

Alternative Growth Scenario and Nutritional Outcome using Recursive Dynamics CGE Approach : A Study of India

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1. Introduction and Research Questions

This paper attempts to find nutritional outcome of alternative growth scenario for poor households in India. In particular it asks, if giving impetus to agriculture would translate itself into improved nutritional outcome for the rural poor ? Though India undertook structural reforms and opened up the economy in 1991, there are sufficient documentation that the malnutrition of adult and children is still a grave concern for the planners inspite of many welfare schemes that were launched in the last 2 decades. Agricultural sectoral growth is also diving down. In this background, this study attempts to find if the gloomy prospect of agricultural sector is the major cause, or the problem lies elsewhere.

2. Methodology

The paper uses CGE model of Recursive Dynamics to project results for the future years with reference to BAU and alternative scenarios. The basic model adopts the one by Panda-Ganesh Kumar (2008) for production and consumption structure and made extensions to suit our analysis. The existing CGE model is a static model based on a modified Social Accounting Matrix for the year 2003-04. The specific features of the model are: Intermediate demands follow Leontief's input-output coefficients and the sectoral value added follows CES (constant elasticity of substitution) production function. Households preferences follow LES system of demand ROW is a single entity in the model It follows Armington specification for trade. To suit our analysis, the following adjustments have been made in the existing model.

Agricultural sector - In the existing model, the agricultural sector comprises 14 subsectors, 10 for crops and 4 for allied sectors such as Dairy, Fishing, Poultry and other animal products. In the crop sector, coarse cereals are combined into one sector. Since the present analysis focuses on consumption and nutrition, individual crops in the combined coarse cereals, viz. Bajra, Jowar, Maize and others have been separated and the total crops sector is extended from 10 to 13 sectors.

Factor Market Disaggregation - The existing model has only 5 factors, 4 for labour, rural-urban further divided by skilled and unskilled and 1 for capital. Our model has split capital into land, agricultural capital and non-agricultural capital. This was perceived as important for the recursive dynamics where the growth in the land and agricultural capital widely differs from that of non-agricultural capital. Hence to inject growth in the capital , it has become necessary to have these types separately.

Household Classification - The existing SAM has five household classes each for rural and urban areas based on the consumption expenditure. The modified SAM aggregated top 2 and bottom 2 household classes to make only 3 household classes each for rural and urban areas. This was carried out to make the model more meaningful for the future years. There may be households who shift from one group to another and the model is not capable of updating this. The clubbing of finer groups will result in minimum errors.

The following is the final household groups. The classification is based on three expenditure classes each for rural and urban areas and was based on the following monthly per capita expenditure percentiles: Bottom 30% of the population; 30% - 70% of the population ; Top 30% of the population

The model follows "recursive dynamics" for future projections, wherein interperiod changes are analysed through a series of temporary equilibria. Parametric changes will be fed into the model to take it to future years. The parametric changes are considered for capital, population growth, labor, Total factor productivity, certain behavioral parameters, government expenditure and foreign

inflow and outflow. With 2006/07 as the base year, the model will be simulated for the block years 2009-10 and 2010-20.

3. Data

To study the effect of various policy targets on agriculture in general equilibrium model, a Social Accounting Matrix (SAM) for 2006/07 of India based on the detailed SAM developed by Panda and Ganesh-Kumar (2008) will be used. The SAM comprised 35 sectors, 7 factors of production and 6 categories of households 3 each for rural and urban based on MPCE. The 35 sectors comprised 17 sectors from agriculture, one sector of primary products, 4 sectors of agro-processing, 7 sectors of manufacturing and 6 sectors of services. The SAM was constructed at market prices of the commodities in 2006/07.

4. Novelty of the research

Past studies are mostly based on static model. The present study employs a forward looking approach, by using recursive dynamic model. It will give a useful direction to the policy makers to minimize malnutrition especially of the poor. Alternative scenarios will consist of GDP led growth, agriculture led growth, cereal led growth and non-agriculture led growth at 2 alternative growth rates scenario.