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AN EMPERICAL ANALYSIS OF AGRICULTURAL STRUCTURE OF ODISHA

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ABSTRACT

This paper deals with analysis of agricultural structure of Odisha. It has been found that the productivity has been stagnant especially in last two decade. The average size of holding has been on decreasing path in all size group class. If we look at whole picture of agriculture in Odisha so may be of India as a whole, it seems that the agriculture sector has been in the receiving ends. In this context it is essential to study about the agricultural structural and situation in Odisha and its implication for overall economic development. Because at last what we need is development of people with a sustainable way. For that we need to see the macro picture of agriculture.

KEYWORDS: *Agriculture, Demonstration Effect, Migration, Livelihood, Labour, Sustainable Agricultural Growth.*

1-BACKGROUND

Labour is an important factor for agricultural production. What so ever may be the advancement of technology; in each and every work on agriculture, labour cannot be fully replaced by modern machine. But now a day due to distress or aspirations to work on non-farm sector, the people are on move from rural area to urban area (Sharma, 1997). From my pilot study (through scheduled questionnaire surveyed to villagers and migrants) in the month of January 2013, from two villages of Bargarh district i.e. Ganthiapali and Chikhili of Ambabhona Block, I found that most of the villagers are not interested in farming activities. Mostly the youth in the age group 20-40 are migrating to different places ranging from inter-region migration to inter-state migration. The impact of migration on the place of origin from rural area to other area is very complex issue to study. Since agriculture is the prime activities for livelihood in rural area of Odisha, it's very important to study the interaction between labour out migration and agriculture.

2- INTRODUCTION

Odisha is one among the agrarian state in India. Most of the people of Odisha depend on agriculture as their livelihood. Odisha agriculture contributes 21.11 percent to Net State Domestic Product (NSDP) in 2007-08 at 1999-2000 prices (economic survey, Odisha 2007-08) and provides employment directly or indirectly an odd 70 percent of labour force as per as 2001 census. The share of Gross State Domestic Product (GSDP) from agriculture and allied services is around 16.46 percent (advance estimate, economic survey Odisha 2011-12). Empirically the agriculture and allied sector played a vital role in the economy of the state of Odisha and livelihood of majority of its populace. Agriculture is one of the sectors, which if properly managed than it has relatively less side effect unlike other sectors. Since agriculture is the sectors which employ to relatively more man labour days than other sectors, it provides livelihoods to more people with more distributive manner. But due to demonstration effect

and other push and pull factors has been making people to migrate to cities, mega cities, industrial area and special economic zone (SEZ). But after green revolution the agricultural sector has become more technical. The agricultural labours are also migrating with non-agricultural labour.

In this context it is essential to study about the agricultural structural and situation in Odisha and its implication for overall economic development. Because at last what we need is development of people with a sustainable way.

Before analysing the changes that have taken place in agriculture in Odisha in the recent years, first let's see what has happened to agriculture as a whole in all India and Odisha level. For that we need to see the macro picture of agriculture.

3-SOME MACRO INDICATORS OF INDIA AND ODISHA: WITH RESPECT TO AGRICULTURE

Indian economy is more complex economy then any economy in the world. India cannot be compare with other developed or underdeveloped economy. India is special country from the front of socio-economic and political perspective. India's culture and tradition is different and distinguished from other country. Although agriculture including allied activities accounted for only around 14 percent of Gross Domestic Product (GDP) at constant prices (2004-05) in 2011-12 (Economic Survey 2011-12), still its role in Indian economy is much bigger than any other sector when we look from the employment side, which provides employment to 58.2 percent of work force according to 2011 census. The declining share of agriculture and allied activities in India's economy GDP is consistent with normal development trajectory of any developed economy, but fast and sustainable agricultural growth remain vital for employment generation, incomes, assets creation, food security, poverty reduction, inclusive growth and development and overall sustainable development in India.

3.1: All India Sectoral Growth in recent plan

From the below table -1 does provide detail about growth of Indian economy sector wise and in totality in recent plan periods. Here total economy has been divided into three main broad sectors. They are Agriculture (Primary) sectors which include agriculture and allied subsectors, Industry (Secondary) sector which does consist of manufacturing, construction etc. and Service (Tertiary) sector which includes transportation, hotels etc. From this table- 1 we can see that the growth rate of agricultural sector has been very low in compare to industry and service sector. In the eighth plan the growth rate of agriculture was high in compare to other subsequent plan period of five year. It was very low in ninth and tenth plan period just around two percent. But any how it crossed to 3 level percent in the eleventh plan period (2007-12). Despite of that also Indian economy was not able to achieve the overall growth of nine percent in the same period of plan. Now the target for twelfth plan period growth rate is 4 percent for agriculture and 9 percent for overall sectors.

