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Outcome of FPTP in a Diversified Society: Evidence on Disproportionality from Lok Sabha Constituencies

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Abstract

Democracy across the world has witnessed the evolution of the electoral system. The First-past-the-post (FPTP) system practiced in India has certain disadvantages, such as disproportional representation. This paper analyses the election outcome in FPTP electoral system in a diverse society like India using constituency-level information for the Lok Sabha election. I examine how social diversity, religious diversity, and fractionalization affect the outcome in the FPTP system. The fractionalization index for religious diversity, polarization index for religious polarization, and Herfindahl–Hirschman Index for vote concentration are formed for Lok Sabha constituencies to understand the impact of diversity on vote concentration as well as vote share of winning candidates. Further regression analysis is done where state-specific and time-specific effects are controlled. It is found that fractionalization i.e. religious diversity affects the vote concentration negatively. It is also found that on average the vote concentration for SC/ST reserved constituencies is lower than general constituencies. This suggests that religious diversity reduces the vote concentration which further leads to disproportionality. It is important to think of ways to provide the space for the parties which are getting votes but not getting seats in Lok Sabha, especially for reserved constituencies.

Keywords: Religious Polarization, Electoral System, Religious Fractionalization, Vote Concentration

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1. INTRODUCTION

The role of social and religious polarization on development is widely discussed. Banerjee (1997) and Banerjee and Pande (2007) suggest that ethnic polarization affects the efficiency of democratic systems, through inefficient politicians winning elections because of caste affiliations. On the other hand, Alesina, et.al. (1999), Bardhan and Mukherjee (2012), and Afridi, Iversen and Sharan (2016) suggest that polarization affects development, through a decline in investments in local public goods. Banerjee and Somanathan (2007) also argue that access to public goods is adversely affected by religious fragmentation.

Polarization and fragmentation also play an important role in election outcomes. Recent works by Hansen (2001), Shah (2007), and Banerjee (2007) aim to understand the association between religious nationalism, caste, and politics at the local level. In this study, I have tried to understand the role of religious polarization and diversity in the determining the outcome of Lok Sabha elections.

India follows the First-past-the-post (FPTP) system. FPTP is viewed as the simplest form of the electoral system, as each voter can give one vote and the candidate with the highest number of votes wins – even without necessarily having the absolute majority in the constituency.

FPTP has certain disadvantages.

- FPTP favours large parties, and can exclude the small and regional parties, which mean the FPTP system tends to create a scenario where a single party forms the government[1]. By contrast, proportional representation (PR) leads to a multiparty system.
- FPTP also creates a discrepancy in the vote share obtained by the parties and the share of seats they win in the legislature. Voters may not vote for their most preferred candidate in an FPTP system, to avoid 'wastage' of their vote (Monroe, 1995). This creates a problem for small parties.

As far as Indian democracy is concerned, even though the FPTP system is implemented, small and regional parties are established and have survived. Indian democracy, however, does witness the discrepancy in vote share and seat share.

Duverger (1963) suggests that

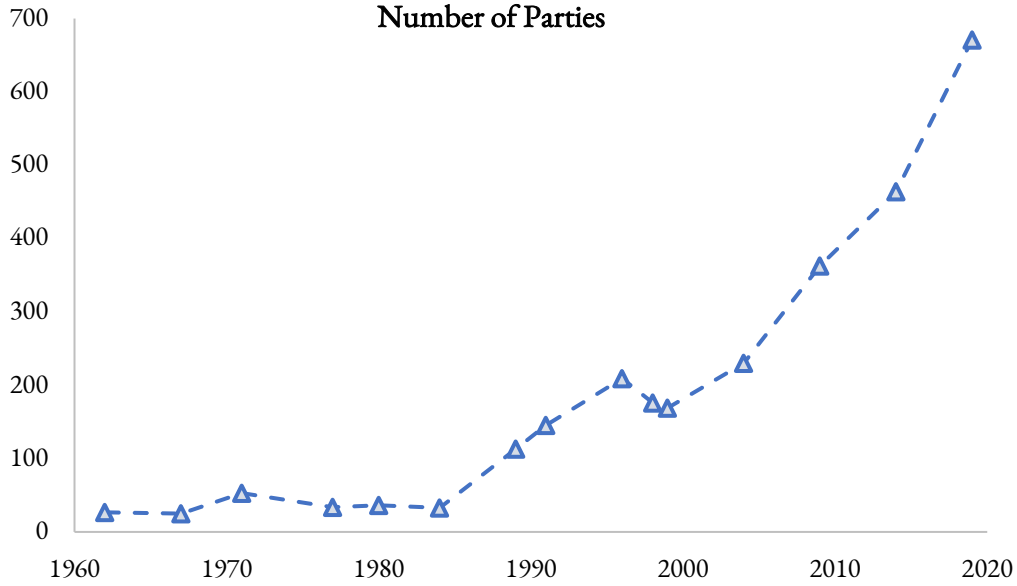
1. Proportional representation tends to lead to the formation of many independent parties,
2. The two-ballot majority system tends to lead to the formation of many parties that are allied with each other,
3. The plurality rule[2] tends to produce a two-party system.

