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Urban Primacy and Socioeconomic Development in India: A Case for Reexamination

THE future of exceptionally large and influential Asian cities is of great interest to urban planners and students of the urbanization process alike, not to mention the populations involved. Cities like Calcutta and Bombay can summon images of teeming city streets and assorted urban problems and have been used to conjure up visions of "tyrannopolises", which distort the development of rural areas and smaller urban places by acting as "irresistible magnet[s] to the growing sector of the rural population finding the task of making a livelihood from the family holding one of progressively greater difficulty" (Fryer, 1953: 2). But when one turns to the social scientific literature for answers about the future of such cities, one encounters a debate that seems to have been prematurely closed. This paper focuses on this debate and essays, through an investigation of recent urbanization in India, to shed some light on the relationship between socioeconomic development and urban primacy, or the relative size and dominance of the largest city and/or cities in an urban system, in developing regions.

The relationship between development and primacy has interested social scientists at least since the pioneering work of Mark Jefferson, who argued in 1939 that the largest, or "primate," city of a nation becomes increasingly prominent at advanced levels of development. Jefferson's generalization, since dismissed, nevertheless led to the debate that provides the background for the current study, a debate that was stimulated when George Zipf published his theory in 1941 that socioeconomic development is normally marked by what he called a rank-size distribution among cities within a system. In its crudest

form, Zipf's rank-size rule meant that the second largest city would be one-half the size of the largest, the third largest would be one-third, and so on, provided the country had reached a high level of integrative development.

The original propositions of Jefferson and Zipf could not both be correct: i.e., it is impossible that development should lead simultaneously to both a single extraordinarily large city and a conformity with the rank-size rule among all cities. But only in the middle 1950's was primacy clearly connected with low levels of development. Theorists of this era (e.g., Phillip Hauser, 1957; Eric. Lampard, 1955; Norton Ginsberg, 1955; Gist and Halberg, 1956) considered the primate cities of South Asia "parasitic" in Bert Hoselitz's (1955) sense of the word, acting, as they did, as "irresistible magnets" for what might otherwise be productive population in rural and smaller urban areas.

Towards the beginning of the 1960's, however, cross-sectional analyses by Brian Berry (1961) and Surinder Mehta (1964) cast doubt on the idea that primacy inhibits economic growth, but the question of whether the two might be related in some other way remained open. By 1972, Salah El-Shakhs argued that the two were related in a curvilinear way: that primacy (1) increases with early advances in the level of development (a positive relationship), (2) reaches a peak during a transitional period, and (3) decreases with subsequent increases in the level of development (a negative relationship).

El-Shakhs' argument was based upon the theses of modernization geographers like John Friedmann and Edward Soja, who have argued that normal development entails a tension between core and peripheral areas within social systems. During early stages, this tension is resolved in favour of core areas, or the "major centers of innovative change," because "crucial decisions are made during the early phases of development which establish a framework of locational advantages" (Soja and Tobin, 1975: 206). Eventually, however, ever-increasing tensions between core and periphery are resolved in favour of the periphery, reflecting in part the likelihood that at advanced stages of development there is "sufficient surplus capital and geographically extensive organizational structures available for the costly adjustment necessary to break the bonds of core domination" (Soja an Tobin, 1975: 200). Aside from arguing that there is a curvilinear relationship between development and primacy, then, El-Sakhs suggests that the "direction of causality" between the two is not from primacy to development (in which primacy inhibits development), but from development to primacy (in which the resolution of the tensions of development naturally favors or disadvantages core areas).

El-Shakhs tested his curvilinear model with a cross-sectional analysis of 75 countries around 1955 and an historical study of the United States and Great Britain. These analyses suggested that "(1) there is a significant association between the degree of primacy of the distribution of cities and their socioeconomic level of development, and (2) the form of the primacy curve (or its evolution with

development) seems to follow a consistent pattern in which the peak of primacy obtains during the stage of socioeconomic transition with countries being less primate in either direction from the peak" (El-Shakhs, 1972 : 30).

