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ELECTORAL PERFORMANCE OF THE CONGRESS PARTY IN PUNJAB (1951-1977) : AN ECOLOGICAL ANALYSIS

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ABSTRACT : The paper presents an ecological analysis of the performance of the Congress party in elections to the State Assembly in Punjab, since independence. Spatial patterns of electoral support for the party have been mapped, and the nature and degree of its spatial concentration, including degree of consistency over different elections, have been measured. The patterns so identified have been analyzed and explained in relation to a set of selected socio-economic variables, which were compressed into six broad "contexts" by the method of principal components analysis.

Areal pattern of electoral support for the Congress has all along been highly inconsistent. This indicates absence of a fixed pattern of relationship between electoral performance of the party and the spatial patterns of communal cleavages. This is because of the umbrella character of the Congress Party which, in an ever shifting balance of forces, manages to accommodate various shades of opinions and pressure groups in Punjab, where the voters are often sharply divided between rural/urban and Sikh/Hindu sentiments. Since the Congress derives support from all sections of the society, the socio-economic contexts explain only a small part of the party's total vote variation in each election. However, in the highly communalised politics of Punjab, whenever elections were held during a period of marked communal tension, the Akalis and the Jan Sangh had gained at the cost of the Congress Party.

Founded in 1885, the Indian National Congress is the oldest political party in Asia. The history of this party has been, to a great extent, the history of the freedom movement in India. Owing to this fact the Congress has continued to over-shadow all other political parties in this country, since a large number of people still prefer to vote for this party primarily because of its historical association with the struggle for freedom.

At the time of independence, organisationally the Congress was perhaps the weakest in Punjab; unlike elsewhere in India here the Congress had never been the main political force during the pre-independence period. After independence, however, the party quickly made up for this deficiency so that right in the first general elections it forged ahead as the ruling political party in the state and had continued in that position until 1967 when it lost power to the opposition. The party has since been off and on in the governmental saddle alternating with the Akali Dal and its allies.

The objective of this paper is to analyse the electoral performance of the Congress party in elections to the state Assembly in Punjab from 1972 to 1977 (detailed statistical analysis is restricted only to the elections held between 1957 to 1977). The questions we seek to answer are : What is the spatial

pattern of electoral support for theCongress? To what extent is this support regionally concentrated or uniformally spread? And, to what degree has the areal pattern of support for the party been consistent over time? The patterns so identified have been explained in relation to a set of selected socio-economic variables (Appendix I) which have been compressed into six broad " contexts " by the method of principal component analysis (Appendix II).

These six contexts are :

X_1 = the urban-developmental context,
X_2 = the agricultural developmental context,
X_3 = the religio-linguistic context,
X_4 = the spatial cantext,
X_5 = the non-agricultural professions context, and
X_6 = the age and marital status context.

The simple linear regression equation used is of the following form :

$$Y_{jt} = a + bx_{kj}$$

where Y_{jt} = vote share of the Congress in constituency j in year t,
X_{kj} = factor score of kth context in constituency j,
a, b = regression coefficients.

Multiple regression techique has been applied for obtaining the overall explanation of the patterns analysed. For this purpose, the following equation has been used :

$$Y_{ijt} = a_{it} + \sum_{k=1}^{6} bkit\ X_{kj}$$

where Y_{ijt} = percentage share of the electoral variable i in constituency j in election year t,
X_{kj} = value of factor score of context Xk for electoral variable i in election t,
a_{it} = intercept for electoral variable in election t,
i = the vote share of the Congress,
j = constituencies,
k = 1 .... 6 (socio - economic contexts), and
t = 1957, 1962, 1967, 1969, 1972, 1977 (election years).

The analysis is based on the Assembly constituency which in the case of India was the smallest unit for which electoral results were available until 1977. The socio-economic data from the Census reports have been converted to the leval of the constituency in the manner explained elsewhere (Dikshit and Sharma, 1981). However, in the analysis of areal consistency in the pattern of electoral support, tehsil has been adopted as the unit of analysis. This became necessary because unlike the tehsils, the constituency boundaries have changed over time.

In the analysis of areal consistency, the statistical technique of principal component analysis has been used since it has been found the most suitable method for this exercise (Taylor and Johnston, 1979, p. 89). It may be noted that consistency in this centext, relates only to territorial pattern of electoral support for the party and not to overall strength in the legislature.

The Changing Pattern of Congress Vote

1952 Elections

In the 1952 elections, the Congress had contested for only 50 of the 68 seats, and had polled an average of 37.54 per cent votes per seat. The inter-constituency variation of votes polled by the party had ranged between 11.21 to 68.10 per cent In ten constituencies the party had polled more than 50 per cent votes each, and in six constituencies its vote share had been below 20 per cent.

Areas of high support for the party were found in the southern parts of Hoshiarpur and in the urban constituencies of Jullundur; above average support had been recorded in the Beas constituency of Amritsar and in the predominantly urban constituencies of Gurdaspur, Ludhiana, and Ferozepur districts. The whole of Ludhiana district (except for the Ludhiana urban constituency), the southern parts of Ferozepur, and south-eastern of Amritsar district had been areas of low support for the party in 1952.