India, contrary to this theory, has multiparty system with high level of disproportionality, and a clearly dominant party after votes are converted into seats (Sartori, 1986; Chhibber and Murali, 2006).

Figure 1 suggests that the number of political parties is increasing rapidly over a period of time. With coalition and alliances, the number of parties forming the government is also increasing. Even under an FPTP system, a multiparty structure is developing. Chhibber and Murali (2006) find that 'Duverger's law' gets violated in states like Bihar and Uttar Pradesh, whereas in the Southern states,

the situation is close to Duverger's law. Chandra (2007) suggests that ethnic identity can be a reason for high number of parties in Uttar Pradesh which violates the Duverger's law. The geographically-concentrated minority parties can also play an important role in explaining this trend.

Figure 1: Total Number of Political Parties (Including State National and Registered (Unorganized) Parties



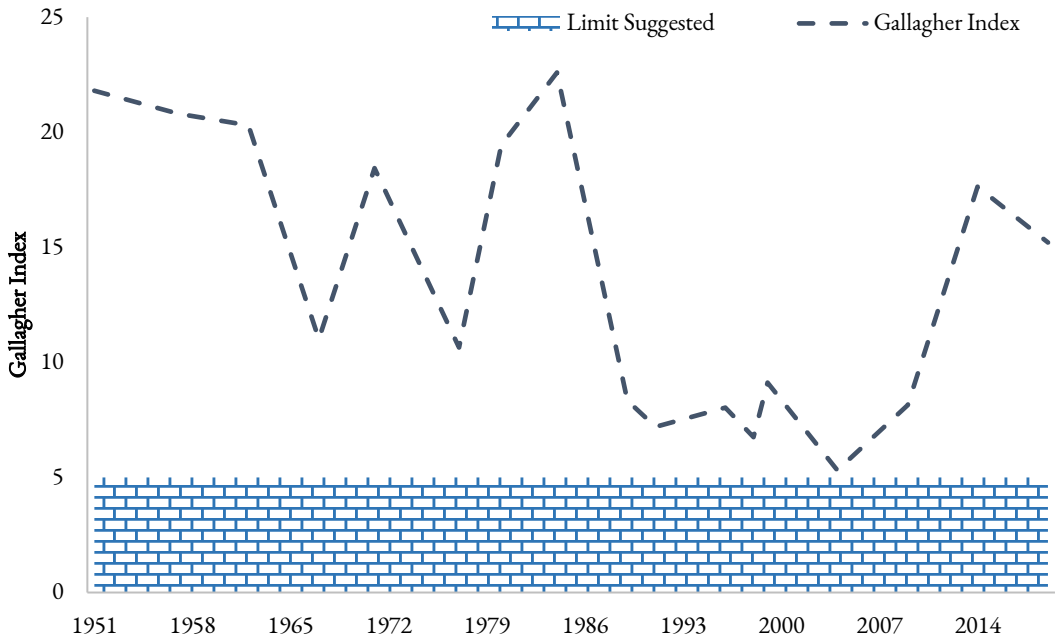
Data Source: Election Results, Full Statistical Reports, the Election Commission of India (https://eci.gov.in/statistical-report/statistical-reports/)

Figure No. 2 shows the trends for Gallagher Index. Gallagher (1991) proposed the disproportionality index, also known as the Gallagher Index, which measures the disproportionality between the seats won by the party and votes received by the party. It is calculated as:

$$\text{Gallagher Index} = \left(\frac{1}{2}\sum_{i=1}^{n}(v_i - s_i)^2\right)^{\frac{1}{2}}$$

where v_i and s_i are percentage of vote and seat obtained by the i^{th} party.