Table: 1-All India Sectoral Growth in recent plan

Plan		Sector			
		Agriculture	Industry	Services	Total
Eighth		4.79	7.29	7.28	6.54
Ninth		2.44	4.29	7.87	5.52
Tenth		2.3	9.17	9.3	7.74
Eleventh		3.3	7.4	10	8.2
Target for twelfth	At 9%	4	9.6	10	9
	At 9.5%	4.2	10.9	10	9.5

Source: Panning commission

3.2: All India Plan outlays in Agriculture and allied Sectors

The table – 2 below does provide idea about plan outlay for agricultural and allied activities in crore rupees from the first plan to twelfth plan period. This table indicate that the share of outlay for agricultural and allied activities has been very low since independence like step mother attitude of the government toward agricultural sectors, which still the biggest employment provider of the economy. No doubt that the absolute figure for plan outlay has increased over the years. But this may not be sufficient as the increased absolute amount may be compensated by inflation in general. But after mid eighties and post-liberalisation period the percentage share of plan outlays in agriculture is hovering around five percent or less, not more than that. The campaign of more industry and more development was the main reason for the decline share of plan outlay for this innocent and voiceless agricultural sector. It was as lower as three percent in the period of United Progressive Alliance (UPA) government regime, which still also continuing. This shows that how far the government of India is committed toward the development of agricultural and allied sectors.

Table-2.All India Plan outlays in Agriculture and allied Sectors in recent years (in '000 Crore Rs.)

Plans	Total Plan outlay	Outlay on Agriculture and Allied Sectors (AAS)	Percent of AAS
vi (1980-85)	97.5	5.6	5.84
vii (1985-90)	180	10.5	5.85
viii (1992-97)	434.1	22.4	5.18
ix (1997-02)	859.2	42.4	4.94
x (2002-07)	1525.6	58.9	3.86
xi (2007-12)	3676.9	136.1	3.70
xii (2012-17)	7669.8	363.2	4.74
Total	14443.1	639.4	4.43

Source: Panning Commission Documents (PCD), 2012-17

3.3 Growth rate (GR) of Net State Domestic Product (NSDP) from agriculture across states

Net State Domestic Product (NSDP) from agriculture is one of the important parameter to know the contribution of agriculture to the total income of the state as whole. Table -3 describe the growth rate of NSDP from agriculture in last two decades. That is from 1st period is the period of technological base revolution (1984-85 to 1995-96) and the period of post –liberalisation (form 1995-96 to 2004-05). The growth rate NSDP of agriculture in the eighties to nineties is somehow more than post liberalisation period. All India growth is about 3.62 percent in 1984-85 to 1995-96 in compare to 1.85 in the following time period. In between states also Odisha has been among the lowest growth rate States, which has only 27 percent of agricultural land is irrigated. Bihar is the only states which has turned the growth rate of NSDP from agriculture in the same time period. But MP, Kerala and Tamilnadu have been on the reverse direction of the Bihar. The growth rate of Odisha has not touched yet, the one percent level of growth rate of NSDP from agriculture. In the same time the states like Punjab, Haryana and West Bengal are performing at more or less in consistent level.

Table-3: Growth Rate of NSDP from agriculture across States and rain fed area in percentage