FREQUENCY DISTRIBUTION OF THE PERCENTAGES OF VOTES POLLED BY THE CONGRESS

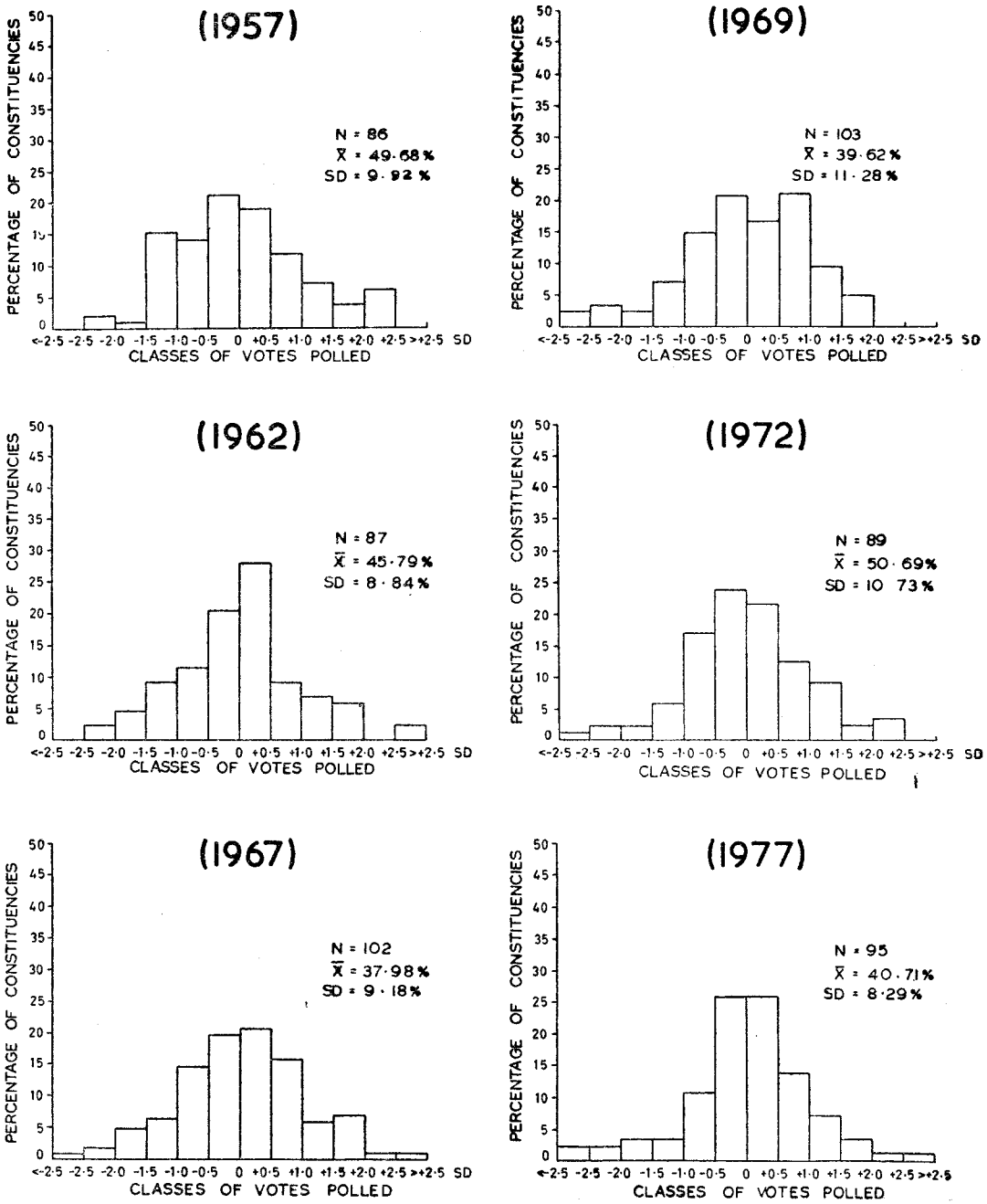


FIG. 1

1957 Elections

In 1957, the Congress had contested all the 87 seats. Owing to the merger of the Akali Dal with the Congress in 1956, the Congress party recorded a significant increase in its vote share per seat. The average percentage of votes per seat for Congress rose to 49.68, although the inter-constituency variation was quite high and it ranged from 24.41 to 74.29 per cent. The party had polled over 70 per cent votes in three constituencies, and above 60 per cent in another seven. Standard deviation of the party's vote distribution was 9.92 per cent and its coefficient of variation 19.97 per cent. Frequency distribution of the party's vote was slightly positively skewed as 46.51 per cent of the constituencies recorded above average per seat share of vote for the party (Fig. 1).

The areas of very high support for the Congress in 1957 included Sirhali constituency of Amritsar, Sultanpur constituency of Kapurthala, the central parts of Hoshiarpur, southern parts of Bhatinda, southern parts of Sangrur, and Patiala constituency of Patiala district. The southern parts of Amritsar (except for one border constituency), the Kapurthala constituency of Kapurthala district, Moga tehsil of Faridkot and the northern parts of Patiala district recorded high support for the party. Above average support was recorded in the northern parts of Hoshiarpur, central parts of Amritsar, south-western parts of Jullundur, western parts of Ludhiana, southern parts of Patiala, and central parts of Bhatinda district. Northern and south-eastern parts of Hoshiarpur, central parts of Ropar, eastern parts of Ludhiana, and northern parts of the districts of Sangrur and Ferozepur recorded below average support for the Congress party. Surprisingly, however, the whole of Gurdaspur district (which is generally regarded as a stronghold of the Codgress) had recorded low support for the party in 1957. Other areas of low support were the central parts of Jullundur and Ferozepur and the south-eastern parts of Sadgrur district (Fig. 2).