Figure 2: Disproportionality for Indian Lok Sabha Election



Data Source: Author uses the data from Election Results, Full Statistical Reports, the Election Commission of India (https://eci.gov.in/statistical-report/statistical-reports/) to calculate the Gallagher Index to measure the disproportionality.

The higher the Gallagher index, higher will be the disproportionality, which means the parties winning higher seats are actually receiving fewer votes. Therefore, the government formed by these parties can be viewed as relatively less representative.

The Canadian Parliament's Special Committee on Electoral Reform has suggested that, for Canada, the Gallagher Index should be 5 or lower. This Committee also recommends the government take efforts to reduce the Gallagher Index, so that more efficient (i.e., inclusive) representation can be brought into politics.

For India, the Gallagher Index is higher than 5. Tillin (2015) also finds disproportionality in the national election results. The Law Commission of India's 2015 report on electoral reforms similarly highlights the disproportionality; they find that even if the FPTP system supports a single major party, the government can't uphold majoritarianism in a multiparty system because a candidate who receives around 20-30% of the votes cast in their constituency can manage to win3.

The Report of the Committee on Electoral Reforms (1990) saw disagreement among the member regarding the continuation of the FPTP system, precisely due to the issue of disproportionality4. Mishra (2018) suggests that elected representatives, as they receive fewer than 50% of the votes cast in their constituencies do not represent the majority of the population.

2. Data and methodology

To understand why disproportionality exists, a constituency-level analysis is required. In this study, I have tried to understand how religious polarization and diversity are affecting the election outcome.

Easterly and Levine (1997), Collier and Hoffler (2004), and Miguel, Satyanath and Sergenti (2004) use the fractionalization index[5] to identify social diversity. For polarization, Esteban and Ray (1994) and Wolfson (1994) propose the polarization index. The fractionalization index and polarization index have been used to measure social diversity and political polarization in the society respectively. In this work, the polarization index proposed by Montalvo and Reynal-Querol (2005) is used; this is also known as Reynal-Querol index (Reynal-Querol, 2002).

Both indices range from 0 to 1. More the fractionalization index, more the diversity in society. In other words, a higher fractionalization index suggests that there is a larger number of social groups in that society. Polarisation is a measure of the relative size of those groups, where a higher polarization index suggests that one group among all social groups tends to have more representation in the society, i.e. that one social group dominates others in terms of population share.

a. $\text{Fractionalization Index} = 1 - \sum_{i=1}^{n}\left(\text{Share of } i^{th} \text{religion in total population}\right)^2$

b. $\text{Polarization Index} = 1 - \sum_{i=1}^{n}\left(\left(\frac{0.5 - \text{Share of } i^{th} \text{religion in total population}}{0.5}\right)^2 * \text{Share of } i^{th} \text{religion in total population}\right)$

There are two challenges encountered while calculating the fractionalization and polarization indices.

1. The first challenge is predicting the population for election years, as census year (1991, 2001, 2011) and elections years (1991, 1996, 1998, 1999, 2004, 2009) are different. To predict the population for every religious group at district level, the growth rate for each such group at district level is calculated based on census data, based on which the population is predicted for election years.
2. The second challenge is matching the district information with Lok Sabha constituencies. In many cases, the district itself is a Lok Sabha constituency; however, one district may have more than one Lok Sabha constituency, or one Lok Sabha constituency may be shared by more than one district. In the first case, where one district has more than one Lok Sabha constituency, the district-level population is divided into the constituencies proportional to the valid votes of the constituencies. In the second case, where one constituency has more than one district, the population of these districts is added to get the population at constituency level.

Further, to understand the election results, two key variables are used as dependent variables. First, the concentration of votes at constituencies, and second, vote share of winning candidates. These

variables represent whether there is concentration at the constituency level, and whether the winning candidate is getting more than 50% of the votes cast.

The Herfindahl-Hirschman Index (HHI)[6] is calculated by adding the square of vote shares of all candidates in each constituency. HHI shows the voting concentration, i.e. a higher HHI value suggests that one candidate has managed to win high vote share. Lower HHI and lower vote share of winning candidate suggests that votes are getting divided among other candidates too.

