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## Spatial analysis of performance of the Agriculture Sector in Haryana

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### Introduction

Haryana is an agrarian economy. Agriculture sector plays a major role in state economy. Haryana is self-sufficient in produce food and second largest supplier to central pool. It has been major contributor in green revolution. After green revolution, Haryana had one of the best agriculture performances in terms of agriculture output and export as compared to other states. This study focuses on analysis of the contribution of agriculture in GDP of Haryana, its growth pattern and ongoing structural changes in the economy. Structural change refers to transformation of economy with changing contributions of various sectors in gross domestic product. This paper also attempts to understand structural changes in economy of the state. In every developing economy, share of primary sector falls and that of secondary and tertiary sector rises in domestic income as the country develops. With structural change, the importance of agricultural sector reduces leading to underestimation of contribution of primary sector in growth of economy.

## Objectives of the study

The main objective of this paper is:

- 1) To examine the performance of agricultural sector in Haryana.
- 2) To study factors affecting growth of agricultural sector in Haryana.

## Research methodology:

The stylized set of facts is that structural change is positively related to economic growth and with development, the share of agriculture falls, of industry and service sector rises. The study is carried out to find the pattern of growth and structural change in economy of the state. The selected indicators to analyze performance of agricultural sector are sectoral composition, labour shares, capital formation, production of major crops, cropping intensity, irrigation intensity, consumption of fertilizers and pesticides etc. Data from

Economic Surveys of Haryana and Department of Agriculture have been used in this study. Cropping intensity = Total cropped area/net sown area x100; Irrigation intensity = Net area irrigated/net area sown x100

## Result and Discussion

Haryana is an agricultural state which is one of the better Indian states when it comes to agricultural performance and hence called "Bread Basket of India". The Green Revolution that made India self-sufficient in food production had an incredible contribution from the state. Majority of its population is dependent on agriculture and allied activities like crop husbandry, dairy farming, forestry and fishing etc. Thus, the State gave highest priority and developed strong infrastructure to boost this sector. Today, this sector is important contributor to the Gross State Domestic Product. However, due to major structural changes in the economy of Haryana, this contribution has gone down and economy of the state is becoming more dependent on Industry and Services Sectors. The structural change can be observed from changing sectoral composition of three major sectors. On one hand services and industry sector rose from 21.7 percent in 1969-70 to 50.6 percent in 2019-20 and 17.6 percent in 1969-70 to 32.8 percent in 2019-20 respectively but on the other hand contribution of agriculture sector fell from 60.7 percent in 1969-70 to 16.6 percent in 2019-20. The fall in agriculture share to GSDP has not been accompanied by matching declining in its contribution for absorbing large number of labour.

The gross area sown in the state increased from 45.99 lakh hectare in 1966-67 to 65.49 lakh hectare in 2017-18. In 2018-19, the net area sown was 82.4 percent of total geographical area of the state and forests were just 0.8 percent. The major Kharif crops grown in the state are rice, bajra, maize, jawar, sugarcane, cotton, jute, groundnut and sesame and the major Rabi crops are wheat, gram, linseed, mustard, gram etc. The area under major food crops, wheat and rice, in the state was 60.34 percent of total gross area sown during 2017-2018. Production of majority of crops has been on rise since 1966-67 as the era of green revolution started at that point of time. Production of food grains in the state increased 600 percent from 2592 thousand tons in 1966-67 to 18144 thousand tons in 2018-19 making it major contributor of food grains in nation. However, the area

under commercial crops like sugarcane, cotton and oilseeds has been fluctuating in last few decades. The production of sugarcane has increased constantly from 5100 thousand tons in 1966-67 to 8505 thousand tons in 2018-19 but the surprising decrease in area under sugarcane from 150 thousand hectares in 1966-67 to 109 thousand hectares in 2018-19 is a matter of concern. Production of cotton increased around 600 percent on 1966-67 to 2018-19 and production of oilseeds has shown overwhelming rise of around 1290 percent.

The Agriculture and Allied sectors include sub-sectors like crop and livestock, forestry and lodging and fishing. The agricultural activities in state have diversified with increasing interest in horticulture and fisheries. Still, the major contribution in GDP comes from crops and livestock and fishing and forestry contribute negligible percentage resulting into low impact of these two sub-sectors in overall growth of Agriculture and Allied sectors. Although the GSVA from crops, livestock and fishing has increased in last decade but GSVA from forestry and lodging has decreased substantially. The state ranks second in fish productivity per hectare and has also been declared "Fish Disease Free State" by ICAR.