1962 Elections

The overall vote share of the Congress party decreased from 49.68 per cent in 1957 to 45.79 per cent in 1962. The decrease is to be attributed mainly to the fact that the Akali Dal-Congress merger had failed. Owing to this the Akali Dal contested the elections as a separate party. The Congress again contested all the 87 seats. The average vote share for the party was 45.73 per cent though inter-constituency vote variation ranged from 6.81 to 73.37 per cent In six constituencies, the party had polled more than 60 per cent votes, and in 19 others more than 50 per cent Standard deviation of the distribution of the party's vote decreased to 8.84 per cent from 9.92 per cent in 1957. Coefficient of variation of the party's vote distribution was 19.33 per cent. which, incidently, is the lowest on record for this party in Punjab. Frequency distribution of votes for the party was negatively skewed as 51.72 per cent of the constituencies had recorded higher than average share of vote for the party (Fig. 1).

The areal pattern of support for the Congress party underwent a drastic change in 1962. Now the areas of very high support for the party included northern parts of the districts of Gurdaspur, Amritsar, and Ropar, the southern parts of Hoshiarpur, and the south-eastern parts of Jullundur. High support was recorded n the southern parts of Gurdaspur, Sultanpur constituency of Kapurthala, and in the central parts of Jullundur and Faridkot districts. Areas of above average support included the central parts of the districts of Gurdaspur, Amritsar and Hoshiarpur, and northern areas of Jullundur and Kapurthala, and the whole of Patiala district except for the constituencies of Rajpura and Patiala. Below average support was recorded in south-eastern parts of Jullundur district, in the whole of Ludhiana district (except for its north-eastern areas),

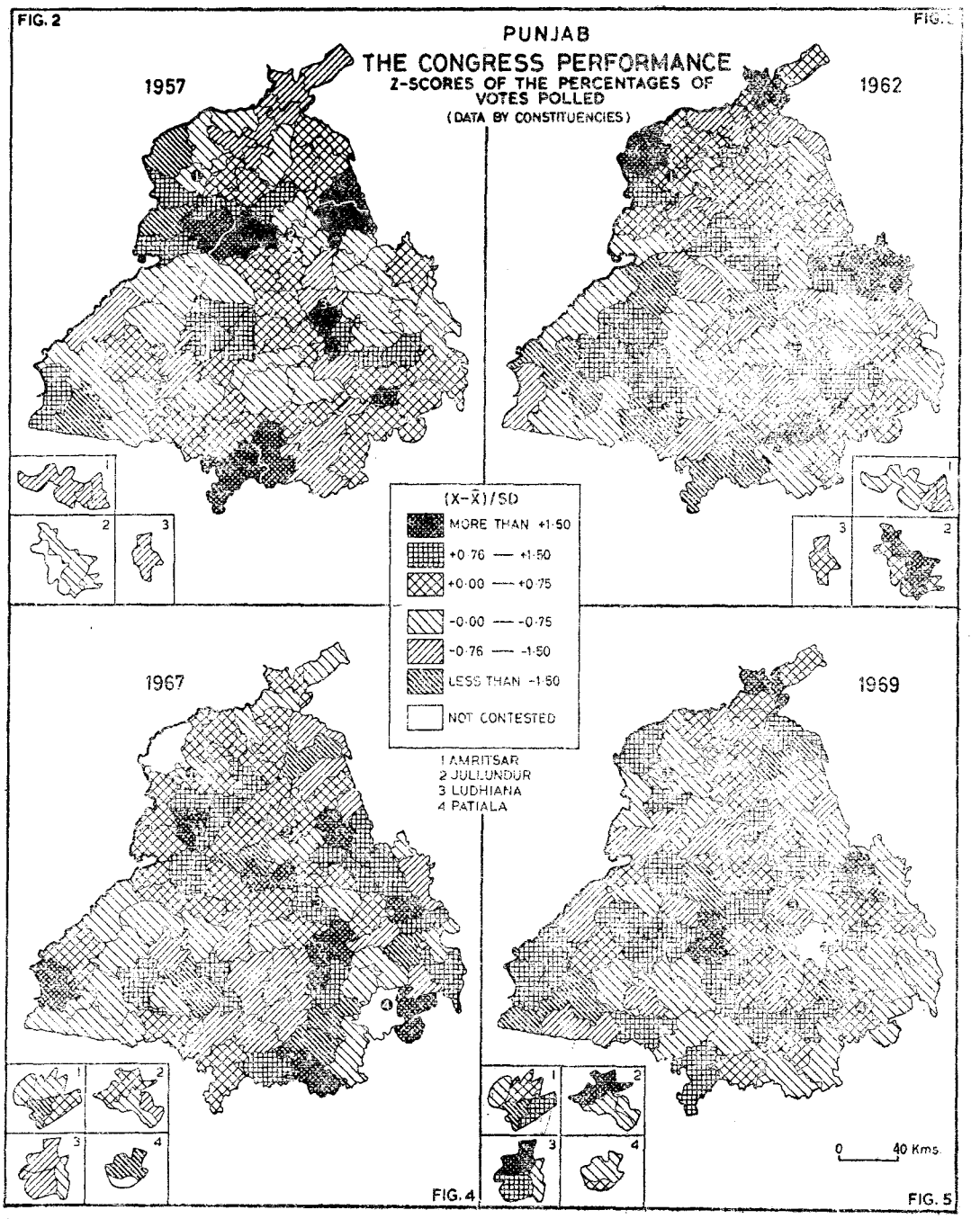


FIG. 2
PUNJAB
THE CONGRESS PERFORMANCE
Z-SCORES OF THE PERCENTAGES OF VOTES POLLED
(DATA BY CONSTITUENCIES)
1957
1962
1967
1969
(X−X̄)/SD
MORE THAN +1·50
+0·76 — +1·50
+0·00 — +0·75
-0·00 — -0·75
-0·76 — -1·50
LESS THAN -1·50
NOT CONTESTED
1 AMRITSAR
2 JULLUNDUR
3 LUDHIANA
4 PATIALA
0 40 Kms.
FIG. 4
FIG. 5

the central parts of Patiala district, the two constituencies of Moga tehsil, and the central areas of Ferozepur district. Areas of low support for the party were south-western parts of Gurdaspur, Dasuya constituency of Hoshiarpur, Zira and Fazilka tehsils of Ferozepur, the north-western parts of Lundhiana, the central parts of Ropar and southern parts of Sangrur and Bhatinda (Fig. 3).