Since the candidate with the highest number of votes wins the election in an FPTP system, voters may prefer a given candidate, yet vote for another, whom they think is more likely to win (so that their vote is not 'wasted'). At the national level, this behaviour is reflected in vote-seat disproportionality.

$$HHI = \sum_{i=0}^{n} x_i^2$$

Where x_I is vote share of i^{th}candidate in given constituency.

Further it is also interesting to understand how vote concentration changes for Scheduled Caste or Scheduled Tribe (SC/ST) reserved constituencies compared to general constituencies. Therefore, a dummy variable for reserved constituencies is used in the analysis. Further, since concentration and vote share of wining candidates can be affected by the number of candidates contesting the elections in given constituency, incumbency, number of terms, and which party the candidates belong to, I introduce controls for each of these variables into the analysis.

Since the 2011 census is the most recent available, extrapolation of population data after 2011 is avoided. The focus of the study is thus on the 1991, 1996, 1998, 1999, 2004, and 2009 Lok Sabha elections; it is interesting to focus on the post-1991 period, where alliance politics becoming a routine.

Every state can have a different pattern of voting; to control for this, state dummy variables are included, to allow for state-specific effects. Adding to the state-specific effect, time-specific effect is also controlled. Appendix table no. 1 summarizes the variables which are used in this work.

Equation 1:

$$HHI_i = \alpha + \beta_1 * \text{Fractionalization Index}_i + \beta_2 * \text{Polarization Index}_i + \beta_3 * \text{Incumbent}_i + \beta_4 * SC_i + \beta_5 * ST_i + \beta_6 * \text{Same Party}_i + \beta_7 * \text{Number of Candidates} + \beta_8 * \text{Number of Terms}_i + \sum_{i=2}^{n} D_i * \text{State}_i + \sum_{i=2}^{n} \theta_i * \text{Year}_i + \varepsilon_i$$

In equation one, HHI is the dependent variable; fractionalization index, polarization index, incumbent dummy variable, same party dummy variable, number of candidates, and number of terms are independent variables.

Equation 2:

$$\text{Vote Share of Winner}_i = \alpha + \beta_1 * \text{Fractionalization Index}_i + \beta_2 * \text{Polarization Index}_i + \beta_3 * \text{Incumbent}_i + \beta_4 * SC_i + \beta_5 * ST_i + \beta_6 * \text{Same Party}_i + \beta_7 * \text{Number of Candidates} + \beta_8 * \text{Number of Terms}_i + \sum_{i=2}^{n} D_i * \text{State}_i + \sum_{i=2}^{n} \theta_i * \text{Year}_i + \varepsilon_i$$

In equation two, independent variables are the same, but the dependent variable is the vote share of the winning candidate. In both equations, state dummies and time dummies are incorporated to control for state-specific and time specific effects. Appendix table 4 explains the coefficient in equation one and equation two.

3. RESULT

Appendix table 5 shows the result for Equation 1.

- In three models, the fractionalization index has statistically significant and negative impact on HHI.
- In all models, the coefficient of SC and ST dummies are statistically significant and negative.
- In all models, the number of candidates has a statistically significant and negative impact on HHI, albeit a very small one.
- In all models, the number of terms served by the winning candidate has a statistically significant and positive impact on HHI.

Appendix table 6 shows the result for Equation 2.

- In three models, the fractionalization index has a statistically significant and negative impact on vote share of the winning candidate.
- In three models, the coefficient of the ST dummy is statistically significant and negative.
- In three models, the number of candidates has a statistically significant and negative impact on vote share.
- In all models, the number of terms already served by the winning candidate has a statistically significant and positive impact on their vote share.

Both the HHI and the vote share of the winner are negatively impacted when the fractionalization index is included. The fractionalization index provides insight into the religious diversity. The more diverse the population, the more likely it is that votes will be split. As a result, there will be a lesser concentration of votes in a society with a high level of diversity.

Due to the fact that votes are being split, whomever comes out on top will also obtain a low vote share. Since the winner is determined by the number of votes received, and since the winner's share of the vote is decreasing as a result of increasing diversity, the disproportionality of representation at the national level – i.e. seats held by candidates who received a low vote share, hence are less representative of their constituents – is growing along with the religious diversity.