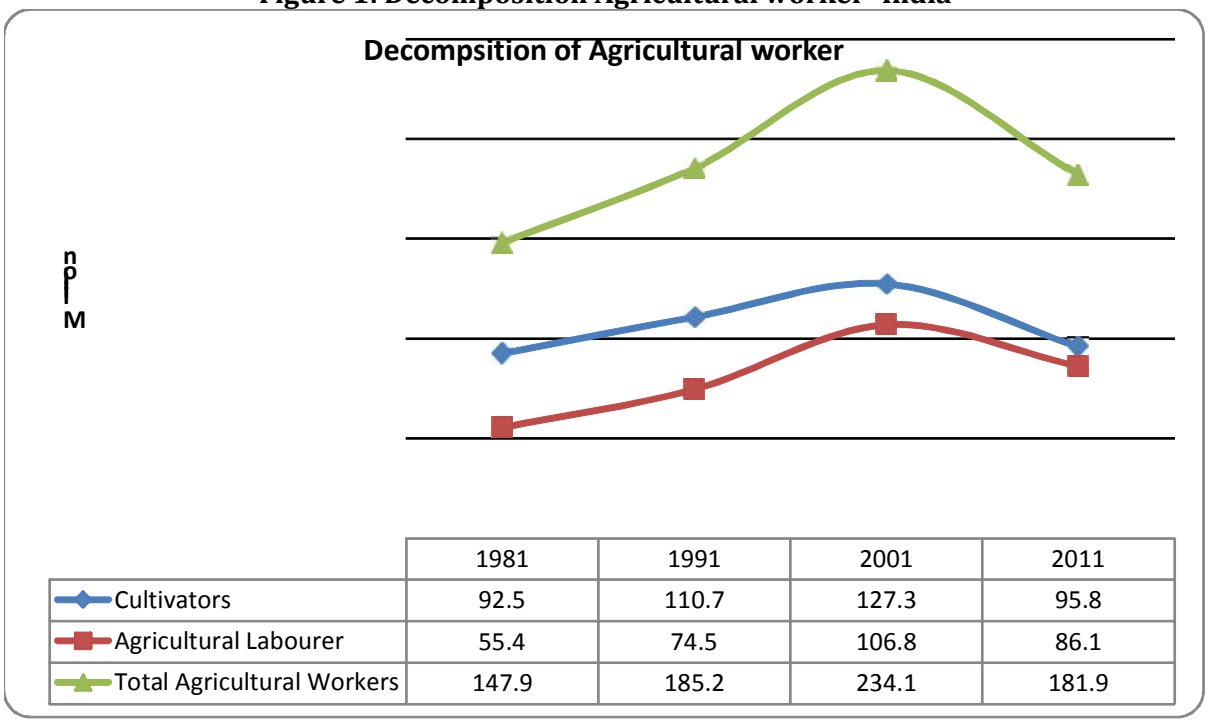
S.L.	States	Growth Rate		Rain fed area in Percentage
		1984-85 to 1995-96	1995-96 to 2004-05	
1	Punjab	4	2.16	3
2	Haryana	4.6	1.98	17
3	UP	2.82	1.87	32
4	Tamilnadu	4.95	-1.36	49
5	West Bengal	4.63	2.67	49
6	Bihar	-1.71	3.51	52
7	Andhra Pradesh	3.18	2.69	59
8	All India	3.62	1.85	60
9	Gujarat	5.09	0.48	64
10	Rajasthan	5.52	0.3	70
11	Odisha	-1.18	0.11	73
12	MP	3.63	-0.23	74
13	Karnataka	3.92	0.03	75
14	Maharashtra	6.66	0.1	83
15	Kerala	3.6	-3.54	85
16	Assam	1.65	0.95	86

Source: National Account Statistics 2008 series, CSO, MOSPI, New Delhi, adopted from PCD (Planning Commission Document)

3.4. Decreasing Cultivators in India

On average about an odd number of 2035 farmers are losing 'Main Cultivators' status every single day for the last 20 years. And in the times of jobless growth, they have had few places to go beyond the lowest, menial ends of the service (P. Sainath, May 2, 2013). Employment in totality and in non-agricultural sectors has not been growing. This job less growth in the recent years has been accompanied by growth in casualization and in-formalisation of labour market in India. It does speak of an "absolute shift in workers from agriculture of 15 million in to services and secondary sectors. But many within the sectors also likely moved from farmer to agriculturallabourer status, swelling the agrarian underclass of India. (IAMR, 2012). Figure one provide some glimpse of number of agricultural worker in India based on agricultural census. Total number of agricultural worker although never increased from 2001 agricultural census to 2011, number of total cultivators has been on declining trend since 1991. This shows that the worker has shift away from cultivators to non cultivator's i.e. labourer from 2001 to 2011 mostly. It implies that Laborisation* of Indian agricultural workers has been the trend since 1951. Either the profitability of agriculture is decreasing or informal centralisation of land holding may be the taking place in India. Input cost of agriculture and erratic nature of agriculture may be reason also.**Laborisation means more number of labor in particular sector*

Figure 1: Decomposition Agricultural worker- India



	1981	1991	2001	2011
Cultivators	92.5	110.7	127.3	95.8
Agricultural Labourer	55.4	74.5	106.8	86.1
Total Agricultural Workers	147.9	185.2	234.1	181.9

Source: Census (number rounded in millions)

3.5. Composition Odisha Economy vis-a-vis Indian Economy

Figure 2 does provide about the composition of Odisha and Indian economy. Compared to Indian economy the economy of Odisha is more agricultural, more industrial and, less service oriented with respect to the contribution from sectoral GDP to the total GDP. The service sector at national level accounted for about 66 percent of GDP against only 57 percent for Odisha in 2010-11. Agricultural sector represented only 17 percent as against 14 percent at national level in the same year for the Odisha economy.

Figure 3 gives the dynamic composition of Odisha's economy from the year 2004-02 to 2011-12. From this figure we can clearly say that the Odisha economy becoming less agricultural, more industrial and more service oriented economy. As per as the advance estimate of 2011-12 the agricultural sector represents only 16 percent of State GSDP, where as industrial and service sector represents approximately 58 and 26 percent respectively. This pattern is no doubt similar to the experience of India as well as global trend of sectoral contribution. As it is true for the Indian economy, in recent years the service sector has been dominating state economy contributing more than half of the state GSDP.

Figure 2: Composition Odisha Economy vis-a-vis Indian Economy, 2010-11.