1967 Elections

In 1967 the Congress failed to win majority. The average vote share per seat for the party came down to a mere 37.98 per cent though the interconstituency variation in votes polled by the party ranged from 12.45 to 61.20 per cent. The party had contested 102 seats out of the total 104. In only 10 constituencies it polled 50 per cent or more votes, while in 19 constituencies its vote share was less than 30 per cent. Standard deviation of the party's vote now increased to 9.18 per cent. Coefficient of variation of the party's vote rose to 54.17 per cent, indicating higher areal variation in the distribution of electoral support for the party. Frequency distribution of the party's vote remained slightly negatively skewed as 51.78 per cent of the contested constituencies recorded above average share of votes for the party (Fig. 1).

The areal pattern of vote for the Congress had again changed drastically so that the party now recorded the highest level of support in the Malwa region, and the areas of very high support included the southern parts of Ludhiana, north-eastern parts of Sangrur, central parts of Ropar, southern parts of Patiala and Lehra constituency of Sangrur district. High support was recorded in the central parts of Amritsar, eastern parts of Jullundur, southern parts of Hoshiarpur, central and southern parts of Ropar district and in the Zira constituency of Ferozepur district. Areas of above average support were located in the central and southern parts of Gurdaspur, northern parts of Amritsar and Jullundur, central parts of Ludhiana, and the Ferozepur constituency of Ferozepur district, Pathankot and the two border constituencies of Gurdaspur, rural constituencies around Amritsar, the Patti constituency of Patti tehsil, central parts of Jullundur, and Muktsar tehsil of Faridkot district were areas of below average support for the Congress party. Low support was recorded in northern and central parts of Hoshiarpur, western parts of Sangrur and northern parts of Bhatinda excluding the constituency of Phul (Fig. 4).

1969 Elections

In 1969 the Congress fielded candidates for all the constituencies except one. Although the party recorded a slight improvement in its average vote share per seat, which now stood at 39.62 per cent, it failed to win majority. In fact, it won less seats in 1969 than it had in 1967. Percentage of votes polled in its favour ranged from 1.02 to 60.27 per cent. In only 16 out of 103 seats it had contested, the party polled more than 50 per cent, votes; and in 18 constituencies its vote share was less than 30 per cent. Standard deviation of the the party's vote distribution increased to 11.28 per cent. Coefficient of variation of the party's vote now stood at 28.47 per cent, which was the highest ever recorded for this party. Frequency distribution of the party's vote was slightly negatively skewed as in 51.45 per cent of the constituencies it polled more than its average vote share (Fig. 1).

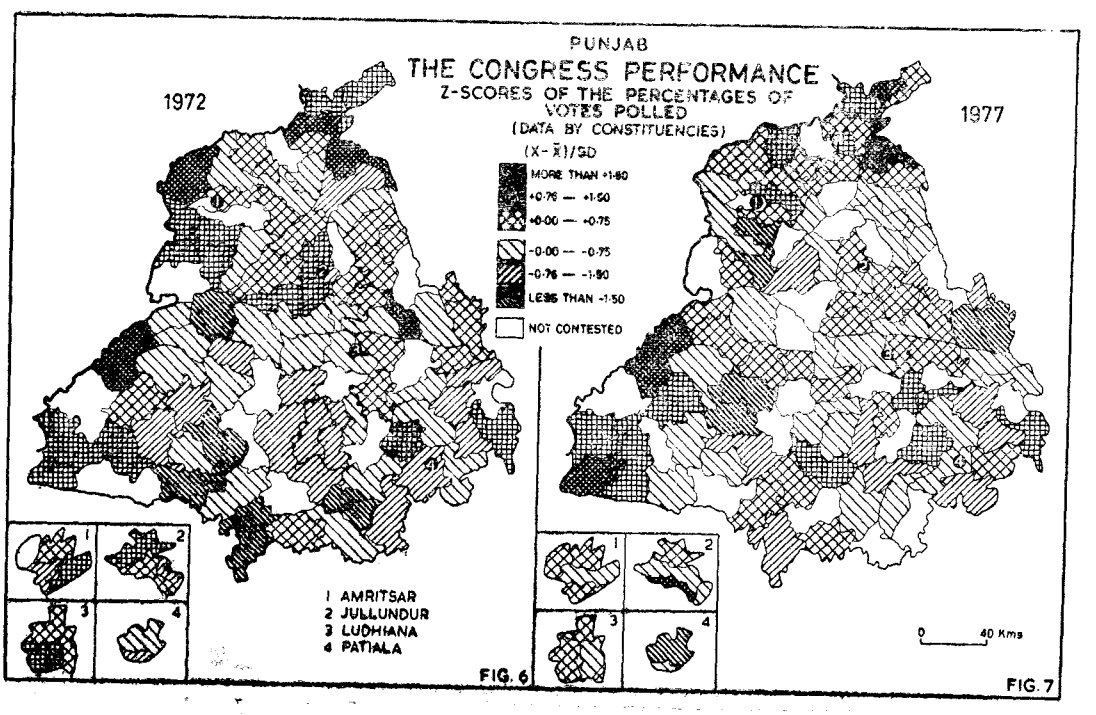
The areal pattern of vote for the party had again changed substantially. Now support for the party was recorded in southern parts of Pathankot and Garhshankar tehsil and eastern parts of Moga tehsil. High support was recorded in the northern parts of Dasuya, the southern parts of Samrala, the northern parts of Fazilka and the whole of Faridkot tehsil as well as in south-eastern parts of Jullundur, central parts of Sangrur and southern parts of Bhatinda district. Above average support was recorded in central and southern parts of Gurdaspur, central and western parts of Jullundur,