It is interesting to note that the concentration of votes in reserved seats (SC/ST) is, on average, lower than in general constituencies. This indicates that votes are being split more in SC/ST reserved constituencies in comparison to general constituencies. When compared to general constituencies, reserved seats often result in the winner obtaining a smaller share of the votes cast. This suggests that in reserved seats, parties who are not winning are nevertheless able to get a good percentage of vote shares.

Both the extent of concentration and the vote share are being influenced by another factor: the number of terms. This has a positive and significant influence on both the vote share and the HHI, which shows that candidates with a large number of terms manage to obtain the greater vote share, which also translates into a higher degree of voting concentration.

4. CONCLUSION

It is a well-known fact that the FPTP system causes disproportionality. This study seeks to explain how the FPTP system contributes to disproportionality in diverse societies. In diversified constituencies, votes are distributed among a larger number of parties, which results in a lower vote concentration in any one party, as well as a lower vote share for the winner of that constituency.

This suggests that in the more diverse constituencies, the parties that did not end up winning the election are also attracting voters; however, because the winner of an election under the FPTP system is the candidate who receives the highest number of votes, these preferences do not end up being represented in the house. This results in a disproportionality, since parties are getting votes yet are unable to win the election as a result of the situation.

When compared to general constituencies, the vote concentration in SC/ST reserved constituencies is much lower. The parties who ended up losing the election in SC/ST reserved constituencies have been able to get votes, but they were unable to reflect these votes in the house. Therefore, it is vital to discover the means by which these parties may be provided a place in the house.

The problem of disproportionality is a worrying aspect of the FPTP system. Are parties becoming seatless even though voters are preferring them? If candidates are winning the election by gaining 30–40% of the vote, then what happens to the remaining 60–70% of the vote? If this also occurs in reserved constituencies, then the issue of disproportionality becomes more severe. It becomes relevant to ask whether it is fair to reserve seats instead of votes. These are important questions that need answers.

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APPENDIX

Table 1: Summary of variables

Variables	Description in general sense	How indices are implemented in this work	Interpretation
Fractionalization Index	Easterly and Levine (1997) discusses the fractionalization index to identify the social diversity.	In this work, census data is used. As religious data is available compared to caste-based data, religious data is used to calculate the fractionalization index.	High fractionalization index suggests that there are large numbers of religious groups in a given constituency.
Polarization Index	Polarization index discussed by Montalvo and Reynal-Querol (2005) and Reynal-Querol (2002) gives an idea about polarization across the social groups. It helps to identify whether one group has higher representation in society compared to others.	In this work census data is used. As religious data is available compared to caste-based data, religious data is used to calculate the polarization index.	High polarization index suggests that one religious group has higher representation or higher population compared to other religious groups in a given constituency.
HHI	Hirschman (1958) discusses Herfindahl-Hirschman Index (HHI). HHI helps to understand the market concentration and competitiveness.	HHI in this work is used to calculate the voting concentration. Vote shares received by the candidates in a given constituency are used to calculate the HHI.	Higher HHI suggests that the concentration of votes is high, which suggest the winning candidate is dominating the other candidates in terms of votes.
Vote share of winning candidate	Vote share of winning is calculated as: $\left(\frac{Votes\ received\ by\ winnign\ candidates}{Total\ votes\ in\ given\ constituency}\right) * 100$ Data from Election Commission of India is used.		Vote share is the percentage of total votes received by the winning candidate.

Incumbent (dummy variable)	Data available from Election Commission of India is used to identify whether a given candidate won in the immediate previous election.	This is a dummy variable. It is one if the given candidate is incumbent and zero otherwise.
Same party (dummy variable)	Data available from Election Commission of India is used to identify whether a given candidate is contesting the election from the same party as when they contested before, or if they have changed their party affiliation.	This is a dummy variable. It is one if given candidate is contesting the election from same party which they were representing in the previous election.
Number of candidates	Data available from Election Commission of India is used to identify the total number of candidates contesting the election.	This shows the total number of candidates contesting the election in given constituency.
Number of terms	Data available from Election Commission of India is used to identify how many times a given candidate has won the elections previously.	This shows how many times a given candidate managed to win the election in the past.
SC dummy variable	Notifications from Election Commission of India are used to identify whether a given constituency is reserved for SC candidates.	This is a dummy variable. It is one if a given constituency is reserve for Scheduled Caste and zero otherwise.
ST dummy variables	Notifications from Election Commission of India are used to identify whether a given constituency is reserved for ST candidates.	This is a dummy variable. It is one if a given constituency is reserve for Scheduled Tribe and zero otherwise.

