

Evaluation of Economic Development at Micro Level in Karnataka

Prem Narain, S.D. Sharma, S.C. Rai and V.K. Bhatia
Indian Society of Agricultural Statistics, New Delhi-110012

SUMMARY

The level of development of various talukas of Karnataka has been estimated with the help of composite index based on optimum combination of socio-economic indicators. One hundred seventy five talukas coming from all the districts of the State have been included in the study. The data for the year 1994-95 on thirty two socio-economic indicators have been used. Out of thirty two indicators included in the study, fifteen indicators are directly concerned with agricultural development, four indicators depict the progress of development in industrial sector and the rest thirteen indicators describe the level of development in infrastructural service sector. The level of development has been separately estimated for agricultural, industrial, infrastructural and overall socio-economic fields.

In case of overall socio-economic development, the taluka of Bangalore (S) of Bangalore district has been ranked first and the taluka of Hosanagar of Shimoga district is ranked last. Positive significant association is found between the developments in agricultural sector and overall socio-economic fields. Infrastructural facilities are influencing the level of development in the positive direction. For bringing about uniform regional development, model talukas have been identified and potential targets for various indicators have been estimated for low developed talukas.

Key words : Composite index, Model talukas, Potential targets, Developmental indicators, Regional disparities.

Introduction

Development has been appropriately conceptualized as a process, which improves the quality of life. The programmes of development have been taken up in the country in a planned way through various Five Year Plans. The main objective of these programmes is to enhance the quality of life of people as well as effecting improvement in their social and economic well being. The economic growth and uniform regional development are the basic objectives of developmental programmes. The Green Revolution in agricultural sector and commendable progress in the industrial front have certainly increased the overall

total production in the country, but there is no indication that these achievements have been able to reduce substantially the regional inequality in the level of development. Although resource transfers are being executed in the backward region of the country, it has been observed that the regional disparities in terms of economic development is not declining over time.

A seminar was organized jointly by the Planning Commission, Government of India and State Planning Institute, Government of Uttar Pradesh from April 22 to 24, 1982 for focusing the attention of the scientists, planners, policy makers and administrators regarding the levels of disparities in economic development of various states in the country. Realizing the seriousness and importance of the problems of estimation of level of development, the Indian Society of Agricultural Statistics conducted a series of research studies in this direction. The data on socio-economic variables of major 17 states of the country had been critically analyzed for the years 1971-72 and 1981-82 [1991, 1992] and wide disparities in the level of development were observed by different regions. It was therefore, felt necessary to make a deeper analysis for evaluating the level of development using the district level data on socio-economic variables. The district level data had so far been analyzed for the states of Orissa [1992, 1993], Andhra Pradesh [1994], Kerala [1994], Uttar Pradesh [1995], Maharashtra [1996], Karnataka [1997], Tamil Nadu [2000] and Madhya Pradesh [2002]. Evaluation of inter-district variation in economic development was made for the districts of southern region of the country [1999]. Disparities in the crop productivity were estimated by analyzing the yield data at tehsil level in Uttar Pradesh [2001]. On detailed examination of the economic development of low developed districts, it was found that the entire part of the districts are not low developed but some parts are middle level or high level developed. Therefore, this year it has been decided to quantify the levels of development of different sectors of economy at micro level. In the first instance, the State of Karnataka has been selected for conducting the study. All the 175 talukas of the State are included in the study. The study deals with the evaluation of levels of development in agriculture, industry, infrastructural facilities and overall socio-economic fields for all the talukas of Karnataka. The evaluation of economic development at taluka level is quite important as there has been a growing consensus about the need of micro level planning in the country.

A knowledge of the level of development at taluka level will help in identifying where a given taluka stands in relation to others. The study also throws light on the relationships of socio-economic development with the developments in agriculture, industry and infrastructural facilities of various talukas of the State. On the basis of distances and composite indices of development, model talukas have been identified for fixing up the potential targets of different indicators for low developed talukas.