western parts of Ludhiana, central parts of Ropar and southern parts of Sangrur district. Central areas of Hoshiarpur and Amritsar, eastern areas of Patiala, and Amritsar, eastern areas of Patiala, and nothern parts of Bhatinda district recorded below average support. The areas of low support included Mukerian and Hoshiarpur constituencies of Hoshiarpur district, southern parts of Amritsar district, northern parts of Moga tehsil, and southern parts of Ferozepur, Fazilka and Muktsar tehsils and the constituencies of Dharamkot, Qila Raipur, Nabha and Sherpur (Fig. 5).

1972 Elections

The Congress returned back to power in 1972. The party had fought this election in alliance with the Communist Party of India, as such, it had contested only 89 seats, leaving the rest for the Communist party. Average percentage of vote per seat for the party rose to 50.69, which was till then the highest for this party in any Assembly election in Punjab. Inter-constituency variation in the Congress vote ranged from 15-42 to 75.64 per cent. Standard deviation of the party's vote distribution was 10.73, and the coefficient of variation 21.17 per cent. Frequency distribution of vote for the Congress was slightly positively skewed as only 48.31 per cent of the constituencies recorded above average share of vote for the party in 1972 (Fig 1)

A comparative view of Figures 5 and 6 would show that the areal pattern of support for the party in 1972 was very different from that in 1969. On the whole Majha and Doaba regions recorded high vote percentages for the Congress. The northern parts of Gurdaspur, southern parts of Amritsar, western parts of Jullundur, southern parts of Ferozepur, and Nabha and Rajpura and constituencies of Patiala district recorded high support for the party. Very high level of support was found in the constituencies of Dinanagar, Mukerian, Ajnala, Nawansahar, and Guru Harsahai. The areas of above average support were



found in the south-eastern parts of Gurdaspur, north-eastern parts of Amritsar, central parts of Hoshiarpur, the whole of Kapurthala and the northern parts of Ropar and central parts of Ludhiana district. Below average support was recorded in south-eastern parts of Gurdaspur, north-western parts of Ludhiana, northern parts of Patiala, and in some constituencies in the districts of Ferozepur, Faridkot, and Amritsar. Areas of low to very low support were the easten and southern parts of Patiala and the whole of the districts of Sangrur and Bhatinda (Fig. 6).

1977 Elections

In 1977 the Congress again fought the election in alliance with the CommunistParty of India. The party contested only 95 of the 117 seats, leaving the rest to the Communist party. The average vote share per seat for the party now came down to 40.71 per cent as against 50.69 in 1972. Standard deviation of the distribution of the party's vote was 8.29 per cent, and its coefficient of variation 20.34 per cent. Frequency distribution was now slightly negatively skewed, since 52.63 per cent of the constituencies recorded above average vote share for party (Fig. 1).

Northern parts of Gurdaspur and Hoshiarpur and central parts of Ferozepur district were the areas of very high vote for the Congress party in 1977. High support was recorded in the central parts of Gurdaspur, southern parts of Ferozepur, and in the districts of Ludhiana and Patiala. Above average support for the party was recorded in south-parts of Gurdaspur district (in which not a single constituency recorded less than the party's average vote share per seat), northern parts of Mansa tehsil, northern areas of Amritsar district, and the semi-urban constituencies of Ferozepur district. Below average support for the party was recorded in the central parts of Hoshiarpur and southern parts of Ropar district, and in Muktsar tehsil. Low to very low support was found in the southern parts of Amritsar and Kapurthala, northern parts of Ropar, eastern parts of Patiala, central parts of Faridkot, and in some scattered constituencies of the districts of Sangrur and Bhatinda (Fig. 7).

Territorial Consistency in Electoral Performance

Table I

Factor Matrix Exhibiting Territorial Consistency in the Electoral performance of the Congress Party

Election	Factors	
	I	II
1957	0.68	- 0.39
1962	0.67	- 0.61
1967	0.43	0.65
1969	-0.53	-
1972	0.68	-
1977	-0.52	-0.52
Eign values	2.110	1.238
Cummulative Percentage of eignvalues	35.20	55.80

Factor loadings in Table I show that during 1957-1977,there was a general absence of areal consistency in the pattern of electoral support for the Congress party. The two factors in Table I together explain only 56 per cent variation in vote distribution of the party. This is in sharp contrast to the cases of the Akali Dal and the Jana Sangh where, in each case, one factor alone explains above 75 per cent· vote variation.

