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Measuring Sustainability of Indian Agriculture

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Abstract

The sustainability of food grain availability of Indian agriculture can be measured in terms of non-declining percentage change in per capita food grain production. In the similar way the sustainability of food grain production of Indian agriculture can be measure in terms of non-declining percentage change in per hectare food grain production. The present study finds that the trend of percentage change of food grain production both in the term of per hectare and per person is non-declining. Therefore, one can say that Indian agricultural production is sustainable

Keywords: Sustainability, Agriculture.

1. INTRODUCTION

The Contribution of the agricultural sector in the Indian Gross Domestic Product has been declining over the period. On the other hand, the population of India has been increasing.

In such a situation, one should know the sustainability of the Indian agriculture. The share of the agriculture was 67.5 per cent in GDP in 1950 that decreased to 17.00 per cent in 2021. The population of India increased from 359 million in 1950 to 1401 million in 2021. The yield of food grain increased from 522 kg per hectare in 1950 to 2520 kg per hectare in 2021. The per capita food grain production increased from 141 kg per person per year in 1950 to 220 kg per person per year in 2021. One should ask the question, is it sustainable agricultural production in India? The present paper finds its answer that it is sustainable agricultural production.

2. Objectives

Objective of this study is to know the advantages of different currency regimes for policy implications to enhance the economic growth.

3. Methodology and Data Sources

The secondary data have been used in the present analysis to measure the sustainability of the Indian agriculture. Data have been taken from the Handbook of Statistics on Indian Economy published by Reserve Bank of India for the period of 1991 to 2021. Per hectare productivity of Indian food grain production has been used to measure the trend line of the percentage change in the productivity. In the similar line of the measuring the sustainability has been used by population data for availability of per person food grain. The data for population has been taken from the World Development Indicators published by World Bank. It is clear that agricultural sustainability is measure two ways. **First**, none-declining percentage change in per capital food grain availability shows sustainable agriculture. **Second**, non-declining percentage change in per hectare food grain production may be called sustainable agricultural productivity.

4. Literature Review

Agriculture is activity that produces foods, fibres, fuels, forestry and fisheries through the use of terrestrial plants and animals (FAO, 2017). A sustainable agriculture is that in which output does not decrease when input is not increased (Monteinth, 1990). When productivity is maintained even in the case of disturbances, is called sustainability (Conway, 1985).

5. Analysis

The agricultural sector is the back bone of the Indian economy because it supports maximum employment, contributes in GDP and shares positive net export. On the other hand, the population of India has been increasing over the period. Therefore, there are mainly two fold burdens on the Indian agriculture. **First**, maintaining rising trend of per capita food grain production is required. **Second**, maintaining soil capacity to maintain rising trend of per hectare food grain production is required. The present paper discusses these two facts and proves that Indian agricultural sector is sustainable.

Fact-1: Indian agriculture is able to feed the rising population

Figure-1 has been incorporated to show the trend line of percentage change in per capita food grain production. It answers the question of whether the Indian agricultural sector is able to feed the rising population or not. Per capita food grain production has