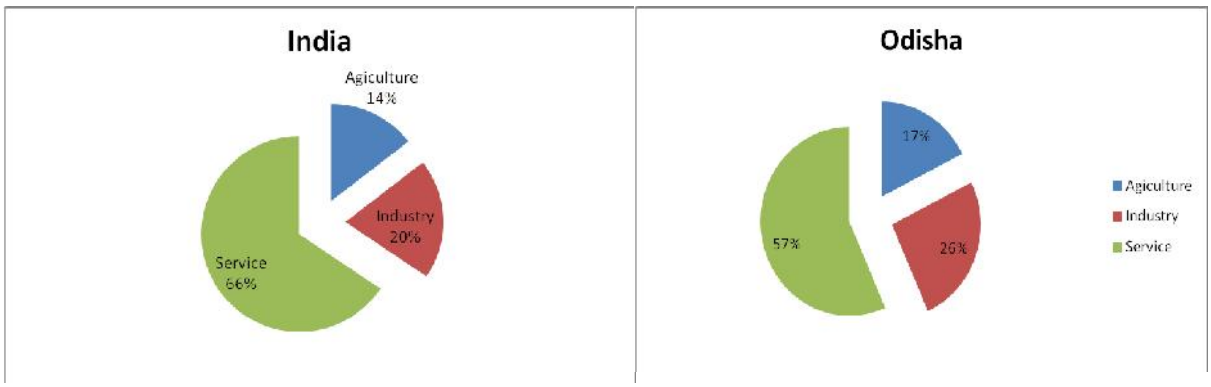
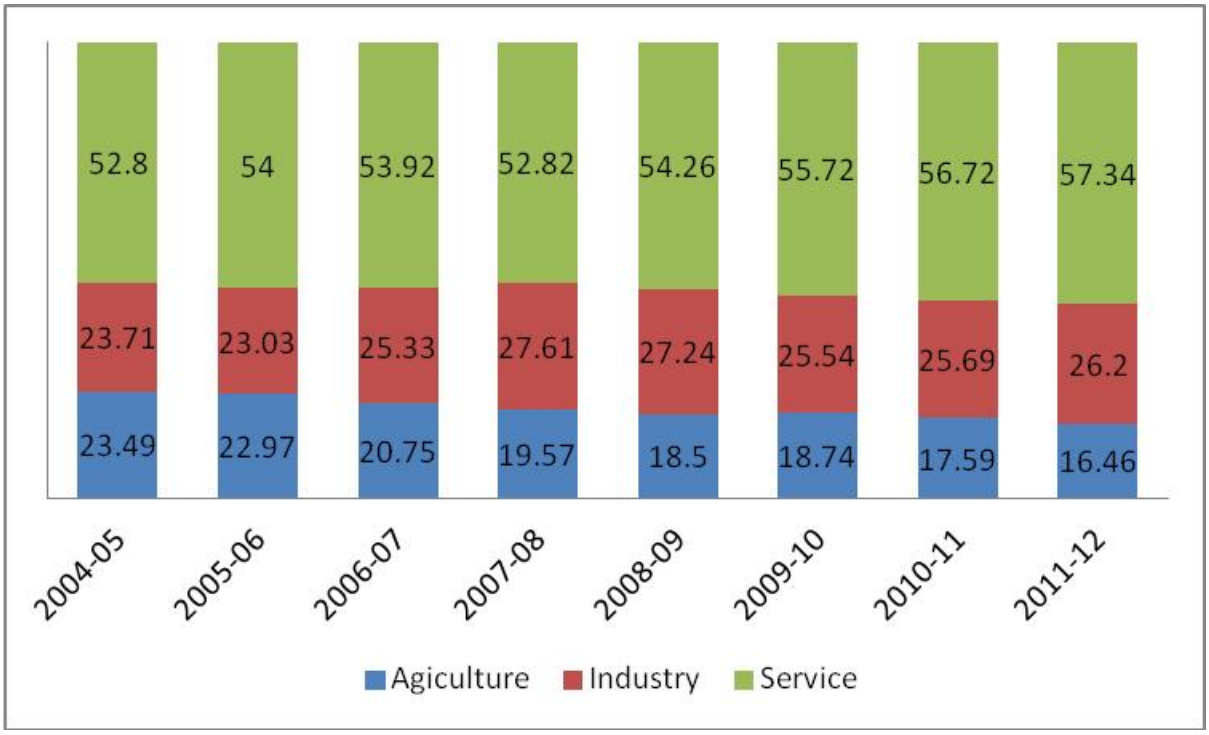


