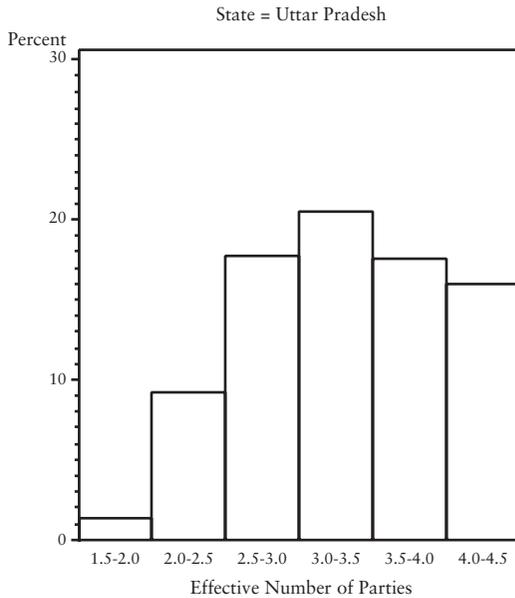


Figure 5b. Distribution of effective number of parties in Uttar Pradesh

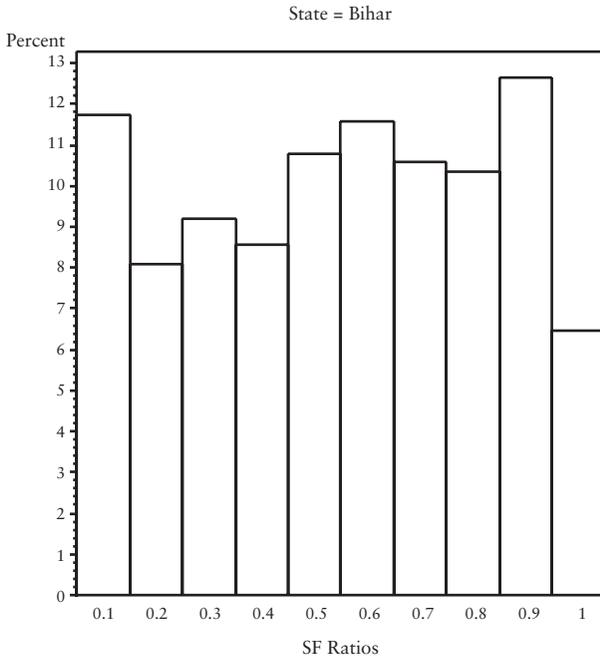


Figure 6a. Distribution of SF ratios in Bihar

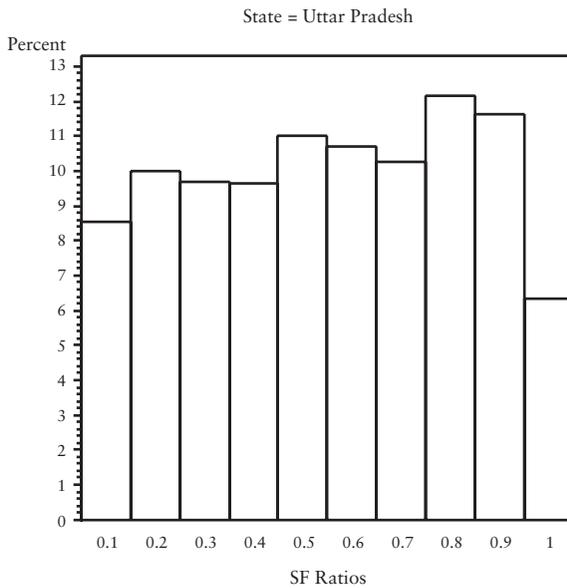


Figure 6b. Distribution of SF ratios in Uttar Pradesh

nor to 1 (the non-Duvergerian equilibrium). In other words, a logic of strategic voting that focuses only on district-level dynamics would not be able to account for the number of parties getting votes at the district level in Uttar Pradesh and Bihar. Our findings regarding the effects of federal arrangements may shed light on the long history of more than two parties getting votes at the district level in Bihar and Uttar Pradesh. Uttar Pradesh has had either more than two national parties or more than two national and regional parties competing for control of the state governments. The interest of national parties in these two states is due not only to their geographic proximity to central government institutions, but also to their combined allocation of almost 26 percent of the Lok Sabha's 545 seats. In such an environment, it seems only natural that national and regional issues can compete for salience, thereby allowing national and regional parties to gain votes.