2. Method of Analysis

Development is a multidimensional process. Its impact cannot be evaluated fully by any single indicator. A number of indicators when analyzed individually, do not provide an integrated and easily comprehensible picture of reality. Hence, in the present study, index of development has been built up for different talukas on the basis of optimum combination of various indicators. Taluka has been taken as the unit of analysis and all the 175 talukas of the State are included in the study. The data on thirty two developmental indicators for the year 1994-95 are utilized in the analysis. Out of thirty two indicators, fifteen indicators are directly concerned with the agricultural development, four indicators depict the progress of development in industrial sector and the rest thirteen indicators describe the level of development in infrastructural service sector.

2.1 Developmental Indicators

Each taluka faces situational factors of development unique to it as well as common administrative and financial factors. Indicators which are common to all the talukas have been included in the analysis for evaluating the level of development. The composite indices of development have been obtained for different talukas by using the data on the following developmental indicators.

1. Percentage of forest area
2. Percentage of area under miscellaneous trees and groves etc.
3. Percentage of cultural waste land
4. Percentage of net area sown
5. Percentage of area sown more than once
6. Percentage of net area irrigated
7. Percentage of gross area irrigated
8. Percentage of area under rice
9. Percentage of area under cereals
10. Percentage of area under pulses
11. Percentage of area under cotton
12. Percentage of area under sugarcane
13. Percentage of area under oilseeds
14. Bovine population per lakh human population
15. Percentage of agricultural workers to total workers
16. Population per registered factory
17. Number of employees per registered factory

18. Population per commercial bank
19. Population per cooperative society
20. Total road length per '00 sq. km. of area
21. Total registered motor vehicles per lakh population
22. Population served per post office
23. Number of telephones per lakh population
24. Population per medical institution
25. Number of beds in hospital per lakh population
26. Population growth rate (1981 – 1991)
27. Density of population per sq. km.
28. Percentage urbanization
29. Percentage of SC & ST population
30. Percentage of workers to total population
31. Sex ratio
32. Literacy rate

These indicators may not form an all inclusive list but these are major interacting components of development in the State.

2.2 Estimation of Level of Development and Fixation of Potential Targets

Indicators of development come from different population distributions and they are recorded in different levels of measurements. Therefore, the values of these indicators are not quite suitable for simple addition in combined analysis. Hence, for obtaining the composite index of development, the values of the indicators are transformed by subtracting the mean from the individual observation and dividing it by standard deviation. The best value of the transformed variables for each indicator (with maximum/minimum value depending upon the direction of the impact of indicator on development) is identified and the squares of the deviations of the transformed variables from their best values are obtained. The inverse of its coefficient of variation is used as weight for obtaining the pattern of development. The statistical technique given by Narain *et al.* ([1], [5], [6], [10]) is applied to construct the composite index of development for different talukas. The composite indices have been obtained separately for agricultural, industrial, infrastructural and overall socio-economic fields. The value of the composite index is non-negative and lies between zero and one. A value close to zero indicates higher level of development whereas a value close to one indicates lower level of development. The developmental distances based on all the indicators have been obtained for each pair of talukas and model talukas have been identified on the basis of composite indices and development distances. Model talukas are better

developed talukas and the best values of different indicators of model talukas have been taken as potential targets for low developed talukas.

3. Results and Discussion

3.1 The Level of Development

The composite indices indicating the level of development have been worked out for different talukas in respect of agricultural sector, industrial sector, infrastructure service sector and overall socio-economic sector. The talukas have been ranked on the basis of level of development. The composite indices along with the rank of the talukas are given in Appendix.