Figure 3: Sectoral Decomposition of GSDP of Odisha

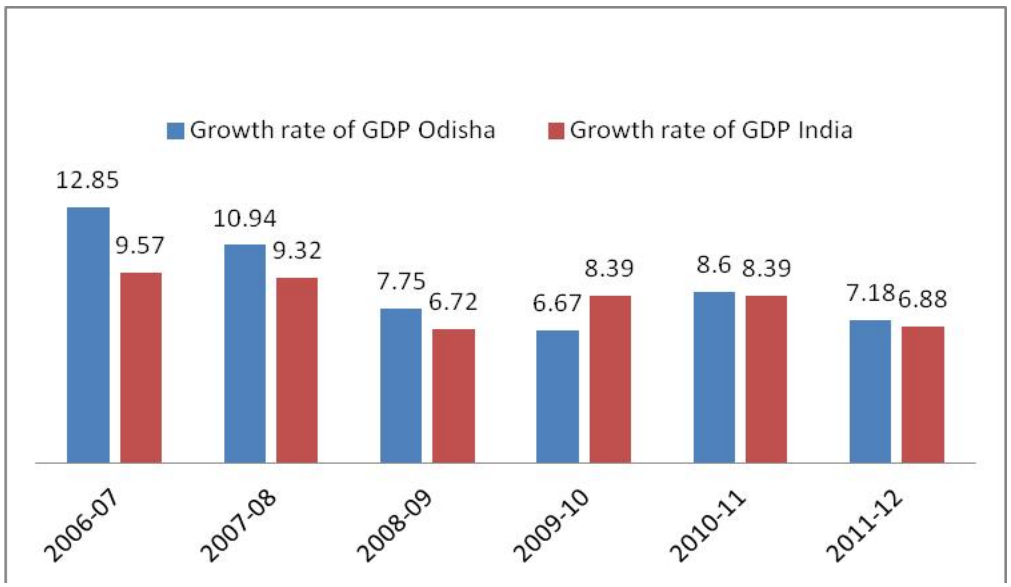


Source: Economic Survey of Odisha, 2011-12

3.5.1. Growth rate of GSDP of Odisha and GDP India in recent years (in 2004-05 prices)

Figure 4 shows the comparison of growth rate of India with Odisha. As per as quick estimates Odisha real growth rate in 2010-11 at 8.6 percent at 2004-05 prices where as India's real growth rate was 8.36 percent in the same time period. The pattern of growth rate of GDP and GSDP of India and Odisha respectively has been in the same trend except in the year 2009-10. Out of six year from 2006-07 to 2011-12, the real growth of Odisha State has exceeded the national growth rate for five years.

Figure 4- Growth rate of GSDP of Odisha and GDP of India



Source: Economic Survey of Odisha, 2011-12.

4. GLIMPSE OF AGRICULTURAL STRUCTURE AND SITUATION IN ODISHA

4.1 Land utilisation in Odisha:-

According to agricultural census of India the Operated area has been classified into six broad categories. They are as follows:

i) Net area sown: It is the total area sown with crops and orchards counting area sown more than once in the same year only once.

ii) Current fallow: This includes the cropped area, which are kept fallow during the current year but was cultivated in the previous year. For example with any seeding area is not cropped in the same year, it may be treated as current fallow.

iii) Fallow land other than current fallow: All lands, which are taken up for cultivation but are temporarily out of cultivation for a period of not less than one year and not more than five years. The reasons for keeping such lands fallow may be one or more of the following:

a) Poverty of the cultivator

b) Inadequate supply of water

c) Malarial climate

c) Silting of canals and rivers and

d) Un-remunerative nature of farming

iv) Other uncultivated land excluding fallow land: This will include the following type of lands

a) Permanent pastures and other grazing lands: All grazing lands, whether they are permanent pastures and meadows or not. Village common grazing lands would, however, be excluded.

b) Land under Miscellaneous Tree Crops: Cultivable land, which is not included in the net area sown but is put to some agricultural use. Land under casuarina trees, thatching grasses, bamboo bushes and other groves for fuel which are not included under 'Orchards' would be covered under this category.

v) Culturable waste: All lands available for cultivation whether not taken up for cultivation or taken up for cultivation once but not cultivated during the current year and the last five years or more in succession for one reason or the other. Such lands may be either wholly or partly covered with shrubs and jungles, which are not put to any use. Land once cultivated but not cultivated for five years in succession would also be included in this category.

vi) Not available for cultivation: This would include Forest area under non-agricultural use, barren and uncultivable land.

a) Forest: All lands classed as 'Forests' under any legal enactment dealing with forests or administered as forests whether State owned or private and whether wooded or maintained as potential forest land. The area of crops raised in the forest and grazing land or areas open for grazing within the forests would be included under the forest area. Only private forest would be covered for the purpose of Agricultural Census.

b) Area under Non-Agricultural Use: All lands occupied by buildings or ponds or lands put to use other than agriculture will be included in this category. Only such lands within the cultivated holding should be covered in the Census.

c) Barren and Uncultivable Land: All barren and uncultivable land within the cultivated holding.

Below table 4.1 does provide in detail about the land use pattern in Odisha in last three agricultural censuses from 1995 to 2005. Net area cultivated has decreased from 5039 thousands in 1995 to 4943 thousands hectors in 2005. Total area available for agricultural purposes has also decreased in the same time period. Area under current fallows although increased from 1995 to 2000 census, it decreased in 2005 to 136 thousand hectors. Net area shown also has decreased from 4929 thousands hector in 19995 to 4807 thousands in 2005 agricultural census.