A brief glance at the coefficients for the dummies for Bihar and Uttar Pradesh in Table 1 makes it quite clear that these states have large enough positive coefficients to raise the effective number of parties well above two. The distinct nature of district-level party politics in Bihar and Uttar Pradesh should therefore caution us about drawing generalizations about Indian party politics based on analyses of these two states.

There are other states in India where the effective number of parties does rise above two, but the spikes are limited to particular election years (e.g. Andhra Pradesh in 1978, Tamil Nadu in 1977, etc.). The overall tendency in these states is towards a two-party system at the district level. For example, in 1978 the effective number of parties at the district level in Andhra Pradesh suddenly jumped close to three, suggesting that the vote was fairly divided in that election. The effective number of parties dropped back to its normal levels in 1983 and 1985.

Figure 7 shows the effective number of parties in the districts in Andhra Pradesh from 1967. It was in 1983 that N. T. Rama Rao successfully created a new party – the Telugu Desam – which won the state assembly elections handily. One interpretation of the success of the Telugu Desam is the charismatic nature of its leader – N. T. Rama Rao. A similar conclusion can be drawn regarding M. G. Ramachandran's success in Tamil Nadu in the 1980s. What this analysis suggests is that fragmentation of the party system at the district level allows for the possibility of a political entrepreneur to build new coalitions, and may explain why individual entrepreneurs have been successful in Uttar Pradesh as well.

Caveats and Conclusion

In this article, we have shown that Duverger's law holds for state assembly elections in India, but there are clear violations of the law. We argued that these violations are more likely to occur in states where more than two

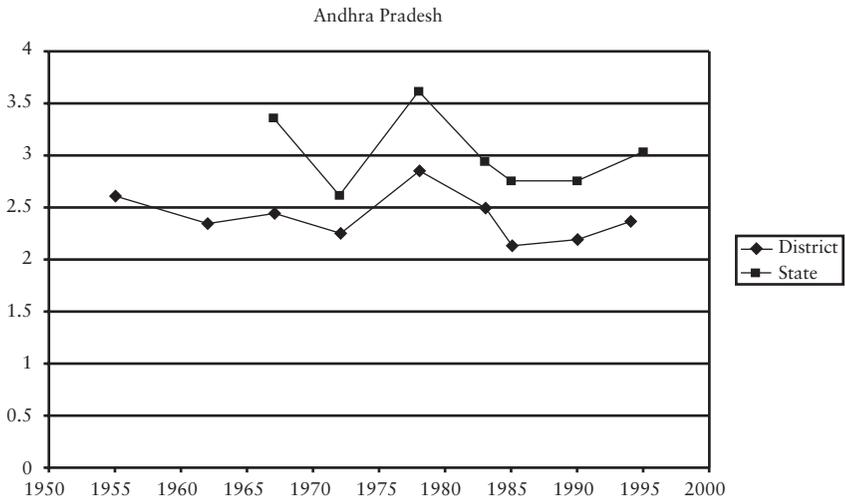


Figure 7. Effective number of parties in Andhra Pradesh

national parties or a combination of national and regional parties are competing for votes. Given that in the Indian federal system the national and state governments can exercise some authority in districts, voters may vote for national or regional parties even if those parties are not likely winners in the district. Is this analysis more generally valid? Future research on federal systems like Canada, where Duverger's law is also violated, would provide leverage on developing a more comprehensive answer. In addition, an in-depth analysis of Bihar and Uttar Pradesh may point to the interaction between current ethnic politics and federalism and further expose the socio-economic conditions under which Duverger's law breaks down at the district level.

Notes

We thank Rohini Somanathan for sharing a clean version of the state assembly data. Comments by Clemen Spiess, Subrata Mitra and Alexander Fischer during a seminar at the University of Heidelberg were especially helpful. Detailed readings and remarks by Ken Kollman and Irfan Nooruddin were particularly valuable, as were comments made by the three referees.