El-Shakhs' work closed the debate about the relationship between socioeconomic development and urban primacy for almost a decade. In 1979, however, Roger Clark demonstrated that the positive relationship between primacy and development does not hold for less developed countries when primacy is measured as the ratio of the largest city to a national urban population or of the largest city of a finite number of next largest cities and when development is measured as energy consumption per capita. In fact, in cross-sectional and longitudinal analyses involving more than 100 nations in 1950,1960, and 1970, Clark found no relationship between primacy and development for less developed countries, even while he did find the expected negative relationship for more developed ones—a relationship that panel regression analysis showed to be in the expected direction (from development to primacy) according to El-Shakhs' thesis. The discrepancy between Clark's findings and those of El-Shakhs' for less developed countries is the point of departure for the current study. What is of concern here is whether there was any detectable relationship between urban primacy and development during a recent decade within the states of the Republic of India.

The States of India, 1961-1971

The Republic of India has been selected for this study for several reasons. First, India's largest cities have the problems that attracted the attention of social scientists to large South Asian cities in the first place (see, e.g., Ginsberg, 1955 : 457). All of India's largest cities exhibit problems of overcrowding, poor housing, mass poverty, pollution, traffic congestion, unemployment, crime, malnutrition and ill health that are serious and threaten to become worse (see, e.g., Mayur, 1975 : 168-74). Moreover, it has been claimed that these cities have a "parasitic" influence on their urban and rural hinterlands (see, e.g., Munsi, 1975 : 297 ff), although such an influence has not been systematically demonstrated.

Equally important, India is large and heterogeneous enough to enable comparative analysis within its national boundaries. Thus, although India's overall urban structure is characterized by the comparative literature as having extremely low first-city primacy (e.g., Ginsberg, 1966), this characterization is not necessarily appropriate. El-Shakhs, for instance, singled out India as one of several countries with a multiplicity of urban systems. According to El-Shakhs, such a multiplicity may usually be attributed to one or more of the following conditions :

(1) the superimposition of a modern development system on a spatial system with an extensive urban tradition; (2) the existence of sharp and effective geopolitical and ethnic regionalization within the system; (3) recent political and territorial change leading to the partition of one socioeconomic system into more than one national unit. (El-Shakhs, 1972 : 29)

In the case of India, all three of these conditions have been influential, so that the political subdivisions into which the nation was divided at the time of independence (1948) bore little relationship to the then current social, ethnic and political realities. Since independence, however, efforts have been made to reorganize the Indian states to conform better with these realities. The Major thrust of this effort occurred in 1956 when the States Reorganization Act established fourteen states, essentially along linguistic lines (Griffiths and Katrak, 1965 : 560), although subsequent reorganization brought the total number of states to 21 by the 1971 census.

TABLE 1—LINGUISTIC DISPERSAL IN INDIA : 1961

Language	*Home state*	*Total no. of speakers in India* ('000s)	*Total no. of speakers in the homestate* ('000s)	*Total no. of speakers outside the homestate* ('000s)	*Ratio of linguistic dispersal*	*Adjusted ratio*
Assamese	Assam	6,803	6,784	19	0.3	0.3
Bengali	W. Bengal	33,888	29,435	4,453	13.1	7.0
Gujarati	Gujarat	20,304	18,672	1,631	8.0	4.1
Hindi	U. P., Bihar, M. P., Rajasthan, Punjab	133,435	126,840	6,594	4.9	5.1
Kannada	Mysore	17,415	15,371	2,044	11.7	7.3
Kashmiri	Jammu & Kashmir	1,956	1,937	18	0.1	0.1
Malayalam	Kerala	17,015	16,065	950	5.6	5.6
Marathi	Maharashtra	33,286	30,278	3,007	9.0	7.6
Oriya	Orissa	15,719	14,443	1,275	8.1	8.1
Punjabi	Punjab	10,950	8,343	2,607	23.8	10.5
Tamil	Madras	30,562	28,016	2,546	8.3	8.3
Telugu	Andhra Pradesh	37,668	30,934	6,733	17.9	8.9

NOTE : Ratio of linguistic disperal is calculated by dividing the figure in column 5 by the figure in column 3 and by multiplying the quotient by 100. Adjusted figures keeping in mind the bilingual nature of some states.