Table- 4.1 Structure of land use of operated area of Odisha in hectors (percentage in bracket)

Land use	Year		
	1995	2000	2005
Total area	5143918 (100)	5081035 (100)	5019476 (100)
Net Area Sown	4929276(95.83)	4842204 (95.30)	4807491 (95.78)
Area Under Current Fallows	109834 (2.23)	162620 (3.36)	136179 (2.83)
Net Cultivated Area	5039110(97.96)	5004824(98.50)	4943670 (98.49)
Other Uncultivated Land Excluding Fallow Land*	25950 (0.53)	12508(0.26)	19108 (0.40)
Fallow Land Other than Current Fallows	32352 (0.63)	37351 (0.74)	32636 (0.65)
Culturable Waste Land	23509 (0.48)	14502 (0.30)	14856 (0.31)
Total Uncultivated Land	81811 (1.59)	64361 (1.27)	66600 (1.33)
Land Not Available for Cultivation @	22997 (0.47)	11850 (0.24)	9206 (0.19)

Source: Agricultural census

**Permanent Pasture Other Grazing Land and Miscellaneous Tree and mangroves*

@ (Forest (private), area under non Agricultural Uses, Barren land and uncultivable land)

4.2 Changing structure of land holding and area operated

Holding size of land does play an important role in productivity of agricultural produce. There has been a lot of debate about land size and productivity of land. Some argue that there is direct relationship between land size and productivity of land (Chand et al, 2011). On the other hand some land economist argue that there is negative correlation between land size and productivity in agricultural sectoral particularly (Pol, 1984).

Table-4.2: Total number of holding (in'000) by size group in Odisha (percentage in bracket)

	Size Group					
Year	Marginal	Small	Semimedium	Medium	Large	All Classes
1995	2145(54.08)	1106(27.89)	544(13.72)	156 (3.93)	15(0.38)	3966 (100)
2000	2295(56.43)	1114(27.39)	501(12.32)	145(3.57)	13(0.32)	4067(100)
2005	2520(59.50)	1126(26.59)	461(10.89)	117(2.76)	10(0.24)	4235(100)
2010	3369(72.19)	918(19.76)	312(6.69)	63(1.35)	5(0.25)	4467(100)

Source: Agricultural census

That is the reason it is important to study about land area and holding size of the agricultural land. The table 4.2 gives total number of holding by size group of farm in Odisha (in'000 hectors). The size group class of farm has been broadly divided into five classes' i.e. Marginal(less than one hector), Small (1-2 hector), Semi-medium (2-4 hector), Medium (4-10 hector) and large (more than 10 hector) classes of farm which categorize on the basis of hector of total land hold by a farmer as per as agricultural census in India. Total number of holding of marginal size group class is only in increasing path, among all class size groups in Odisha. All total number of holding of all size classes also increasing lead by the marginal class among all. This shows that marginalization of land in taking place in Odisha land size. Although total area holding by marginal size class also in increasing trend (figure 5), but the number of marginal holder of land also increasing more significant way (table4.2), which may be the cause of decreasing average size of holding size in Odisha in almost all size groups class of farm (table 4.4). Average size of land holding of marginal farm has only increased insignificantly from 0.5 hector in 1995 to 0.57 hector in 2010 agricultural census.

Table 4.3: Operated Area (in '000 ha.) by all size groups in Odisha (Percentage in bracket)

	Size Group					
Year	**Marginal**	**Small**	**Semimedim**	**Medium**	**Large**	**All Classes**
1995	1064 (20.68)	1522 (29.59)	1451 (28.21)	864 (16.80)	243 (4.72)	5144 (100)
2000	1155 (22.45)	1544 (30.39)	1344 (26.45)	818 (16.10)	220 (4.33)	5081 (100)
2005	1304 (25.35)	1547 (31.84)	1222 (25.15)	642 (13.21)	144 (2.96)	4859 (100)
2010	1922 (39.54)	1497 (30.80)	919 (18.91)	381 (7.84)	142 (2.92)	4861 (100)

Source: Agricultural census

Table 4.4 Average size of holding by size group in Odisha (in hector)

Year	Size Group					
	Marginal	**Small**	**Semimedium**	**Medium**	**Large**	**All Classes**
1995	0.5	1.38	2.67	5.54	15.96	1.3
2000	0.5	1.39	2.69	5.63	16.48	1.25
2005	0.52	1.37	2.65	5.51	15.89	1.15
2010	0.57	1.63	2.95	5.99	25.46	1.04

Source: Agricultural census

4.4. Crop coverage and crop production: Odisha

Figure 6, 7 and 8 does provide idea about area; production and productivity of cereal, pulses and total in lakh hector, in lakh million tonnes and in k.g. per hector of Odisha from 1951 to 2008-09 respectively. Total area under cereals has been in constant since 2003-04. Same is the case of pulses from the year 2006-07. Beside the year of 2002-03 the trend of all area, productivity and production has been in same direction.