1 There is only limited evidence that strategic voting is widely prevalent. It has been difficult to discover definitive evidence from surveys that voters comprehend their full range of choices in manipulating election results (Abramowitz, 1995), and no one can reasonably say that many voters accurately calculate the optimal strategies given the institutional and informational constraints. However, scholars have found evidence from surveys and from aggregate election results, especially from

- Germany, Great Britain and Canada, that voters often split their votes. This shows that voters: give some thought to policy outcomes as opposed to merely following deep partisan attachments, refrain from supporting sure winners in order to improve representation of minor parties, and jump on the bandwagon of winners rather than vote for sure losers (Alvarez and Nagler, 2000; Bawn, 1993; Blais and Nadeau, 1993; Cain, 1978; Fisher, 1973; Galbraith and Rae, 1989; Johnston and Pattie, 1991; Kim and Fording, 2001; Laver, 1987; Niemi et al., 1993; Tsebelis, 1986).
- 2 We use the word 'district' rather than 'constituency' to be consistent with the literature on parties and party systems.
 - 3 We have excluded Punjab due to the fact that the turnouts at some elections held there during the 1980s and early 1990s were very low. Including the data from Punjab does not change the results.
 - 4 We also fit the model to the data after removing outliers in order to account for the effect of overly influential observations. The DFITS statistic was used to identify influential observations, and a size-adjusted cutoff of $2\sqrt{p/n}$, where p is the number of parameters in the model and n is the number of observations, determined which observations were to be excluded from the analysis (Belsley et al., 1980). This statistic identifies any combination of X's that could unduly affect our regression and/or major parameter estimates of interest. Calculations of DFITS statistics found that the outliers are randomly distributed across constituencies – i.e. no one constituency is consistently an outlier. The results from the models with outliers excluded are not substantively different.

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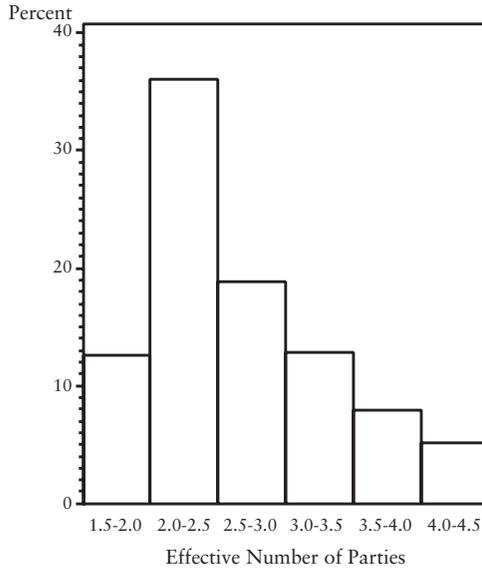
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Appendix A. State assembly elections included in analysis dataset

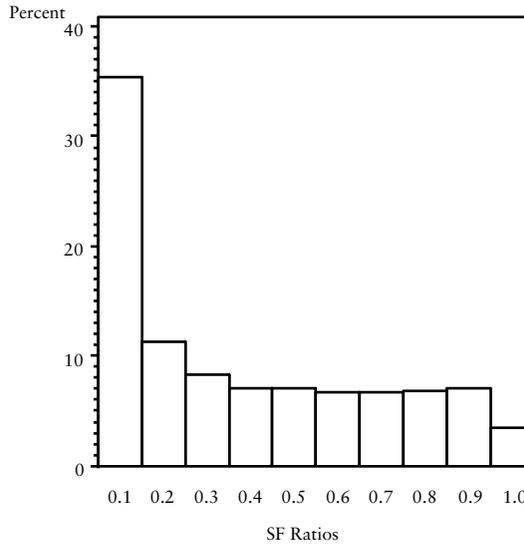
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Andhra Pradesh	1978, 1983, 1985, 1989, 1994
Assam	1978, 1983, 1985, 1991, 1996, 2001
Bihar	1980, 1985, 1989, 2000
Gujarat	1980, 1985, 1990, 1998
Haryana	1982, 1987, 1991, 2000
Karnataka	1978, 1983, 1985, 1989, 1994
Kerala	1980, 1982, 1987, 1991, 1996, 2001
Madhya Pradesh	1980, 1985, 1990, 1993, 1998
Maharashtra	1978, 1980, 1985, 1990, 2000
Orissa	1980, 1985, 1990, 2000
Rajasthan	1980, 1985, 1989, 1991, 1993
Tamil Nadu	1980, 1984, 1991, 1996, 2001
Uttar Pradesh	1980, 1985, 1989, 1991, 1993
West Bengal	1982, 1987, 1991, 1996, 2001

Appendix B.