It may be seen that in case of agricultural sector, the taluka of Bangalore (S) of Bangalore district was ranked first and the taluka of Hosanagar of Shimoga district was ranked last. The value of composite indices varied from 0.05 to 0.99. In case of industrial sector, the taluka of Hubli of Dharwad district was found to be on the first position and the taluka of Bagepalli of Kolar district was on the last place. The composite indices varied from 0.02 to 0.99. For infrastructural facilities, the taluka of Gudibanda of Kolar district was on the first position whereas the taluka of Ron of Dharwad district was on the last place. The composite indices varied from 0.78 to 0.99. In case of overall socio-economic development, the taluka of Bangalore (S) of Bangalore district was ranked first and the taluka of Hosanagar of Shimoga district was ranked last. The composite indices varied from 0.06 to 0.99. Ten best developed talukas in the socio-economic field are Bangalore (S), Bangalore (N), Challakere, Mangalore, Mysore, Kolar, Gadag, Karwar, Belgaum and Bangarpet. Two talukas belong to the district of Bangalore, two belong to Kolar district, and one each comes from the districts of Chitradurga, D. Kannada, Mysore, Dharwad, Uttar Kannada and Belgaum. Ten lowest developed talukas in socio-economic field are Hosanagar, Theerthahalli, Sorab, Sagar (all belonging to the district of Shimoga), Sringeri, N.R. Pura (both coming from the district of Chikamagalur), Alur, Belur (both from the district of Hassan), Siddapur and Yellapur (both from Uttar Kannada). The development in agricultural sector has a greater influence on the overall socio-economic development in the State.

3.2 Different Stages of Development

For relative comparison of talukas with respect to the level of development, it appears appropriate to assume that the talukas having composite index less than or equal to $(\text{Mean} - \text{SD})$ are highly developed and are classified in category I of developed talukas and the talukas having composite index greater than $(\text{Mean} + \text{SD})$ are low developed and are classified in category IV. Talukas with composite index lying between (Mean) and $(\text{Mean} - \text{SD})$ are medium level developed and these are put in category II and the talukas with composite index lying between (Mean) and $(\text{Mean} + \text{SD})$ are classified in

category III as developing talukas. On the basis of above classifications, talukas are put in four categories of development as high, medium, developing and low. The following table presents the district-wise number of talukas included in the analysis and the number of talukas placed in different categories of development.

Table 1. Distribution of talukas in different categories of development

District	Total number of talukas	Number of talukas in different categories of development			
		High	Medium	Developing	Low
Bangalore	3	3	-	-	-
Bangalore(R)	8	2	3	3	-
Belgaum	10	2	6	2	-
Bellary	8	2	2	3	1
Bidar	5	2	2	1	-
Bijapur	11	4	6	1	-
Chikamagalur	7	-	-	2	5
Chitradurga	9	2	3	2	2
D. Kannada	8	1	3	4	-
Dharwad	17	3	11	2	1
Gulbarga	10	1	3	5	1
Hassan	8	-	1	3	4
Kadagu	3	-	1	2	-
Kolar	11	4	5	1	1
Mandya	7	2	3	2	-
Mysore	11	3	2	6	-
Raichur	9	1	6	2	-
Shimoga	9	1	1	2	5
Tumkur	10	1	4	5	-
U. Kannada	11	2	3	4	2
Total	175	36	65	52	22

It may be seen from the above table that all the three talukas of district Bangalore are highly developed whereas none of the talukas of districts Chikamagalur, Hassan, and Kadagu are categorized in category I of high developed talukas. Thirty six talukas are classified in highly developed group and sixty five talukas are put in medium level category. These talukas are better developed. On the other hand, fifty two talukas are found to be poorly developed but these are having the tendency of improving the level of development. Twenty two talukas mostly belonging to the districts of Chikamagalur (five talukas out of a total of seven), Hassan (four talukas out of eight talukas) and Shimoga (five talukas out of nine talukas) are observed to be low developed. Most of the low developed talukas belong to low developed districts which have been identified in the study conducted by Narain *et al.* [9] where the districts were taken as the unit of analysis. It has also been observed that some talukas from the low developed districts are medium level developed and some talukas from developed districts are in the developing stage or low developed.

An important aspect of the study is to find out the relative share of rural population, population belonging to SC and ST categories, population density, educational status, land put under agricultural use, irrigation facilities and bovine population under different categories of development in the State. These details are presented in Table 2.

