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## Comparisons of land and labour productivity in Karnataka

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### Abstract

The importance of agriculture in the economic development of any country, rich or poor, is borne out by the fact that it is the primary sector of the economy which provides the basic ingredients necessary for the existence of mankind and also provides most of the raw materials which then transformed into finished products, serve as basic necessities of the human race. In a preponderantly agrarian economy, agriculture plays a most strategic role from several points of view. At a minimum, farm production must be increased rapidly enough to keep pace with population growth. However, in a speedy industrializing economy, this is not enough. Industrialization necessarily brings with it urbanization and a rapid expansion of the industrial labour force. This may then be expected to bring with it a rising per capita demand for food, based on higher urban incomes. Moreover, in one form or another, agriculture is called upon to save and finance a significant part of the investment for an expansion of industrial plant, transport and other sectors as well.

**Keywords:** Growth of productivity and production, improved in labour an land in agricultural, growth rate, trends in agricultural crops.

### 1. Introduction

Agricultural productivity is a multidimensional concept, which includes technological advancement, effective management of available resources and organizational set-up for the agricultural production. These factors in turn affect the relative production in any region.

In order to assess the productivity variations in each of the twenty-seven (including newly created) districts of the state, the best two methods (out of seven) for the evaluation of productivity have been applied, considering all the major food crops grown in the state, namely, Rice, Ragi, Jowar, Bajra, Maize, Wheat, Other Cereals, Tur, Gram, Other Pulses, Groundnut, Sugarcane and Cotton since the beginning of 1993-94 in the state up to 2007-08.

As said above, the following two approaches have been adopted for evaluating productivity, viz;

- a) Agricultural Productivity Based on Output per hectare of Cropped Land (Price Weighted).
- b) Agricultural productivity Based on Output per Agricultural Worker (Price Weighted) to perform at their highest potential?

### 2. Computation of Agricultural Productivity, Based on Output Per Hectare of Cropped Land (Price Weighted)

Productivity based on agricultural output per hectare may be accounted due to certain advantages, because land is the most permanent and fixed among other factors for evaluating productivity. Recently, it has assumed a special attention due to population explosions and the relative returns from it. Therefore, to evaluate productivity indices in each district farm state level harvest prices for the corresponding years have been incorporated. This gives the agricultural output per hectare (in Rs.). These indices of a farm output have been computed by multiplying the harvest price to the production of crop concerned. These products were finally added up and divided by the total crop area to get the value of output per hectare (in Rs.)

### 3. Computation of Productivity, Based on Output Per Agricultural Worker (Price Weighted)

Productivity can also be assessed by evaluating the returns per agricultural worker engaged in the farming as this indicates the standards of farming population in a certain region and their returns from the business, which they perform.

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The productivity of agricultural worker can be assessed by multiplying the production by the price (harvest) and the product is to be divided by the population engaged for the production process since planting to harvesting the crop. The indices of labour and Land Productivity in terms of money are presented in Table 6.5. These indices were computed in terms of output per agricultural worker and output per hectare of cropped land for the years 1993-94 to 2007-08 in rupees (at 1990-91 constant prices). The Table shows that there is wide inter-district variations in productivity indices. The average value of output per agricultural worker ranges from Rs. 263.60 to 6017.40 in the districts of Bangalore (U) and Belgaum respectively, and output per hectare of cropped land from Rs. 5647.60 to Rs. 77003.02 in Bellary and Mandya respectively. The comparisons of labour and land productivity indices for the twenty-seven districts of the state, and also in terms of growth rates are presented in Fig 6.8. The extent of labour and land productivity has been measured on the Y/L vertical axis and Y/A horizontal axis respectively. Broadly three distinct scatters or paths extending out from the origin can be observed: (a) the first scatter or path indicated by a group of districts namely, Belgaum, Shimoga, Bijapur, Bagalkot, Bidar, Mandya and Kodagu, where the extent of relationship between both productivities is highly favourable, (b) the second scatter is indicated by the districts of Chitradurga, Davangere, Chikmagalur, Hassan, Mysore, Chamarajnagar, Dakshina Kannada, Udupi and Bellary, where the extent of relationship between labour and land productivity has not been so favourable, and (c) the third path is indicated by the remaining districts of the state where the relative productivity indices are far below the above two extremes. These relationships may further be visualized and each path seems to reflect the long-run process of productivity variations in respect of Labour and Land Output in each district which represents a part of certain region in the state.