Figure 6: Trend in Area of cereals and pulses

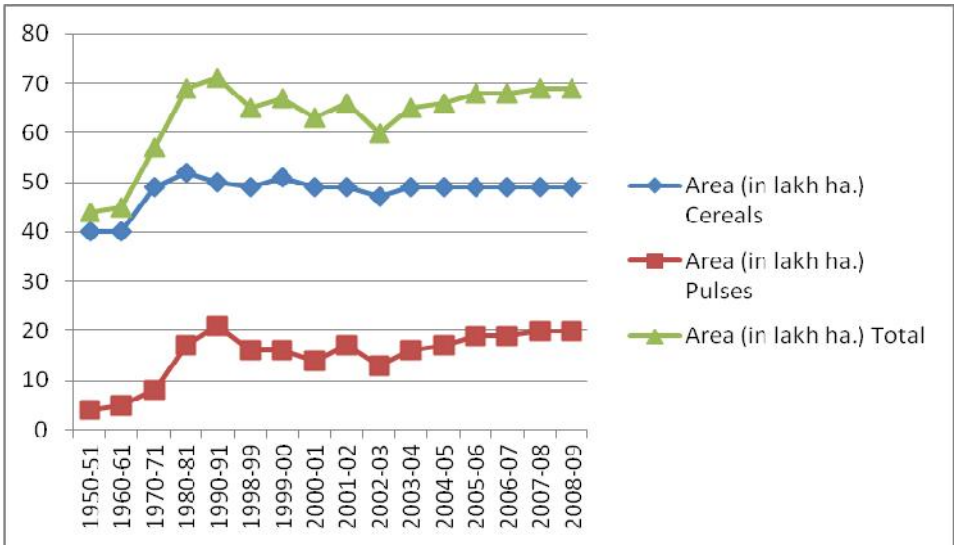


Figure 7:Trend in Production of cereals and pulses

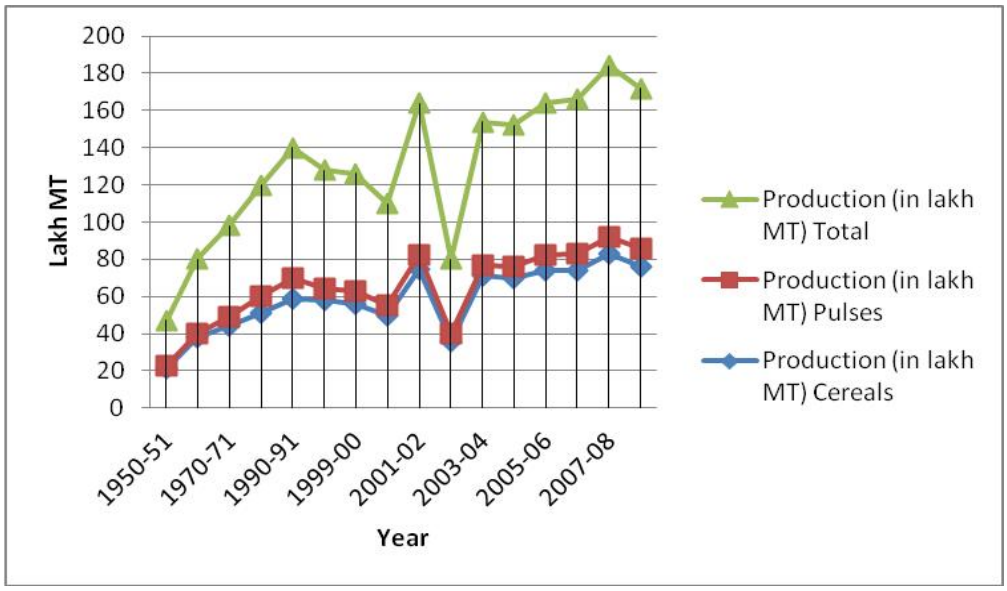
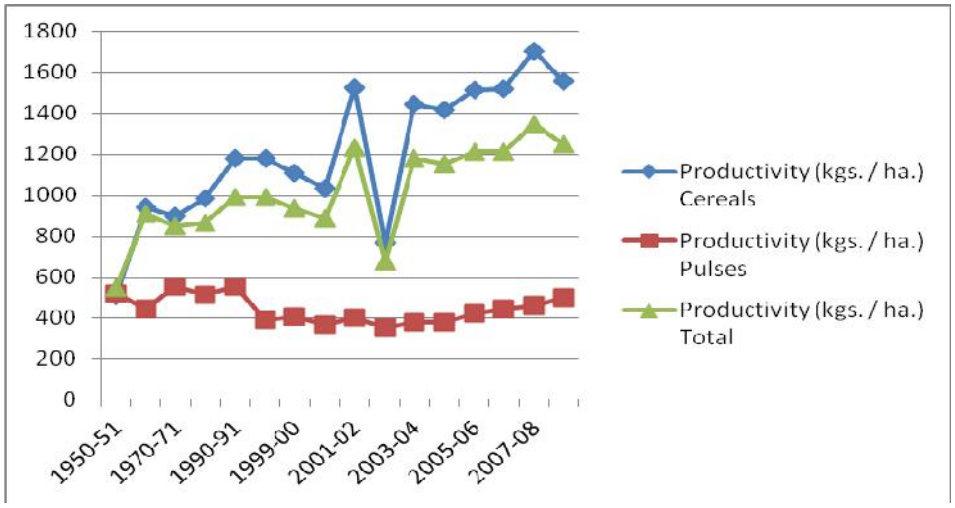