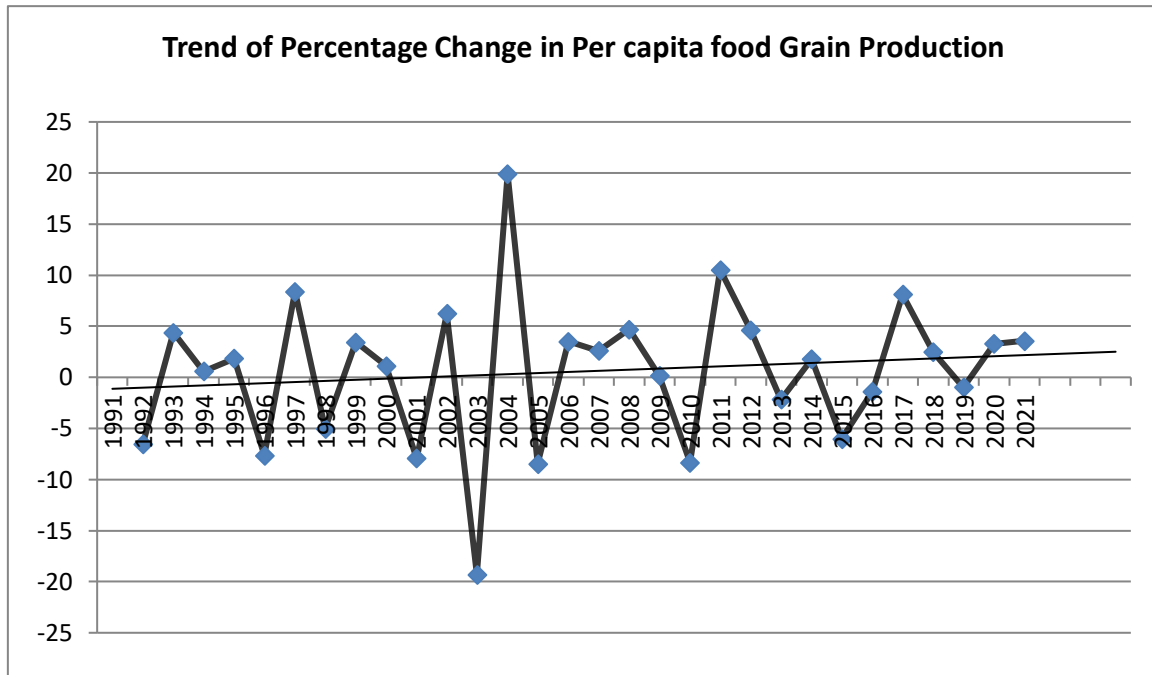


Figure.1. Trend of Percentage Change in Per capita food Grain Production

increased from 200 kg per year in 1991 to 228 kg per year per person in 2021. Not only this, the rate of rise in the food grain production is more than growth rate of population. Its reasons could be many. **First**, India has improved agricultural technology to enhance food grain productivity. **Second**, irrigation facility has been improved by irrigation infrastructure.

A sustainable production requires a rising trend of percentage change in the per capita food grain production. The figure-1 clearly shows this trend. Therefore, by graphical method, one can prove that Indian agriculture is sustainable and able to feed the rising population. There are various reasons of having a sustainable Indian agriculture. Irrigation intensity has increased over the period. Cropping intensity of Indian agriculture has been rising. Cropping pattern shows that Indian agriculture has moved towards cash crops.

Fact-2: Indian agricultural Soil is able to maintain rising production

Figure-2 has been dedicated to show rising trend of land productivity. The trend line is non-declining proving sustainable Indian agricultural production.