#### 4. Productivity Regions - Based on Aggregate Level

The general conclusion which may be derived from the preceding analyses of the regional patterns of the levels and temporal trends in the agricultural productivity, is that there exist wide-ranging disparities in the level as well as in the growth of productivity in different parts of the state. Broadly speaking, the Bidar, Bijapur, Bagalkot and Belgaum districts of north Karnataka and Shimoga, Mandya and Kodagu of South Karnataka constitute a region of high productivity with high rate of growth. The central part of the state including Chitradurga, Davangere, Chikmagalur and Bellary, and also the southern districts of the state including, Dakshina Kannada, Udupi, Mysore, Chamarajnagar and Hassan show a medium level of productivity as well as moderate rate of productivity growth. The remaining parts of the state, particularly the districts, Bangalore (U), Tumkur and Gulbarga are characterized by a low level of productivity, and declining growth rate. Despite this general pattern, there is considerable divergence in the level as well as the trend in agricultural productivity considered on the basis of each index taken separately. Therefore, the determination of generality in the maze of diversity, requires some conclusive and composite indices with regard to the level and growth of productivity. In order to achieve this objective, factor analysis was undertaken with an added objective to find out the most appropriate index for further analysis. In the first place, matrix of inter-correlation of the two indices were computed. An examination of these inter-correlations of the productivity indices shows

that both indices are positively correlated with each other and indicate a high degree of interdependence. This signifies that both the indices which have been considered measure the same thing the productivity. From the matrix of inter-correlations, two factors are derived which taken together explain 85.73 percent variance and 72.76 and 18.36 percent variance individually. Therefore, the first factor may be taken as the productivity dimension emerging from the inter-correlations of the productivity indices. Loading of these indices on the first factor indicates their respective weight ages and signifies the dimension of agricultural productivity which these indices individually explain. Thus, by using loadings of the two indices as their weights in conjunction with the normal distribution of average values of indices and the annual rate of growth, "factor Scores" were calculated which showed the relative positions of the districts with regard to their level of productivity and rate of growth separately. It should be noticed that instead of calculating factor loadings for the growth rate separately, the loadings obtained from the average level of productivity were used to aggregate divergent temporal-trends in different indices so that aggregate regional patterns of the productivity level and trend may be compared.

#### 4.1 Regional Patterns of Productivity Level (Aggregate)

Regionalization of the districts according to the method outlined earlier, shows three district regions of High, Medium and Low Productivity.

#### 4.2 Region of High Productivity

This region includes the districts of Shimoga, Belgaum, Bijapur, Bagalkot, Bidar and Mandya. High Level of Productivity is also indicated by the hilly district of Kodagu. These districts constitute about 25.90 percent of the total number of districts and show a level of productivity considerably higher than 0.5 SD from the average factor score.

#### 4.3 Region of Medium Productivity

The districts having factor scores between +0.5 SD and -0.5 SD form a continuous block in the Central Part of the State with some pockets in the Southwestern part. This region includes the districts of Chitradurga, Davangere, Chikmagalur, Bellary, Hassan, Mysore, Chamarajnagar, Dakshina Kannada and Udupi. All these districts together constitute about 33.30 percent of all the districts in the state.

#### 4.4 Region of Low Productivity

This region includes about 40.00 percent of the districts under study. This region includes the districts of Bangalore (R), Bangalore (U), Tumkur and Kolar of Southern Karnataka; and Uttar Kannada, Raichur, Koppal, Dharwad, Gadaga, Haveri and Gulbarga of northern Karnataka. These districts show a level of productivity below -0.5 SD from the mean of factor scores.

#### 4.5 Regional Patterns of Productivity Trends (Aggregate)

The factors scores calculated by using loadings of various indices on the first factor in conjunction with the normalized distribution of annual growth rates of these indices are grouped in three categories of high, medium and low rates of growth. These categories are mapped in Fig 6.10 which show regional patterns of the temporal trend in the productivity.

#### 4.6 Region of High Growth Rate

This region is constituted by two major areas and two isolated

pockets where rate of growth is found to be high. The first major area includes the districts of Belgaum, Bijapur and Bagalkot. The second major area which shows a high rate of growth comprises the districts Mandya and Kodagu. Besides these contiguous areas of high growth rate, the districts of Shimoga and Bidar also show a high rate of growth productivity. This region constitutes more than 25.00 percent of the total number of districts of the state.

#### 4.7 Region of Medium Growth Rate

The major compact area of moderate growth rate is found in the southern districts of Mysore, Chamarajnar, Bangalore (U), Hassan, Dakshina Kannada, Udupi, Chikamagalur, Chitradurga and Davangere. Besides these districts, Bellary and Gulbarga are also the districts of medium growth rate. This region covers 40.74 percent of the total number of the districts of state.

#### 4.9 Region of Low Growth Rate

Low rate of growth in the state prevails in more than 33.00 percent of the districts. The major concentration of these districts is found in the central part of the state. The two compact regions of low growth rate in productivity are found in the districts of Uttar Kannada, Dharwad, Gadag, Haveri, Raichur and Koppal in the north and also Tumkur, Kolar, Bangalore (R) in the southern part of the Karnataka State.

#### 5. Conclusion

From the above, it is clear that regional variation is existing in Karnataka in respect of agricultural development. Regional imbalance in agricultural productivity caused the undevelopment of agriculture in Karnataka state. Regional imbalances in agricultural productivity are due to special variations in the availability of important agricultural inputs. Provision of agricultural input along with the development of basic infrastructure will help to develop agriculture. Further diverting of human labour pressure from agriculture sectors to some non-agricultural sector will increase the productivity of agricultural sector and contributes positively towards the agricultural development in the state.

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