Table II shows that the Congress has been contesting a large majority of seats in each election. In terms of average votes per seat, the party had faired particularly well in the 1972 elections when its average vote share per seat had risen to 50.69 per cent. Except for 1957 and 1962, when its average vote share per seat was around 45 per cent the party's average vote share has generally been 41 per cent or less. Standard deviation of the party's vote distribution in all the elections have been quite low as compared to its chief rival, the Akali Dal

Table II

Parameters of the Distribution of Congress Vote

Election Year	Per cent seats contested	Average Percentage of votes polled per seat	SD of vote distribution	CV of vote distribution
1957	100.00	44.68	09.92	19.97
1962	100.00	45.73	08.84	19.33
1967	98.07	37.98	09.18	24.17
1969	99.03	39.62	11.28	28.47
1972	85.57	60.69	10.73	21.17
1977	81.19	40.77	08.29	20.34

This indicates that despite the general lack of areal consistency in the electoral support for the Congress, the support for the party has been more evenly distributed than is the case for any other party in Punjab.

This underlines the umbrella character of Congress party in Punjab. Here the Congress has essentially been an aggregative political party occupying a position midway between the two extremes represented by the Akali Dal and the Jana Sangh. It accommodates all sections of society-Hindus as well as Sikhs, and rural as well as urban pressure groups. The party has deliberately attempted to avoid close identification with any conflecting section or pressure group. However, because from time to time conflicting interest groups make diametrically opposed demands-demands that are difficult to fully reconcile-the pattern of coalition of different interest groups that the party creates for its electoral support. keeps changing from election to election. Owing to this, none of socio-economic variables has the same correlation sign with the Congress vote over different elections (see also Brass, 1975, pp. 383-383).

Although the areal pattern of electoral support for the Congress has changed quite frequently, in general, the districts of Gurd aspur, Hoshiarpur, Jullundur, and Ferozepur have favoured the Congress while with the conspicuous exception of Ferozepur district, the Malwa region as a whole has not been favourable to electoral victory of this party.

Contextual Explanation of the Congress Vote

As an essentially aggregative party, the Congress derives varying degree of electoral support from all sections of the society in Punjab. Owing to this, one cannot expect strong or consistent relationship between electoral performance of the Congress and the various socio-economic contexts. The nature of the relationship beween electoral performance of the Congress party and the various socio-economic contexts have changed from election to eletion This changing ecological relationship is essentially a function of the socio-politcal climate prevailing at the time that the elections are held. The results of factor analysis summarised below show that the party does not possess a clearely defined territorial base of any appreciable magnitude.

For each of the elections, R^2 value has been quite low. This shows that religion and language, the two important considerations

Regression of vote share per seat for the Congress party, on the religio-linguistic context for elections held between 1957–1977

(Y stands for the vote of the congress party, and
X_3 for the religio-linguistic Context.)

1957	election	Y =	49.69 – 0.307** X_3 (0.110)	R = 0.291	R^2 =	0.085
1962	election	Y =	45.72 + 0.148 X_3 (0.097)	R = 0.162	R^2 =	0.026
1967	election	Y =	38.01 – 0.174* X_3 (0.085)	R = 0.200	R^2 =	0.040
1969	election	Y =	39.61 – 0.0920 X_3 (0.106)	R = 0.857	R^2 =	0.007
1972	election	Y =	50.33 + 0.266* X_3 (0.103)	R = 0.267	R^2 =	0.071
1977	election	Y =	40.54 + 0.119 X_3 (0,062)	R = 0.195	R^2 =	0.038

* Significant at 0.05 or better level.
** Significant at 0.01 or better level.

in the electoral politics of Punjab, have not exercised much influence on the electoral performance of the Congress party. In three out of the six elections, the relationship between the pary's performance and the religio-linguistic context was positive in nature, but in the remaining three elections, the relationship was negative.

It may be noted that since the per cent. Hindu and Hindi-speaking population load positively on the religio-linguistic context (in contrast to the Sikh and Punjabi-speaking population which load on the negative side), positive scores on this context are indicative of areal majority of Hindus and Hindi-speakers. As such, positive values for the relationship between the Congress vote and the religio-linsuigtic context show that in that particular election, the Congress was widely favoured by the Hindu and Hindi-speaking voters.

The relationship between the electoral performance of the Congress and the religio linguistic context in the eleetions of 1957, 1967 and 1969 was of a negative type. The level of explantion was the highest in 1957, when this context explained 8.5 per cent (significant at 0.01 level) of variation in the electoral performance of the party. This relatively high level of negative relationship between the religio linguistic context and the vote proportions of the Congress in 1957 is explained by the fact that at that time, the Akali Dal had merged with the Congress party. Owing to this, the Congress had received wide support in all the Sikh and the Punjabi-speaking, majority constituencies, while as a reaction it lost votes of the many of its Hindu/Hindi speaking sympathisers. As for the 1967 elections, the negative relationship is explained by the fact that the Hindu and the Hindi speaking electorate was not happy with the Congress party because of its having conceded the partition of Punjab on the basis of language.

As Table III would show, none of the contexts has high explanatory value in respect of the Congress vote, except for the agricultural developmental context (X^2) in 1962 and 1972, and the spatial context (X^4) in 1972, On none of the five contexts have R^2 values of the multiple regression been high. This confirms the hypothesis about the "umbrella" character of the Congress party. The total explanation on all the

Table III

R^2 Values of the Regression and Multiple Regressions of the Congress Performance on the Valious Contexts.