Source : Bose (1972 : 155).

Table 1 gives an indication of how successful this reorganization process has been, as well as some evidence of how little interregional migration has occurred in India. Shown here is the linguistic dispersal by states of the Indian population in 1961. The table presents ratios of linguistic dispersal, or the number of persons speaking a particular language as a proportion of the total number of persons in India speaking that language. As an example, there were 2.0 million persons speaking Kashmiri in the whole of India. Of these, only 18 thousand were enumerated outside of Jammu and Kashmir. Thus, the linguistic dispersal ratio is less than 0.1. In contrast, the linguistic dispersal ratio for Punjabis was the highest in India—23.8 percent. Overall, however, the data suggest rather low levels of interstate migration among the Indian states as presently constituted. Another indication of relatively high levels of intrastate closure can be seen in Table 2, also from Bose (1972 : 143). It shows that about 90 percent of all the lifetime migration recorded in the 1961 census had occurred within the state of origin. The combined evidence of Tables 1 and 2 suggests that the newly reorganized states of 1956 and after may, with reasonable caution, be used as units of comparative analysis in the study of Indian urban structure.

Method

Bose's analysis of urbanization in India also suggests several reasons for limiting the study of the relationships between development and urban processes to the period after 1961. Among the most compelling of these lies India's stormy history during the century before 1950 and the fact that 1951-61 was really the first intercensal decade marked by rapid strides in industrial development. These considerations, when added to the reorganization of the country into relatively closed states during the 1950's, make it difficult to do comparative studies of the relationship between development and urban primacy much before the intercensal decade of 1961 to 1971.

The technical strategy employed here has two parts. Static analyses relating urban primacy to several measures of development are presented for 1961 and 1971 to determine the stability of the relationship over time. Dynamic analyses relating primacy measures are then presented for the interval 1961-71 to answer the question : does level of urban primacy affect subsequent levels of socioeconomic development or vice versa? The data are drawn from *Statistical Abstracts of India.*

a. Statistical Method

The statistical method used in the cross-sectional analysis is correlation analysis. Since the longitudinal analysis focuses on the interaction between the relative growth of primate cities and socioeconomic development over time, it entails an

additional problem of separating the effects of change in one variable from changes in the other when systematic change is occurring in both. The method used to overcome this problem is panel regression analysis. This method assumes that the effects of one variable on change in another can best be estimated by including an early measure of the dependent variable as an independent control in a linear multiple regression format.[1]

b. Data and Measurement

1. URBAN PRIMACY. Urban primacy is conceptualized in two ways: *(a)* as the percentage of the urban population living in the largest city of a state (called Primacy (I) and *(b)* as the percentage of the urban population living in cities of 100,000 or more (City Primacy). Primacy I is particularly germane to the concerns of Indian urbanologists, since the discussion of the problems of primacy and hyper-urbanization in India has been couched largely in terms of those very large cities, such as Calcutta, Bombay, Madras and Hyderabad, whose recent growth has often outstripped that of other cities in the regions they dominate (e.g., Munsi, 1975: Mayur, 1975). City Primacy measures a different but related dimension of urban primacy, and is also relevant to the concern of many Indian urbanologists that recent urban growth has occurred at the expense of small- and middle-sized towns (see, e.g., Bose, 1972; Munsi, 1975; Mayur, 1975). Table 3 shows the levels of Primacy I and City Primacy for the states in 1971.

TABLE 2—PER CENT OF TOTAL MIGRANTS BY MIGRATION TYPE

*Migration type**	*Total*
Short-distance	67.8
Medium-distance	21.8
Long-distance	10.8
Total	100.0

*Definition of types:

Short-distance migration : Persons born outside the place of enumeration but within the district of enumeration (intra-district migration)

Middle-distance migration : Persons born outside the district but within the state of enumeration (inter-district or intra-state migration); and

Long-distance migration : Persons both in states of India beyond the state of enumeration (inter-state migration).