Table 2: Descriptive Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
HHI	2,803	0.372025	0.085857	0.1	0.813008
Vote share	2,803	47.82154	10.20984	15.04	91.67
Fractionalization Index	2,804	0.272003	0.155018	0.000277	0.730423
Polarization Index	2,804	0.643503	0.284259	0.002994	0.999764
Number of Candidates	2,805	13.86346	13.57579	1	456
Number of Terms	2,805	2.276649	1.588039	1	10

Table 3: Descriptive Statistics (State-wise)

State	HHI	Vote share	Fraction-alization Index	Polarization Index	Number of Candidates	Number of Terms
Andaman and Nicobar	0.40854	50.855	.	.	8.333333	4.833333
Andhra Pradesh	0.39868	49.48293	0.204475	0.511016	12.01596	2
Arunachal Pradesh	0.417678	54.84	.	.	4.25	1.583333
Assam	0.313515	46.12532	0.379434	0.825199	9.367089	2.164557
Bihar	0.356299	46.72661	0.274368	0.656841	16.38976	2.192913
Chandigarh	0.340187	43.675	0.262676	0.730676	28	2.166667
Chhattisgarh	0.370729	47.02143	0.083478	0.217156	12.92857	2.214286
Dadra and Nagar Haveli	0.403404	54.68	0.11099	0.325983	5.666667	3.5
Daman and Diu	0.408417	51.59833	0.232871	0.61312	6.666667	1.666667
Delhi	0.414797	49.21207	0.358731	0.845813	38.68966	2.068966
Goa	0.368921	45.931	0.478103	0.95365	10.9	1.8
Gujarat	0.43665	51.4597	0.190185	0.494497	11.65909	2.606061
Haryana	0.320863	45.80614	0.164201	0.421461	18.45614	1.842105
Himachal Pradesh	0.456067	53.869	0.061711	0.164628	8.1	2.35
Jammu and Kashmir	0.318715	42.49143	0.36427	0.99	13.92857	1.535714
Jharkhand	0.248959	43.02684	0.36752	0.765092	15.47368	2.421053

Karnataka	0.35773	47.59603	0.272646	0.679166	14.14103	2.173077
Kerala	0.420849	51.52826	0.511832	0.969302	8.669725	2.477064
Lakshadweep	0.490385	56.86167	.	.	3	6
Madhya Pradesh	0.388574	47.82742	0.150995	0.411924	15.68681	2.67033
Maharashtra	0.38557	48.1836	0.335756	0.776998	12.8692	2.253165
Manipur	0.275831	41.84417	.	.	9.083333	1.75
Meghalaya	0.427055	55.221	0.565133	0.987269	5.9	3.6
Mizoram	0.414687	50.535	.	.	5.166667	1.666667
Nagaland	0.584948	72.415	.	.	3.5	1.333333
Odisha	0.407923	52.21125	0.103504	0.274171	7.455357	2.446429
Puducherry	0.34621	44.146	0.191402	0.519889	16	1.6
Punjab	0.39478	50.31197	0.45092	0.978622	12.0303	1.787879
Rajasthan	0.413416	49.40205	0.210558	0.552249	14.56818	2.25
Sikkim	0.576233	70.29333	.	.	5.333333	1.666667
Tamil Nadu	0.419308	52.28974	0.214247	0.545038	13.43455	1.879581
Telangana	0.282539	39.59333	0.421402	0.829392	16.25	1.666667
Tripura	0.482455	61.21538	.	.	8.076923	3.076923
Uttar Pradesh	0.282049	39.14889	0.275858	0.670787	19.54989	2.05765
Uttarakhand	0.340077	45.8	0.292704	0.655331	12.14286	2.571429
West Bengal	0.401048	52.58014	0.369467	0.841188	8.213636	3.109091
Total	0.372025	47.82154	0.272902	0.644683	13.86346	2.276649