Figure 8: Trend in Productivity of cereals and pulses

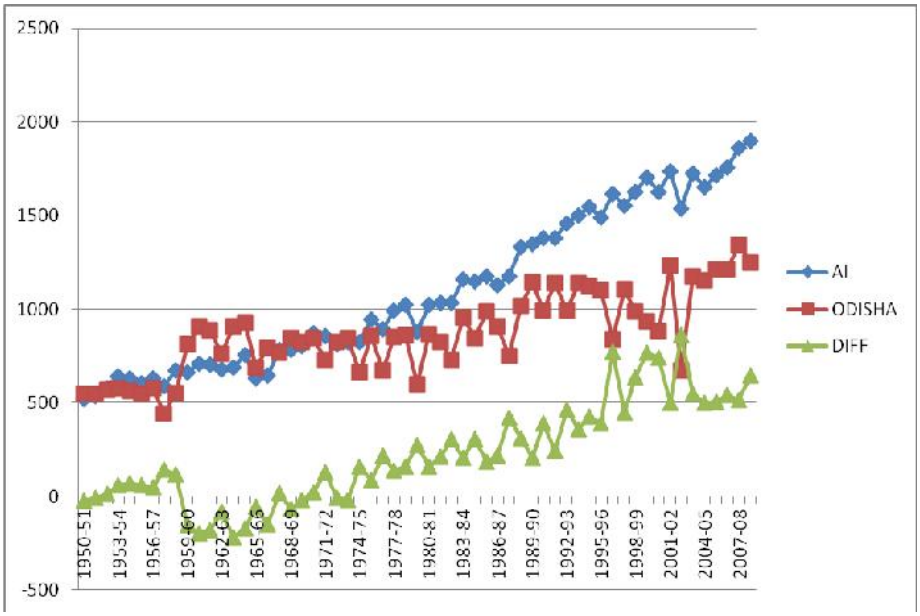


Source: Status of Agriculture in Odisha, Odisha Statistic at Glance

4.5. Productivity of food grain Between Odisha and India

The figure 4.5.1 gives the trend picture if productivity of food grain between Odisha and India. From this figure we can see that the productivity of all India and Odisha level has started from the same point in 1950-51, but as the time progressed, the difference in productivity has become widen. Even after so called green revolution also it has not ever come near to closer level in terms of productivity of food grain of Odisha with India level. This shows that there is systematic failure agricultural sector in Odisha from the front of productivity of food grains.

Figure 4.5.1 Productivity of food grain Between Odisha and India



Source: Status of Agriculture in Odisha, Odisha Statistic at Glance 2007-08

5- CONCLUSION AND POLICY IMPLICATIONS

Agriculture is the main source of livelihood in Odisha, which provides employment more than half of the workforce. The contribution of agriculture to total GSDP in Odisha is less in compare to other sectors. But if you take in totality the dependent on agriculture is more in proportion than the other two i.e. industry and service sectors. Plan out lay for agriculture is also very less. Growth rate of agricultural sectors also has been not significant as other two sectors in Odisha. On the one side the productivity of agriculture in Odisha is very low in compare to India and other state like Punjab, Haryana. On the other side the productivity has been stagnant in last two decade especially. The average size of holding has been on decreasing path in all size group class. If we look at whole picture of agriculture in Odisha or India as a whole, it seems that the agriculture sector has been in the receiving ends. On one hand the demand for food has been growing due to population explosion in Odisha as well as India also. We need food for people in sustainable way and inclusive growth of the economy as a whole. As the Industry and service sectors are more technical and capital oriented, it's become difficult to employ the more people on that sectors. It's the agricultural sectors which may play an important role to create employment for the growing population in the economy by creating sub-agricultural and value added product from agriculture.

Since agriculture does provide employment to more number of people, investment in agriculture will lead to more inclusive growth than investment in other sectors. We need more investment for agriculture to sustain on a sustainable way.

For long term development in agriculture, we need proper irrigation and water and green farming. For water and irrigation we need good amount of rain. For rain we need forest and trees. So forestation is one of the important tools of green economy and sustainable development, which directly make benefit for agriculture and whole economy.

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