Election year	X_1	X_2	X_4	X_5	X_6	X 1-6
1957	0.061	0.003	0.085	0,000	0.073	0.169
1962	0.006	0.139	0.000	0.049	0.056	0.189
1967	0 068	0.000	0.002	0.075	0.005	0.103
1969	0.003	0.005	0.000	0.008	0.027	0.035
1972	0.016	0.147	0.200	0.000	0.004	0.272
1977	0.008	0.000	0.081	0.003	0.002	0.255

contexts taken together has generally varied between 10 to 20 per cent, except for 1972 and 1977 when it had crossed the 25 per cent mark.

Conclusion

The Congress is by far the dominant political party in Punjab. It has contested a great majority of seats in each election and has repeatedly formed government on its own. Areal pattern of support for the Congress party has, however, been highly inconsistent. Owing to the umbrella character of the party, the religio-linguistic cleavage-so vital in the case of the Akali Dal and the former Jana Sangh — has exercised no areally consistent influence on the pattern of distribution of its vote in Punjab. Since the Congress derives support from all sections of the society, the socio-economic contexts can explain only a small part of the total vote variation of this party.

It has been argued that in reality the Congress is not a popular party in Punjab (Nayar, 1966, p. 286). Among the Sikhs, a small proportion of those who do not believe in the Akali ideology, as well as those living in constituencies where the Akali candidates stand little chance of victory, generally vote for the Congress. Likewise, among the Hindu voters, only those who shun the Jana Sangh ideology, or those who find that Jana Sangh candidate is not likely to win, vote for the Congress party. Thus, in Punjab, the Congress faces tough competition both in the overwhelmingly rural constituencies—where the majority of the voters are Sikh; as well as in the predominantly urban constituencies—where majority of the voters are Hindus. But since most constituencies consist of more or less evenly balanced electorate of Sikhs and Punjabi-speakers and Hindu and Hindi-speakers, the Congress party has often emerged as the single largest party even though it has only the second preference of most of the voters in the state.

In the highly communalized electoral politics of Punjab, whenever elections were held during a period of communal tension-the Akali Dal and the Jana Sangh had been the gainers.

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APPENDIX I

List of 55 Socio-Eonomic Variables

1. DEND Total population of each constituency divided by its total area.

2. HOUS Total number of households in each constituency divided by the total number of houses and the dividend multiplied by hundred.

3. POH Total population of each constituency divided by total houses in it and the dividend multiplied by hundred.

4. URBN Urban population as percentage to total constituency population.

5. SERA Females per 1000 males in each constituency.

6. SCPP Total seheduled caste popula, tion of each constituency as percentage of its total population.

7. GRPO Difference of population between two decades as percentage of the population of former decade.

8. FELE Females literate and educated as percentage of total female population of the constituency.

9. MAWO Male workers as percentage of the total male population in each constituency.

10. FEWO Female workers as percentage of total female population in each constituency.

11. AGRI Workers engaged in agricultural occupation on their own land as percentage of total number of workers in the constituency.

12. AGLA Agricultural labourers as percentage of total number of workers in the constituency.

13. FEAG Female workers engaged in agricultural occupation on their own land as percentage of total female workers of the constituency.

14. FEAL Female agricultural labourers as percentage to total female workers of the constituency.

15. WOMF Workers engaged in mining, fishing, forestry etc., as percentage of total workers of the constituency.

16. WOHO Workers working in household industry as pescentage of the total number of workers in the constituency.

17. WOMA Percent workers engaged in manufacturing.

18. WOCO Workers engaged in construction activities (like making bridges, dams, houses, roads etc.) as percentage of total number of workers.

19. WORT Workers engaged in retail trade as percentage of total number of workers in each constituency.

20. WORC Workers engaged in transportation and communication as percentage of total number of workers.

21. WOOA Workers engaged in ' other activities ' as percentage of total number of workers This category includes public utility services like electricity, gas or water-supply, sanitary services, central, state or municipal employees, professional services etc.

22. FWOA Female workers in " other activites " as percentage of the total female workers.

23. ELEC This variable expresses the approximate proportion of population enjoying electricity facility. It was calculated by counting the number of villages with electricity facilities available, and multiplying it with the average population size of the

village. To this number was added the urban population of the constituency. Derived number expressed approximately the population of the constituency using electricity. It was taken as percentage of the total population of the constituency.

24. ROAD This variable shows proportion having road facilities. It was also calculated by the method outlined above in measuring ELEC variable. However, no distinction was made between metalled and unmetalled roads.

25. POST This variable exprsses proportion of population with post office facilities available in their villages or towns. The method for measuring this variable was the same as for ELEC and ROAD variables.

26. NEAS In a year, once or more than once cultivated area as percentage of total area of the constituency.

27. IRRI Area under irrigation as percentage of total cultivated area.

28. PRLA Net area sown in a constituency divided by its total population working as agriclturists and agriclturar labourers.

29. CUWL Area of cultivable waste as percentage of total area in each constituency.

30. AVUD This variable shows areal distance of each constituency from nearest town. Distances of different villages in constituency to nearest unban centres were added and average distance per village was thus calculated. This distance was multiplied by the average population per village. The sum gave us the average distance of the rural population of the constitueney from ne arest town. For calculating an index of ave rage urban distance for whole constitueney following formula was applied:

$$A = \frac{X}{Y} \times Z$$

where A = index of nearest town distance from constituency,

X = rural population of the constituency,

Y = total population of the constituency, and

Z = average urban distance for rual population of the constituency.

31. BODI Distance between nearest point on the Indo-Pak boundary and the centre of the constituency.

32. AMDI Distance of the constituency from the centre of Amritsar town (the biggest town in Punjab and religious contre of the Sikhs).

33. JUDI Distance of the constituency from the centre of Jnllundur town (from where are published newspapers of Punjab, both in Punjabi and Hindi languages).