Table 2. Different categories of levels of development

Items	Level of development			
	High	Medium	Developing	Low
Percentage of talukas	21	37	30	12
Percentage of rural population	63	80	88	89
Percentage of SC & ST population	22	21	23	21
Population density	461	230	179	143
Literacy rate	57	53	52	51
Percentage of net area sown	58	63	48	41
Percentage of net area irrigated	32	23	22	22
Bovine population (in 'oo) (per lakh population)	215	337	430	624

About 21% talukas are found to be in high developed category whereas 37% talukas are in the category of medium level. About 30% talukas are poorly developed but these are improving their level of development at a faster rate. Only 12% talukas are low developed and these talukas require special care and efforts for making improvement in their level of development. Regarding the population composition, about 63% population coming from high developed category belongs to rural area and the remaining 37% population comes from urban area. Talukas belonging to medium developed category are having about 80% rural population. Talukas in the developing category are having 88% rural population and in the low developed category, the rural population is about 89%. Talukas having more urban population are found to be better developed. The SC and ST population in the State are uniformly distributed (about 21%) in all the four levels of development. The population density is observed to be quite high about 461 persons per sq. km. in developed talukas which cover mostly urban areas in the State. The pressure of population on land is extremely high in these areas. The talukas which are medium level developed are also thickly populated and the population density is about 230 persons per sq. km. Low developed as well as developing talukas are having low population density of 143 and 179 persons per sq. km. respectively. The analysis reveals that better developed areas are more thickly populated and the people from poorly developed areas are coming to the developed parts of the State. The literacy rate in high developed talukas is about 57% whereas in the other parts of the State, it is uniformly about 52%. As regards the development in agricultural sector, about 58% area is found to be net sown in highly developed talukas whereas about 63% area is net sown in the talukas which are medium level developed. About 41% area is net sown in the low developed talukas and 48% area is found to be net sown in the developing talukas. About 32% area is irrigated in the highly developed talukas.

In other talukas, about 22% area is found to be irrigated. The situation regarding distribution of bovine population is found to be quite different. In the low developed areas, the bovine population per lakh human population is as high as 624 whereas in highly developed talukas the corresponding figure is 215. The bovine population per lakh human population is about 337 and 430 in medium level developed and developing areas respectively.

3.3 Inter-relationship Among Different Sectors

It is quite important and essential that impact of development in different sectors of economy should be in proper direction which may improve the level of living of the people. The development in different sectors should flourish together in the State. The correlation coefficients between agricultural, industrial, infrastructural facilities and socio-economic developments are given in Table 3.

Table 3. Correlation coefficients

Sectors	Agricultural development	Industrial development	Infrastructural development	Socio-economic development
Agricultural development	1	0.109	0.267**	0.999**
Industrial development		1	0.165*	0.110
Infrastructural development			1	0.268**
Socio-economic development				1

* Significant at 0.05 probability level.

** Significant at 0.01 probability level.

Agricultural and industrial developments are not found to be associated in the State. Industrial development is poor in the talukas which are agriculturally developed. The correlation coefficients between infrastructural facilities and agricultural and socio-economic developments are found to be highly significant. This indicates that the infrastructural facilities available in talukas are very much utilized in developmental activities. Industrial development is also significantly associated with infrastructural facilities. Overall socio-economic development is very highly associated with agricultural development. In fact agricultural development is prominent in almost all the talukas of the State and the talukas which are agriculturally advanced are found to have high level of overall socio-economic development. In other words, agricultural and overall socio-economic development are going hand in hand in the State. Industrial development does not have any significant impact on the overall socio-economic development.

3.4 Model Talukas and Potential Targets for Low Developed Talukas

For bringing out uniform regional development in the State, it is important to examine the extent and nature of improvement needed in different developmental indicators of low developed areas. This information may be useful for readjusting the resources in reducing the level of disparities in development. Model talukas have been identified for evaluating the impact of development activities in the low developed areas. Model talukas are also used for fixing up the potential targets of various indicators in the low developed talukas. The identification of model talukas has been made on the basis of developmental distances and composite indices of development. List of model talukas belonging to the same or nearby districts of low developed talukas is given in Table 4.