SOURCE : Bose, 1972 : 143.

1 For earlier explications of panel regresion analysis see Christopher Chase-Dunn (1975) and Jacques Delacroix (1977).

TABLE 3- PRIMACY LEVELS ON INDIAN STATES IN 1971

	*First-City Primacy**	*Large-City Primacy***
Andhra Pradesh	21	52
Assam	10	10
Bihar	9	45
Gujarat	21	45
Haryana	7	13
Himachal Pradesh	—	—
Jammu and Kashmir	48	66
Kerala	13	42
Madhya Pradesh	2	8
Maharashtra	38	71
Mysore	23	49
Nagaland	—	—
Orissa	11	33
Punjab	14	40
Rajasthan	14	41
Tamil Nadu	20	44
Uttar Pradesh	10	57
West Bengal	21	55

SOURCE : Statistical Abstract of India.
*First-City Primacy is the percentage of the total urban population living in the largest city of the state.
**Large-City Primacy is the percentage of the urban population living in cities with over 100,000 population.

2. SOCIOECONOMIC DEVELOPMENT. Four indicators of socioeconomic development are employed : (a) the percentage of the economically active population outside the agricultural sector (nonagricultural workers); *(b)* the percentage of the economically active male population in manufacturing, other than household

manufacturing (male manufacturing workers); (*c*) literacy rate; (*d*) publicly generated energy per capita.

The category of nonagricultural workers excludes "cultivators" and "agricultural laborers." It has been employed in previous work relating development and urban processes (e.g., Pandey, 1977) and it is used here as an indicator of the degree to which these traditional occupations have been superceded.

The category of manufacturing workers is closer to the heart of what is normally considered industrialization. Only the male population is considered in the preparation of this indicator, because of the extremely rare inclusion of females in the manufacturing labor force of India.

Literacy is measured by the percentage of the total population that is literate and is, as it has been elsewhere (e.g., Pandey, 1977), taken as an indicator of the general level of socioeconomic development within a state. The Indian census defines a literate person as one who has "both the ability to read and write in any language" (*Census Centenary Monograph*, no. 1, 1971).

In lieu of data on per capita energy consumption, a measure of socioeconomic development that has many adherents (e.g., Levy, 1966; Cottrell, 1955; Hazelrigg, 1974), the number of publicly generated kilowatt hours per capita is employed. There are several reasons for using energy consumption as an indicator of general societal development, reasons that include its intimate connection with a society's level of industrialization and its dynamic relation with social, political, and economic development.

Results

The 1950 scholars concerned with South Asian urbanization argued that the relationship between urban primacy and socioeconomic development is negative, with regions having high levels of urban primacy incurring particularly low levels of development. El-Shakhs, on the other hand, believed that the relationship is, for less developed areas at least, a positive one : less developed regions with relatively high levels of development should experience relatively greater levels of urban primacy. What is the empirical support for either expectation?

1. *Correlation Analysis*

Matrices of intercorrelation between dependent and independent variables are presented in Tables 4 and 5. The two indicators of urban primacy show a high degree of intercorrelation in both 1961 and 1971 : .77 and .70, respectively. Both also exhibit relatively high levels of association with urbanization in both 1971 and 1961, a finding that is consistent with the general observation that Indian urbanization has been characterized by the growth of larger cities and the stagnation or decline of smaller and middle-sized cities (e.g., Bose, 1972).

TABLE 4—PEARSON CORRELATION AMONG MAJOR VARIABLES, 1971

	1	2	3	4	5	6
1. First City Primacy						
2. Large City Primacy	.70 (16) *					
3. Urbanization	.53 (16) *	.40 (16)				
4. Nonagricultural Labor Force	.39 (16)	.07 (16)	.31 (16)			
5. Male Manufacturing Labor force	.32 (16)	.27 (16)	.80 (16) *	.59 (16) *		
6. Generated Electricity Per Capita	.31 (16)	.38 (16)	.77 (16) *	.08 (16)	.69 (16) *	
7. Literacy	.04 (16)	—.01 (16)	.41 (16)	.65 (16) *	.79 (16) *	.55 (16) *

NOTE : Number in parentheses indicates the number of states involved in the calculation of the coefficient. * indicates that the corresponding coefficient is significant at the .05 level.