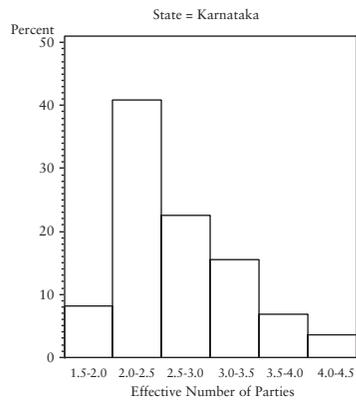
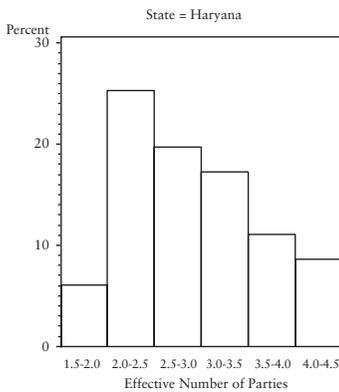
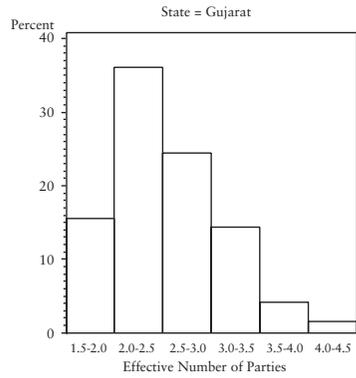
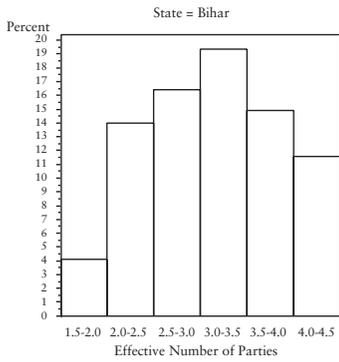
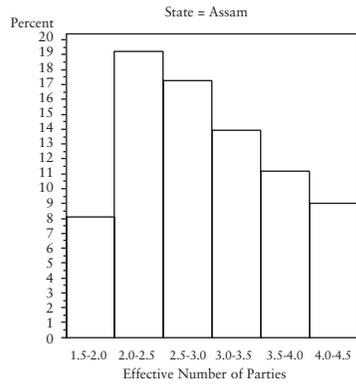
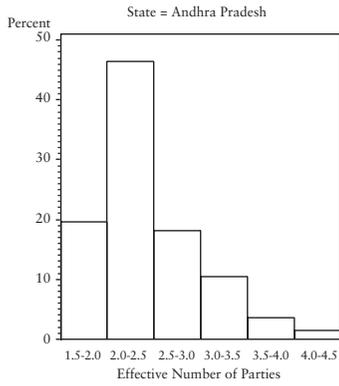
Histogram of effective number of parties (1967 onwards)