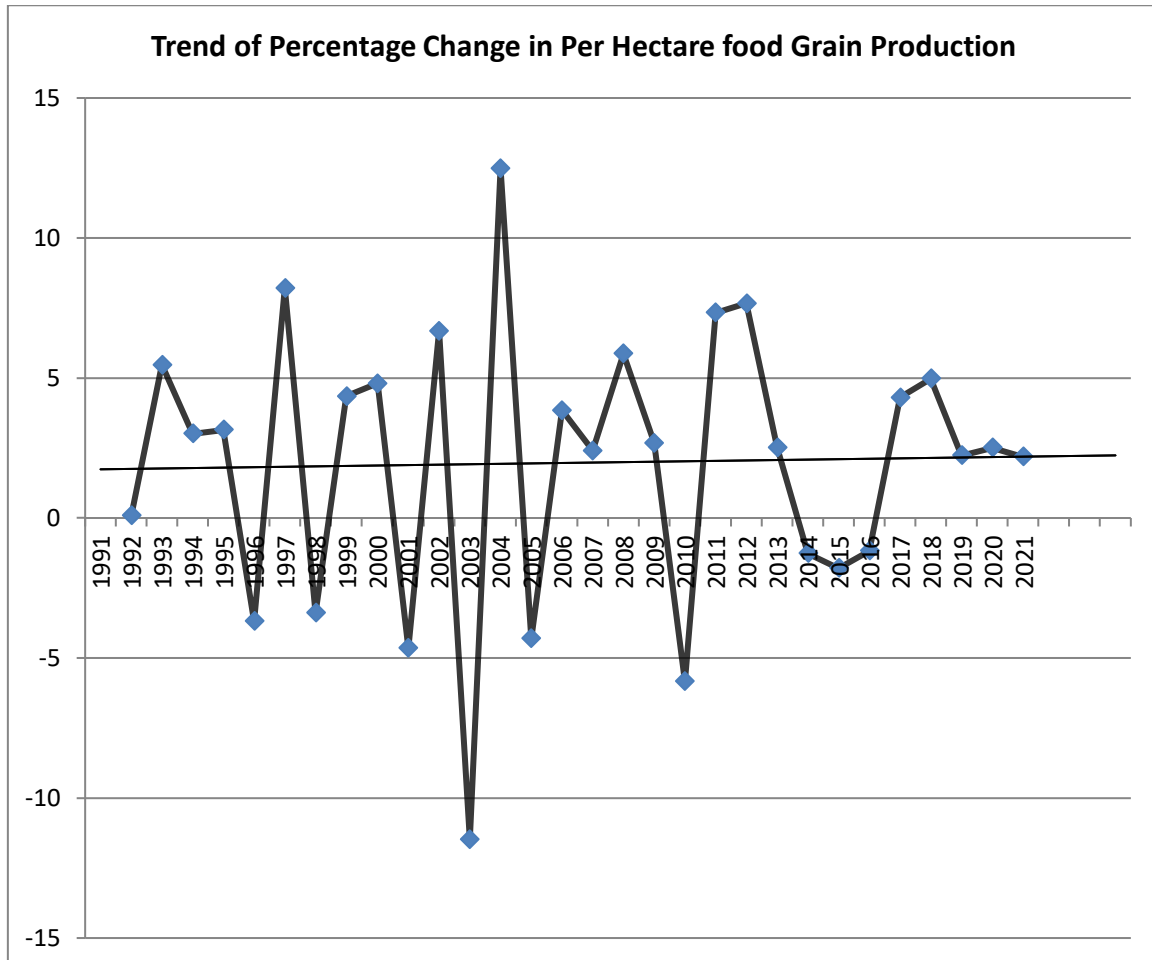


Figure.2. Trend of Percentage Change in Per Hectare food Grain Production

The land productivity has been showing a rising trend over the period. There are various reasons of. Agricultural cropping intensity has been maintained over the period. Technology has been improving and Indian agriculture is adopting new technologies over the period. The soil capacity has been maintained by changing cropping pattern over the period.

Table-1 has been dedicated to get the trend line of per capita food availability and per hectare food grain productivity.

Table-1: Percentage Change in Per person and Per Hectare Food Grain Production

Year	Total Food Grain Production (Lakh Tonne)	Land Used (Lakh Hectare)	Population of India	% change per hectare Food Grain Production	% change per person food production
1991	1764	1278	883927600	-	-
1992	1684	1219	902957070	0.085383	-6.54703
1993	1795	1232	922118387	5.466701	4.376514
1994	1843	1228	941163767	3.008538	0.596383
1995	1915	1237	960301044	3.150684	1.835979
1996	1804	1210	979678458	-3.69428	-7.65963
1997	1994	1236	999133762	8.207041	8.37985
1998	1931	1239	1018665080	-3.39396	-5.01624
1999	2036	1252	1038225823	4.342798	3.451095
2000	2098	1231	1057922733	4.803066	1.126642
2001	1968	1211	1077898575	-4.64718	-7.93477
2002	2129	1228	1097600380	6.683276	6.239059
2003	1748	1139	1116803006	-11.4802	-19.3074
2004	2132	1235	1135991513	12.48705	19.90775
2005	1984	1201	1154676322	-4.30739	-8.44769
2006	2086	1216	1172878890	3.844158	3.509385
2007	2173	1237	1190676021	2.402202	2.613614
2008	2308	1241	1207930964	5.870264	4.695393
2009	2345	1228	1225524753	2.678723	0.144492
2010	2181	1213	1243481564	-5.84348	-8.33669
2011	2445	1267	1261224954	7.326603	10.52741
2012	2593	1248	1278674502	7.667761	4.605905
2013	2571	1207	1295829511	2.519593	-2.16107
2014	2650	1260	1312277191	-1.26286	1.780852
2015	2520	1220	1328024498	-1.78781	-6.03326
2016	2515	1232	1343944296	-1.17051	-1.38062
2017	2751	1292	1359657400	4.30396	8.119587
2018	2850	1275	1374659064	4.980007	2.468118
2019	2852	1248	1389030312	2.235155	-0.96518
2020	2975	1270	1402617695	2.50577	3.302268
2021	3107	1298	1414203896	2.184097	3.58135

Source: 1. Handbook of Statistics on Indian Economy 2. World Development Indicator, World Bank
Food Grain = Rice +Wheat +Coarse Cereal + Pulse

6.
Conclusio
n
A method
of
measuring
the
sustainabil
ity of
Indian
agriculture
has been
incorporat
ed in the
present
study. A

methodology has been adopted to measure its sustainability. It is non-declining trend of percentage change in per capita food grain production for showing sustainability of

agriculture to feed the rising population. It is non-declining trend of percentage change in per hectare food grain production for showing the sustainability of Indian agriculture to produce more. It has been found that Indian agriculture is sustainable in both the cases. Finally, one can conclude that Indian agriculture is sustainable..

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