34. PADI Distance of the constituency from the centre of Patiala town (which was capital of the former PEPSU state).

35. LHDI Distance of the constituency from the centre of Ludhiana town (which is somtimes known as "Manchester of India", and is the biggest industrial centre of Punjab).

36. CEDI This was measured as distance between the geographical centre of the state and centre of each constituency.

37. LWEL Literate population with educational level as percentage of total population.

38. EDPL Population with education up to primary level, as percentage of total population.

39. EDMM Population with education up to Matric or above, as percentage of total population.

40. UNAA Unemployed population aged 15 years or above as percentage of the total population.

41. EDUN Educated unemployed population as percentage of total population.

42. PYON Population in the age group of 20 34 years, as percentage of total population.

43. PMID Population in the age-group of 35-49 years, as percentage of total population.

44. POLD Population in the age group of 49 years and above, as percentage of total population.

45, MARD Married population as percentage of total population.

46. PUNS Punjabi-speaking population as percentage of the total population.

47. HINS Hindi - speaking population as percentage of the total population.

48. SIKP Sikh population as percentage of total population.

49. HINP Hindi population as percentage of total population.

50. PLOU Ratio between iron and wooden ploughs in the constituency.

51. TRAC Number of tractors per thousand number of workers as agricuiturists and agricultural labourers.

52. TUWE Number of tubewells per thouasnd number of workers classified as agriculurists and agricultural labourers.

53. SSLH Number of land holdings with less than 4.9 acres size as percentage of total land holdings in each constituency.

54. MSLH Number of land holdings with size from 5 to 12.4 acres, as percentage of total land holdings in each constituency.

55. LSLH Number of land holdings with size more than 12.4 acres as percentage of total land holdings in each constituency,

APPENDIX II

Rotated Factor Matrix of 55 Socio-Economic Variables

Variables	Factors					
	I	II	III	IV	V	VI
1. DENP	0.83407	—	0.32219	—	—	—
2. HOUS	0.77380	—	—	—	—	—
3. POUH	-0.45637	—	-0.54595	—	—	—
4. URBN	0 88072	—	—	—	—	—
5. SERA	-0.47452	—	—	-0.45566	—	—
6. SCCP	-0.48773	—	—	—	—	0.33858
7. GRPO	0.66514	—	0.44156	—	—	—
8. FELE	0.50578	—	—	—	—	—
9. MAWO	—	—	-0.58571	0.30830	—	—
10. FEWO	0.73067	—	0.38597	—	—	—
11. AGRI	-0.8239	—	-0.41886	—	—	—
12. AGLA	-0.68500	—	-0.36931	—	-0.3196	—
13. FEAG	-0.41233	—	—	—	—	—
14. FEAL	—	—	—	—	—	—
15. WOMF	—	—	—	0.31751	—	—
16. WOHO	-0.45578	—	—	0.45969	—	—
17. WOMW	0.84409	—	—	—	0.49360	—
18. WOCO	—	—	0.52204	—	0.47321	—
19. WORT	0.8?990	—	—	—	0.31268	—
20. WOTC	0.80349	—	0.35057	—	0.39473	—
21. WOOA	0.54611	—	0.58589	—	0.47831	—
22. FWOA	0.34523	—	—	—	0.41703	—
23. ELEC	0.71949	—	—	—	—	—
24. ROAD	0.75805	—	—	—	—	—
25. POST	0.78096	0.34893	—	—	—	—

APPENDIX II Continued

Variables	Factors I	II	III	IV	V	VI
26. NEAS	-0.65926	0.34391	-0.32653	—	-0.49295	—
27. IRRI	-0.34080	—	-0.48805	—	-0.58254	—
28. PRIA	-0.51344	—	—	—	-0.61663	—
29. CUWL	-0.30775	-0.88675	—	—	—	—
30. AVUD	-0.66464	—	-0.37726	—	—	—
31. BODI	—	—	—	0.93966	—	—
32. AMDI	—	—	—	0.92110	—	—
33. JUDI	—	—	—	—	—	—
34. PADI	—	—	—	-0.93963	—	—
35. LUDI	—	—	—	-0.50489	—	—
36. CEDI	—	—	-0.35348	—	—	—
37. LWEL	0.75502	—	—	—	—	—
38. EDPL	0.69742	—	0.42859	—	—	—
39. EDMM	0.84616	—	0.37294	—	—	—
40. ENAA	0.53254	—	0.55011	—	—	—
41. EDUN	0.45170	—	0.48824	—	—	—
42. PYON	0.68133	—	—	—	—	0.42896
43. PMID	—	—	—	—	—	—
44. POID	-0.56181	-0.30051	—	—	—	0.81432
45. MARD	—	—	—	—	—	0.82731
46. PUNS	-0.36049	—	-0.96515	—	—	—
47. HINS	0.34812	—	0.95524	—	—	—
48. SIKP	-0.32106	—	-0.97622	—	—	—
49. HINP	0.32487	—	0.97045	—	—	—
50. PLOU	-0.36668	—	—	—	0.62426	—
51. TRAC	—	0.86058	-0.35947	—	—	—
52. TUWE	—	—	—	—	-0.72396	—
53. SSLH	-0.73190	-0.3454	0.33402	—	—	—
54. MSLH	-0.60292	-0.38419	—	—	—	—
55. LSHL	-0.45117	0.65054	0.46252	—	—	—
Eigen-values	21.770	6.32	4.79	3.91	2-34	2.18
Cumulative Percentage of eigen-values	39.58	51.08	59.78	66.90	71.15	75.11