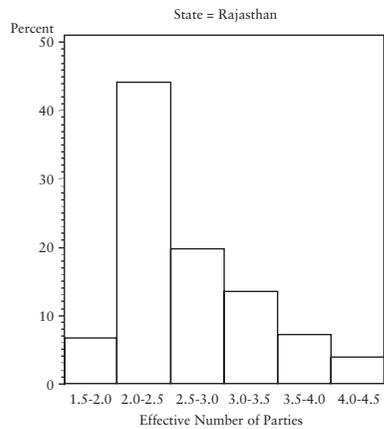
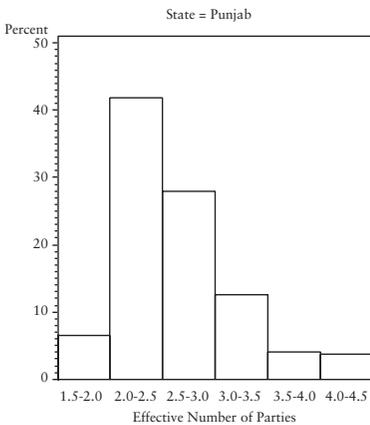
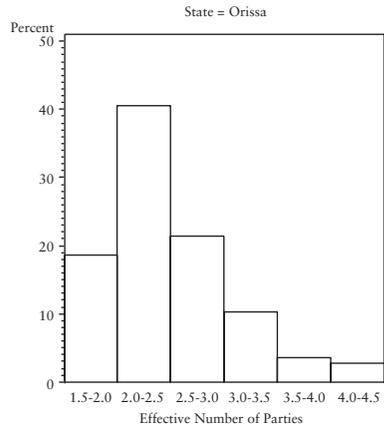
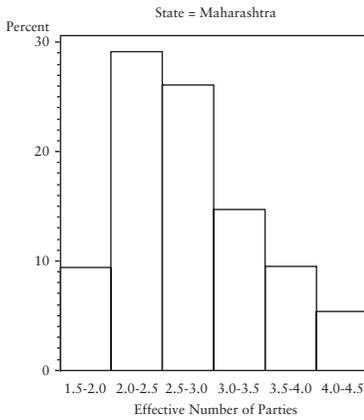
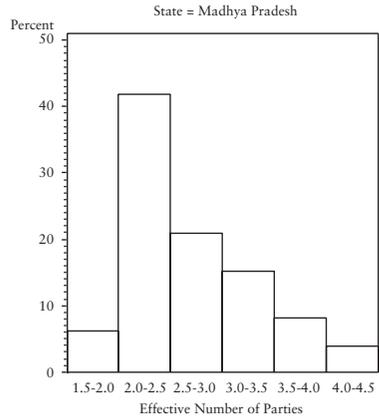
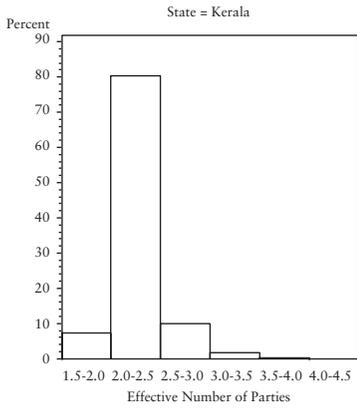
Histogram of SF ratios (1967 onwards)



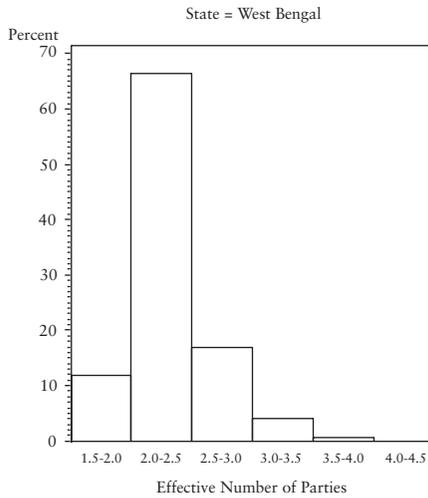
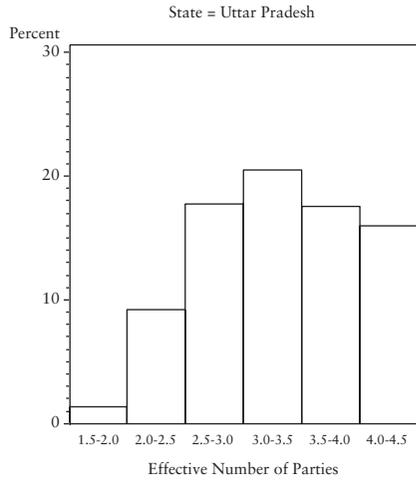
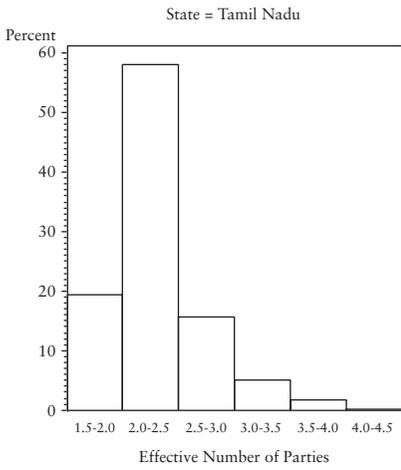
Appendix C. Histograms of the effective number of parties by state