The intercorrelation among the various development indicators is generally high, but not high enough to suggest that they measure the same dimensions of development. Since each apparently measures a distinct dimension, all are employed in the present tests.

The uncontrolled relationships between the two primacy measures and the various development indicators appear to lend, at best, only very weak support to the proposition that primacy and development are positively or, for that matter, negatively related within the Indian states. This is not surprising, however, even in view of the theoretical expectations mentioned above, since cross-sectional differences in urban primacy would have resulted from historical forces that have not generally been related to modern socioeconomic development.

TABLE 5—PEARSON CORRELATIONS AMONG MAJOR VARIABLES, 1961

	1	2	3	4	5	6
1. First City Primacy						
2. Large City Primacy	.77 (16) *					
3. Urbanization	.49 (16) *	.55 (16) *				
4. Nonagricultural Labor Force	—.06 (16)	—.11 (16)	.34 (16)			
5. Male Manufacturing Labor Force	.33 (16)	.37 (16)	.76 (16) *	.71 (16) *		
6. Generated Electricity Per Capita	.12 (15)	.16 (15)	.60 (15) *	.28 (15)	.50 (15) *	
7. Literacy	—.08 (15)	—.19 (15)	.45 (15) *	.84 (15) *	.77 (15) *	.37 (15)

NOTE : Same as in Table 4.

2. *Regression Analyses*

The results of the panel regression analyses are presented in Tables 6 and 7. The parameter estimates for the equations presented in each table are the standardized regression coefficients (betas). The tables show, not surprisingly, that each variable is its own best predictor over time. Thus, for instance, the beta for the controlled relationship between first city primacy (1961) and itself (1971) is .989 and statistically significant (Table 6).

Contrary to El-Shakhs' expectations, however, no development indicator appears to have a significant impact (negative or otherwise) upon later levels of urban primacy of either kind. For instance, the standardized regression coefficient for the controlled relationship between percentage non-agricultural labor force and first city primacy is only .029 and not nearly significant (Table 6).

TABLE 6—PANEL REGRESSION RESULTS BETWEEN FIRST CITY PRIMACY AND FOUR INDICATORS OF SOCIOECONOMIC DEVELOPMENT, 1961 TO 1971 STANDARDIZED PARTIAL REGRESSION COEFFICIENTS

Independent variables (1961)	*Dependent variables (1971)*	
	(1) *Nonagricultural labor force*	*First city primacy*
(1) Nonagricultural $N = 16$ Labor Force	.711 ***	.029
First City Primacy	.397 *	.989 ***
	(2) *Male manufacturing labor force*	*First city primacy*
(2) Male Manufacturing $N = 16$ Labor Force	.985 ***	.020
First City Primacy	—.035	.981 ***
	(3) *Generated electricity per capita*	*First city primacy*
(3) Generated Electricity $N = 15$ Per Capita	.781 ***	—.007
First City Primacy	.108	.983 ***
	(4) *Literacy*	*First city primacy*
(4) Literacy $N = 15$	.910 ***	.032
First City Primacy	.032	.990 ***

NOTE : *indicates that the corresponding coefficient is significant at the .05 level; ***, at the .001 level.

TABLE 7—PANEL REGRESSION RESULTS BETWEEN LARGE CITY PRIMACY AND FOUR INDICATORS OF SOCIOECONOMIC-DEVELOPMENT, 1961 TO 1971 STANDARDIZED PARTIAL REGRESSION COEFFICIENTS

Independent variables (1961)		*Dependent variables (1971)*	
		(1) *Nonagricultural labor force*	*Large city primacy*
(1) Nonagricultural Labor Force	$N = 16$	.709**	—.002
Large City Primacy		.201	.929***
		(2) *Male manufacturing labor force*	*Large city primacy*
(2) Male Manufacturing Labor Force	$N = 16$	.991***	—.058
Large City Primacy		—.048	.951***
		(3) *Generated electricity per capita*	*Large city primacy*
(3) Generated Electricity Per Capita	$N = 16$	.776**	—.055
Large City Primacy		.109	.919***
		(4) *Literacy*	*Large city primacy*
(4) Literacy	$N = 16$	.924***	—.042
Large City Primacy		.071	.902***

NOTE : **indicates that the corresponding coefficient is significant at the .01 level; ***, at the .001 level.