Table 4. Model talukas for low developed talukas

Low developed talukas	Model talukas
Chikamagalur (Kadur, Koppa, N.R. Pura, Sringeri, Tarikere)	Harihara, Hiriyuru, Mudhol, Indi, Bagalakot
Shimoga (Honnali, Hosanagar, Sagar, Sorab, Theerthahalli)	Bhadravathi, Shimoga, Yelaburga, Manvi, Madhugiri
Hassan (Alur, Arasikere, Belur, Sakaleshpura)	Hassan, Somawarpet, Chittapur, Afzalpur
Chitradurga (Holalkere, Hosadurga)	Harihara, Chitradurga, Hiriyuru
Uttar Kannada (Siddapur, Yellapur)	Ankola, Haliyal, Kumta
Bellary (Kudligi)	Hadagali, Siraguppa, Basavakayan
Dharwad (Kalghatagi)	Dharwad, Byadgi, Mundargi
Gulbarga (Shorapur)	Afzalpur, Chincholi, Chittapur
Kolar (Gudibanda)	Chinthamani, Mulabagilu, Shidlaghatta

Model talukas are better developed in comparison to low developed talukas and they mostly belong to the areas of medium level developed category. The best values of developmental indicators of model talukas will be taken as potential targets of the low developed talukas. Improvements needed in various developmental indicators of low developed talukas are as follows

1. District Chikamagalur (Kadur, Koppa, N.R. Pura, Sringeri, Tarikere)

Population growth is not very high in these talukas. About 20% population of the low developed talukas belongs to SC and ST communities. Programmes suitable to these communities might be undertaken in the area. Literacy rate is quite satisfactory in the low developed areas. These talukas are less developed in agricultural sector. Improvement is needed for enhancement of irrigation facilities in the area. Communication systems should also be improved and more medical facilities should be created in the area.

2. District Shimoga (Honnali, Hosanagar, Sagar, Sorab, Theerthahalli)
Development in agricultural sector is extremely low. Most of the area is single cropped and irrigation facilities are poor. Steps should be taken to make improvement in agricultural development. Population growth is not very high. About 18 to 20% population belongs to SC and ST communities. Literacy rate is satisfactory. Improvements in transport and communication systems and medical facilities are required in the low developed talukas.
3. District Hassan (Alur, Arasikere, Belur, Sakaleshpura)
Population growth is low in poorly developed talukas. About 25% population belongs to SC and ST communities. Programmes suitable to SC and ST communities might be undertaken in the area. These talukas are agriculturally backward. Special care should be taken to make improvement in agricultural development. Literacy rate is satisfactory. Improvements are needed in medical facilities and communication systems in these areas.
4. District Chitradurga (Holalkere, Hosadurga)
Population growth is low in these talukas. More than 30% population belongs to SC and ST communities. Developmental programmes should be undertaken in the area for the upliftment of the weaker section of the society. Literacy situation is quite satisfactory. These talukas are less developed in agricultural sector. Irrigation facilities are very poor. Steps should be taken to make improvement in agricultural development. Medical facilities and communication systems should be improved.
5. District Uttar Kannada (Siddapur, Yellapur)
Population growth is low. These talukas are less developed in agricultural sector. Irrigation facilities should be increased. Improvement is also required in medical facilities and transport as well as communication systems. Literacy rate is quite satisfactory in these talukas.
6. District Bellary (Kudligi)
Population growth is very high. About 45% population of the taluka belongs to SC and ST communities. Developmental programmes suitable to these communities might be undertaken. The taluka is backward in agricultural sector. More irrigation facilities should be created in the taluka. Only 36% population is reported to be literate. Steps should be taken to enhance the literacy rate and improve transport and communication systems in the area.
7. District Dharwad (Kalghatagi)
The taluka is low developed in agricultural sector. Irrigation facilities should be created. Literacy rate in the taluka is also low as compared to the literacy rate of the district. Action should be taken to enhance the literacy rate and also for improvement of transport and communication systems.

8. District Gulbarga (Shorapur)

Population growth is high in the taluka. About 30% population of the taluka belongs to SC and ST communities. Developmental programmes suitable to SC and ST communities should be undertaken. The taluka is backward in agricultural sector. More irrigation facilities should be created in the taluka. Literacy rate is comparatively low. Transport and communication systems require improvement.

9. District Kolar (Gudibanda)

About 36% population of the taluka belongs to SC and ST communities. Developmental programmes suitable for upliftment of these communities should be undertaken in the area. The population growth is low in the taluka. The area is backward in agricultural development. Irrigation facilities should be created in the area for improvement in agricultural sector. Transport and communication systems also require improvement.