Table 4: Interpretation of coefficient

Coefficient	Interpretation in equation one	Interpretation in equation two
β_1	Represents the impact of fractionalization index on HHI. If it is positive, then an increase in fractionalization index increases the HHI.	Represents the impact of fractionalization index on vote share. If it is positive, then an increase in fractionalization index increases the vote share of the winning candidate.
β_2	Represents the impact of polarization index on HHI. If it is positive, then an increase in polarization index increases the HHI.	Represents the impact of polarization index on vote share. If it is positive, then an increase in polarization index increases the vote share of the winning candidate.
β_3	It is a coefficient of incumbent dummy. It shows on an average how much difference exists between HHI of the constituency in which incumbent candidate wins the election and HHI of other constituencies.	It is a coefficient of incumbent dummy. It shows on an average how much difference exists between vote share of the winning candidate in a constituency in which the incumbent candidate wins than that in other constituencies.
β_4	It is a coefficient of SC dummy. It shows on an average how much difference exists between HHI of SC reserved constituency and general constituencies.	It is a coefficient of SC dummy. It shows on an average how much difference exists between vote share of the winning candidate in an SC reserved constituency and general constituencies.
β_5	It is a coefficient of ST dummy. It shows on an average how much difference exists between HHI of ST reserved constituency and general constituencies.	It is a coefficient of ST dummy. It shows on an average how much difference exists between vote share of the winning candidate in an ST reserved constituency and general constituencies.
β_6	It is a coefficient of same party dummy. It shows on an average how much difference exists between HHI of the constituency where a candidate contesting from the same party wins the election and other constituencies.	It is a coefficient of same party dummy. It shows on an average how much difference exists between vote share of the winning candidate in a constituency where that candidate is contesting from the same party as in previous elections, and that in other constituencies.

β_7	Represents the impact of number of candidates on HHI. If it is positive, then an increase in number of candidates increases the HHI.	Represents the impact of number of candidates on vote share. If it is positive, then an increase in number of candidates increases the vote share of the winning candidate.
β_8	Represents the impact of number of terms already served by the winning candidate on HHI. If it is positive, then an increase in the number of terms increases the HHI.	Represents the impact of number of terms already served by the winning candidate on their vote share. If it is positive, then an increase in number of terms increases the vote share.
D	It is a coefficient of state dummy. It allows us to control for state-specific effects.	
θ	It is a coefficient of year dummy. It allows us to control for time-specific effects.	

Table 5: Regression results for Equation 1

HHI (Concentration of Votes)	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Fractionalization Index	-0.141** (0.01)	-0.035** (0.03)		-0.119** (0.02)	-0.031 (0.05)	-0.011 (0.17)
Polarization Index	0.059** (0.03)		-0.012 (0.15)	0.049 (0.08)		
Incumbent (1 if incumbent)	0.003 (0.40)	0.003 (0.43)	0.003 (0.44)	-0.001 (0.87)	-0.001 (0.82)	-0.001 (0.82)
Reserved for SC (1 if constituency is reserved for SC)	-0.014*** (0.00)	-0.014** (0.01)	-0.014*** (0.00)	-0.013** (0.01)	-0.012** (0.010	-0.012** (0.01)
Reserved for ST (1 if constituency is reserved for ST)	-0.028*** (0.00)	-0.029*** (0.00)	-0.030*** (0.00)	-0.025** (0.01)	-0.027*** (0.00)	-0.027*** (0.00)
Same Party (1 if candidate contesting the election with same party)	0.000 (0.93)	0.001 (0.88)	0.001 (0.91)	0.014** (0.03)	0.014** (0.03)	0.014** (0.03)
Number of Candidates Contesting the election	-0.001*** (0.00)	-0.001*** (0.00)	-0.001*** (0.00)	-0.001*** (0.00)	-0.001*** (0.00)	-0.001*** (0.00)
Number of terms for the candidates	0.003** (0.03)	0.003** (0.02)	0.003** (0.02)	0.004*** (0.00)	0.004*** (0.00)	0.004*** (0.00)
Constant	0.432*** (0.00)	0.440*** (0.00)	0.439*** (0.00)	0.352*** (0.00)	0.361*** (0.00)	0.360*** (0.00)
Controlling for Party of previous winner	No	No	No	Yes	Yes	Yes
Controlling the State Specific Effect	Yes	Yes	Yes	Yes	Yes	Yes
Controlling the Time Specific Effect	Yes	Yes	Yes	Yes	Yes	Yes
Number of observations	1407.00	1407.00	1407.00	1407.00	1407.00	1407.00