The expectation of the 1950's urbanologists that primacy adversely affects economic development also finds no support, when development is measured by the percentage of males employed in the manufacturing sector, literacy or publicly generated energy per capita. One development indicator does appear significantly affected by earlier levels of urban primacy, however—viz., percentage of the labor force in non-agricultural pursuits. The beta for the effect of first-city primacy upon this indicator is .397 and statistically significant. Those states with the most dominant first cities in 1961 showed the greatest relative loss of agriculturalists in their economically active populations. This result is consistent with the expectations of the 1950's urbanists that the primate city may act as a "magnet" for persons in rural and small-urban areas (see Fryer above).

Discussion and Conclusions

The results of the Indian case study suggest a number of modifications to current social science theory about urban primacy. It provides little support for El-Shakhs' belief that, within less developed regions, relatively advanced levels of development lead to higher levels of urban primacy. None of the development indicators employed in this study showed an impact upon subsequent levels of urban primacy. At least one aspect of the previously discarded thesis of the 1950s urbanists, however, is supported. This is the thesis that primate cities act as unusual distractions for populations engaged in agriculture. Indian states with advanced levels of urban primacy in 1961 were significantly more likely to experience declines in their agricultural sector than others. Since a decline in this particular sector seems to have been a normal correlate of other kinds of development for "early developers" (e.g., the U. S. is no longer a nation of farmers), one is not necessarily led to the conviction that urban primacy has impaired the overall development of India. However, the absence of any support for El-Shalchs' belief, along with the apparent support for at least one tenet of the earlier urbanists' thesis, suggests the following question is still open : does the primate city have a serious, perhaps even deleterious, effect upon the socioeconomic development of less developed areas?

Recent studies of Calcutta and Bombay by Lubell (1974) and Joshi and Joshi (1976), respectively, during the 1960s suggest a number of other factors might be' added to a comprehensive model of primate city development in less developed areas. Take, for instance, the recession of the middle 1960s in West Bengal. It resulted, in part, from a substantial decline in the world's demand for jute products, once synthetic substitutes were developed elsewhere. And, in part, it resulted from government reductions in investment in the important engineering industry (Lubell, 1974). The resulting declines in productivity after 1965 were quickly translated into declines in employment in engineering and jute-processing firms (see Lubell again) and, one suspects, in the relative attractiveness of the

Calcutta metropolitan area (Calcutta's share of West Bengal's urban population dropped from 34 to 29 percent between 1961 and 1971). Bombay, on the other hand, maintained its preeminance within Maharashtra (with about 38 percent of the urban population in 1961 and 1971) during the sixties, despite declines in the world's demand for its textiles, because of government-sponsored programs aimed at the development of its indigenous chemical industry (e.g. Joshi and Joshi, 1976). If less developed areas are indeed'more sensitive to fluctuations in external markets and no less sensitive to government programs than their more developed counterparts, the connection between development and primacy may be largely spurious (i.e., due to a common connection with external economic and internal political relations), rather than direct, as suggested by both El-Shakhs and the 1950s urbanists.

In any case, the overwhelming message of the Indian case study is that social science has yet to develop models capable of comprehending the complexity of urban primacy in developing areas. We really have nothing comparable to El-Shakhs' illuminating hypothesis, for more developed regions, that socioeconomic development leads to declines in urban primacy. Clearly such a model must somehow include statements about how socioeconomic development, or certain kinds of socioeconomic development, affect or are affected by urban primacy. But a host of other considerations—e.g. international relations and sociopolitical commitments—are also likely to play considerable roles. It may even be necessary to entertain the notion that there are different kinds of primate cities, just as there are different kinds of socioeconomic development.

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