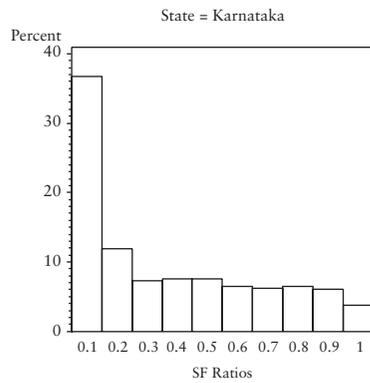
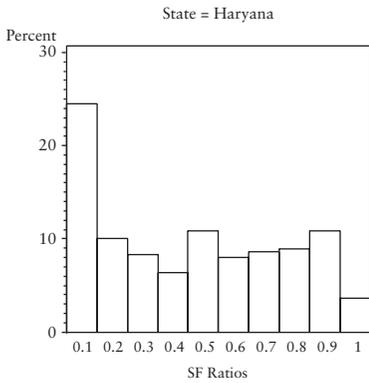
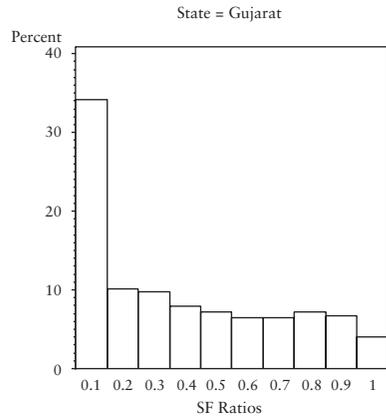
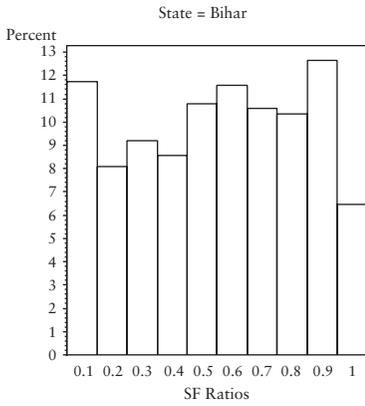
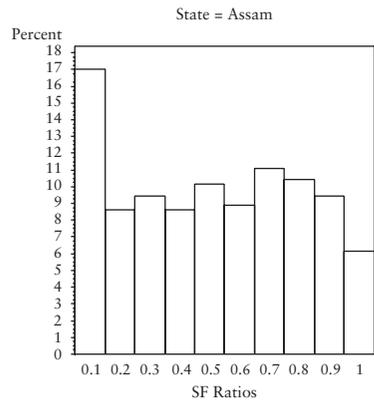
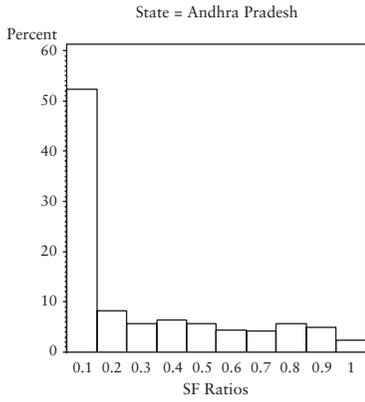
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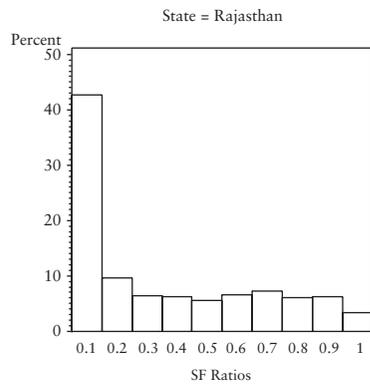
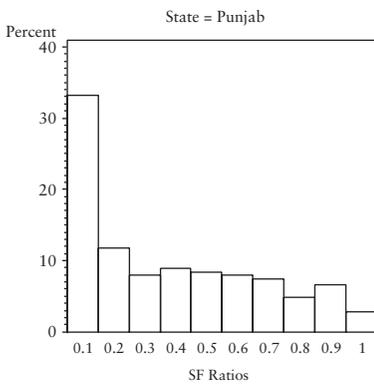
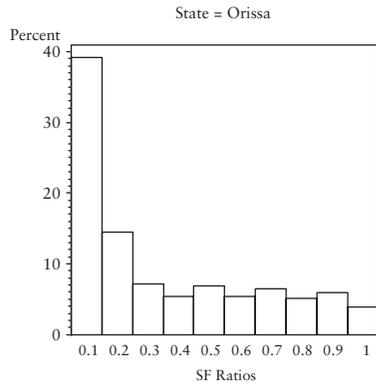