F Prob > F	27.01 (0.00)	27.51 (0.00)	27.38 (0.00)	13.08 (0.00)	13.15 (0.00)	13.11 (0.00)
R-squared	0.44	0.44	0.44	0.52	0.52	0.51
Adjusted R-squared	0.43	0.42	0.42	0.48	0.48	0.48
Joint test for State Specific and Time Specific Effect: F value (P value)	24.61 (0.00)	24.60 (0.00)	24.31 (0.00)	20.43 (0.00)	20.37 (0.00)	20.21 (0.00)

Table 6: Regression results for Equation 2

Vote Share of Winner	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Fractionalization Index	-13.012** (0.04)	-4.322** (0.02)		-10.098 (0.11)	-4.090** (0.03)	
Polarization Index	4.853 (0.14)		-1.737 (0.08)	3.315 (0.32)		-1.754 (0.08)
incumbent (1 if incumbent)	0.409 (0.39)	0.392 (0.41)	0.384 (0.42)	-0.113 (0.82)	-0.128 (0.79)	-0.135 (0.78)
Reserved for SC (1 if constituency is reserved for SC)	-0.909 (0.11)	-0.885 (0.12)	-0.892 (0.12)	-0.841 (0.14)	-0.825 (0.15)	-0.828 (0.15)
Reserved for ST (1 if constituency is reserved for ST)	-2.416** (0.03)	-2.531** (0.02)	-2.583** (0.02)	-1.971 (0.07)	-2.045 (0.06)	-2.084 (0.06)
Same Party (1 if candidate contesting the election with same party)	-0.129 (0.82)	-0.108 (0.85)	-0.122 (0.83)	1.372 (0.07)	1.394 (0.07)	1.393 (0.07)
Number of Candidates Contesting the election	-0.057** (0.03)	-0.057** (0.03)	-0.058** (0.03)	-0.040 (0.13)	-0.040 (0.14)	-0.040 (0.13)
Number of terms for the candidates	0.396** (0.01)	0.405*** (0.00)	0.412*** (0.00)	0.492*** (0.00)	0.496*** (0.00)	0.501*** (0.00)
Constant	50.840*** (0.00)	51.4731*** (0.00)	51.494*** (0.00)	44.589*** (0.00)	45.167*** (0.00)	45.231*** (0.00)

Controlling for Party of previous winner	No	No	No	Yes	Yes	Yes
Controlling the State Specific Effect	Yes	Yes	Yes	Yes	Yes	Yes
Controlling the Time Specific Effect	Yes	Yes	Yes	Yes	Yes	Yes
Number of observations	1407.00	1407.00	1407.00	1407.00	1407.00	1407.00
F Prob > F	24.85 (0.00)	25.41 (0.00)	25.31 (0.00)	11.62 (0.00)	11.72 (0.00)	11.69 (0.00)
R-squared	0.42	0.42	0.43	0.49	0.49	0.49
Adjusted R-squared	0.40	0.40	0.40	0.44	0.44	0.44
Joint test for State Specific and Time Specific Effect: F value (P value)	25.60 (0.00)	25.65 (0.00)	25.44 (0.00)	22.45 (0.00)	22.47 (0.00)	22.34 (0.00)

Notes

[1]Refer to Reynolds, Reilly, and Ellis (2008). In FPTP, every voter can give one vote and the candidate who receives the highest votes wins the election. Therefore, votes received by minor parties or parties representing a smaller section of the population can be seen as wasted votes as these votes don't get any "voice" and "value" in parliament. Therefore, even those voters who prefer smaller parties can vote for other parties rather than "wasting their votes".

[2]Under plurality rule, the candidate who receives more votes than his/her opponents wins the election. FPTP systems are an example of plurality rule.

[3]Refer to Law Commission of India, Report No. 255 Electoral Reforms March 2015 http://lawcommissionofindia.nic.in/reports/report255.pdf

[4]Refer to Report of the Committee on Electoral Reforms, May 1990, Government of India, Ministry of Law and Justice, Legislative Department, https://adrindia.org/sites/default/files/Dinesh%20Goswami%20Report%20on%20Electoral%20Reforms.pdf

[5]The fractionalization index identifies the chances of selecting two individuals randomly belonging to the different groups. This fractionalization index doesn't discuss the cultural and economic differences among groups (Baldwin and Huber, 2010)

[6]HHI index is commonly used index to measure the market concentration.