5. Conclusion

The broad conclusions emerging from the study are as follows

- With respect to overall socio-economic development, 36 talukas out of 175 talukas are found to be better developed and 65 talukas are middle level developed. About 22 talukas are low developed which require special attention while implementing the rural developmental programmes.
- Talukas which are better developed in socio-economic fields, are also better developed in agricultural sector. In fact, agricultural development is very highly associated with the overall socio-economic development.
- Infrastructural facilities available in the talukas are utilized for implementing the developmental programmes in better developed talukas.
- Socio-economic development is positively associated with the development in agriculture.
- Better developed areas in the State are observed to be thickly populated.
- Wide disparities in the levels of development have been observed between different talukas.
- For improving the level of development of low developed talukas, potential targets for different indicators have been suggested. The talukas which are backward in agricultural development are also found to be backward in overall socio-economic development.

REFERENCES

- [1] Narain, P., Rai, S.C. and Shanti Sarup (1991). Statistical evaluation of development on socio-economic front. *Jour. Ind. Soc. Agril. Stat.*, **43**, 329-345.
- [2] Narain, P., Rai, S.C. and Shanti Sarup (1992). Evaluation of economic development in India. *Souvenir of 11th Economic Development Conference in Complementarity of Agriculture and Industry in Development*. Instt. Trade & Industrial Development, New Delhi. 67-77.
- [3] Narain, P., Rai, S.C. and Shanti Sarup (1992). Classification of districts based on socio-economic development in Orissa. *Yojana*, **36(23)**, 9-12.
- [4] Narain, P., Rai, S.C. and Shanti Sarup (1993). Evaluation of economic development in Orissa. *Jour. Ind. Soc. Agril. Stat.*, **45**, 249-278.
- [5] Narain, P., Rai, S.C. and Shanti Sarup (1994). Regional dimensions of socio-economic development in Andhra Pradesh. *Jour. Ind. Soc. Agril. Stat.*, **46**, 156-165.
- [6] Narain, P., Rai, S.C. and Shanti Sarup (1994). Inter-districts disparities in socio-economic development in Kerala. *Jour. Ind. Soc. Agril. Stat.*, **46**, 362-377.
- [7] Narain, P., Rai, S.C. and Shanti Sarup (1995). Regional disparities in the levels of development in Uttar Pradesh. *Jour. Ind. Soc. Agril. Stat.*, **47**, 288-304.
- [8] Narain, P., Rai, S.C. and Shanti Sarup (1996). Dynamics of socio-economic development in Maharashtra. *Jour. Ind. Soc. Agril. Stat.*, **48**, 360-372.
- [9] Narain, P., Rai, S.C. and Bhatia, V.K. (1997). Regional pattern of socio-economic development in Karnataka. *Jour. Ind. Soc. Agril. Stat.*, **50**, 380-391.
- [10] Narain, P., Rai, S.C. and Bhatia, V.K. (1999). Inter district variation of development in southern region. *Jour. Ind. Soc. Agril. Stat.*, **52**, 106-120.
- [11] Narain, P., Sharma, S.D., Rai, S.C. and Bhatia, V.K. (2000). Regional disparities in socio-economic development in Tamil Nadu. *Jour. Ind. Soc. Agril. Stat.*, **53**, 35-46.
- [12] Narain, P., Sharma, S.D., Rai, S.C. and Bhatia, V.K. (2001). Regional dimensions of disparities in crop productivity in Uttar Pradesh. *Jour. Ind. Soc. Agril. Stat.*, **54**, 62-79.
- [13] Narain, P., Sharma, S.D., Rai, S.C. and Bhatia, V.K. (2002). Dimensions of regional disparities in socio-economic development in Madhya Pradesh. *Jour. Ind. Soc. Agril. Stat.*, **55**, 88-107.
- [14] Regional dimensions of India's economic development. *Proceedings of Seminar held on April 22-24, 1982 sponsored by Planning Commission*, Govt. of India and State Planning Institute, Govt. of U.P.
- [15] Taluka socio-economic indicators (1995). DES No. 68/1996, Directorate of Economics & Statistics, Karnataka, Bangalore.