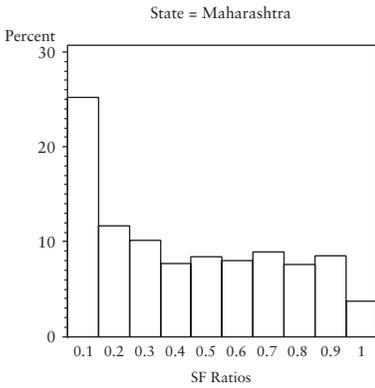
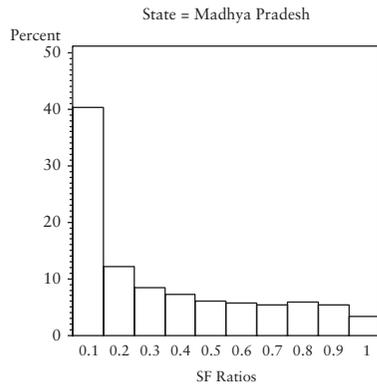
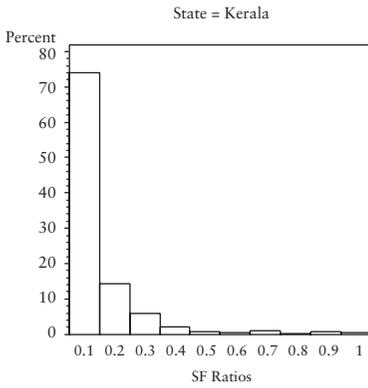
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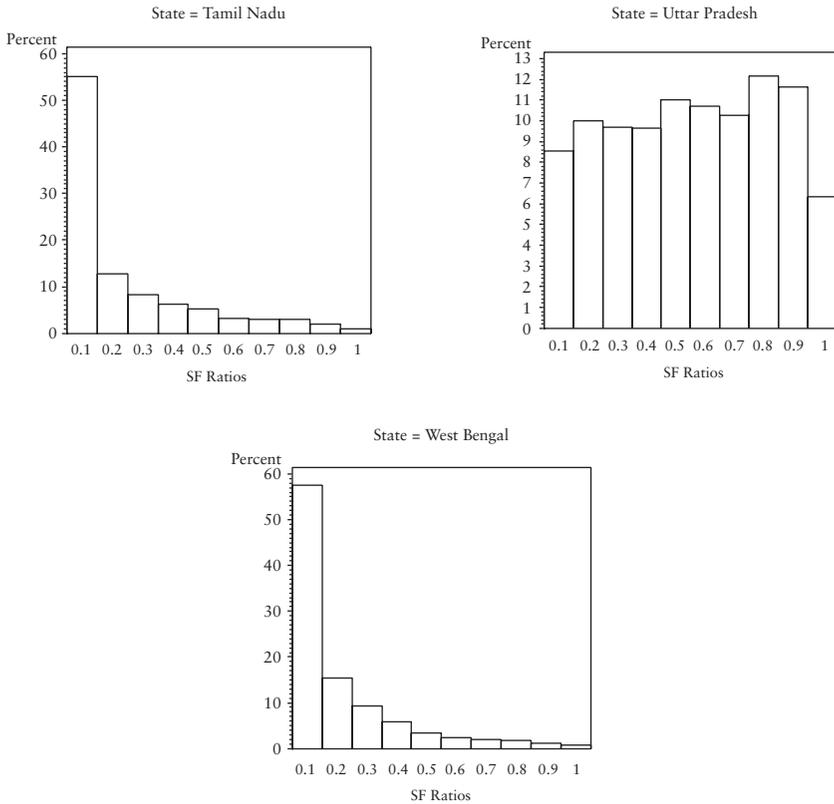
Appendix D. Histograms of SF ratios by state



Appendix D continued



Appendix D continued



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Paper submitted 4 June 2004; accepted for publication 28 December 2004.