Most of the area under cultivation in Haryana is irrigated by tube wells and huge network of canal. This has resulted in continuous rise in net irrigated area from 37.8 percent in 1966-67 to 97.1 percent in 2018-19. The Gross State Domestic Product has shown continuous increase in last decade from 297538.52 in 2011-12 to 528069.75 in 2020-21(at constant prices 2011-12). The cropping intensity in Haryana rose from 179.4 percent in 2007-08 to 190.32 percent in 2018-19. The net consumption of fertilizer in the state increased from 13,347 tone in 1966-67 to 14, 08,277 tone in 2019-20 and use of pesticides increased from just 273 tons in 1966-67 to 4116 tons in 2019-20. Increase in cropping intensity, irrigation and use of fertilizers can be seen as signs of development. The constant increase in use of fertilizers and pesticides after green revolution although reduced input costs and increased the yields, will also show some negative impacts in upcoming future.

The average operated area per permanent agricultural worker was 1.19 hectares, average daily wages paid to an agricultural worker excluding daily perks were 374 rupees, total wages paid to a permanent worker were 66678 rupees annually and the overall average net income per hectare of the operated area of a peasant proprietorship and peasant proprietorship-cum-tenancy was ` 67735 and ` 57236, respectively, according to report on economics of farming in Haryana, 2017-18.

## Conclusions

Although the growth of agriculture sector of the state has seen a boom with increasing infrastructure since the green revolution began in India. Today economy of Haryana has undergone structural transformation showing rise in industry and services sectors followed by fall in share of agricultural sector in SGDP, which is a matter of concern and needs attention from government and policy makers. Major issues like inadequate technology, lack of infrastructural facilities, poor quality seeds, long chain of middlemen, inadequate cold chain facilities, no diversification of crops, depletion of groundwater, alkalinity, soil erosion etc. need to be taken care of. Introduction of new technologies and farm innovations in agriculture, reforming policies and promoting allied activities can play a positive role in growth of this sector.

Table 1: State Per Capita Income (constant prices 2011-12)

Year	Per Capita Income of Haryana (Rupees)	
	At Current	At Constant (2011-12)
2011- 2012	106085	106085
2012-2013	121269	111780
2013-2014	137770	119791
2014-2015	147382	125032
2015-2016	164963	137818
2016-2017	185050	150241
2017-2018	211526	159892
2018-2019	236147	169409
2019-2020	264207	180026

Table 2: Agricultural Profile of Haryana

Geographical Area	44,212 Sq Km
Density of Population	573
Cultivated Area	38.17 Lakh Hectares
Net Sown Area	36.01 Lakh Hectares
Total Cropped Area	66.05 Lakh Hectares
Cropping Intensity	190.32
Irrigated Area	29.56 Lakh Hectares
No. of Operational Farm Holdings	1,37,757
Area of Operational Farm Holdings	1,59,180 Hectares
Average Size of Holdings	2.25 Hectares
Area Under Forests	1779 Sq. Km.

Table 3: Cropping Intensity in Haryana

Cropping Intensity in Haryana (base year- 2007-08)	
Year	Intensity of Cropping
2007-08	179.74
2008-09	181.77
2009-10	178.90
2010-11	184.91
2012-13	181.50
2013-14	185.04
2014-15	187.96
2015-16	185.80
2016-17	184.39
2017-18	189.76
2018-19	190.32

Table 4: Net Area Irrigated

Net Area Irrigated		
Year	Total	Percentage to net area sown
1966-67	1,293	37.8
1970-71	1,532	43.0
1980-81	2,134	59.2
1990-91	2,600	72.7
2000-01	2,958	83.9
2005-06	2,936	82.3
2010-11	2,887	82.1
2015-16	2,887	85.6
2016-17	3,177	90.8
2017-18	3,261	93.0
2018-19 (P)	3,282	91.1

Table 5: Gross State Domestic Product, Haryana

Year	GSDP at Current Prices	GSDP at Constant Prices (2011-12)
2011-12	297538.52	297538.52
2015-16	495504.11	413404.79
2016-17	561424.17	456709.11
2017-18	644963.22	487273.84
2018-19	704957.38	517079.99
2019-20	780612.35	559705.00
2020-21	764872.41	528069.75

Source: Economic Survey, Haryana (2019-20)

Table 6: Area under Principal Crops in Haryana (000 Hectares)

Area under Principal Crops in Haryana							
Year	Wheat	Rice	Total Food	Sugarcane	Cotton	Oilseeds	Gross Area Sown
1966-67	743	192	3,250	150	183	212	4599
1970-71	1,129	269	3,868	156	193	143	4957
1980-81	1,479	484	3,963	113	316	311	5462
1990-91	1,850	661	4,079	148	491	489	5919
2000-01	2,355	1,054	4,340	143	555	420	6115
2005-06	2,303	1,047	4,311	129	584	736	6509
2010-11	2,504	1,243	4,702	85	493	521	6499
2011-12	2,531	1,234	4,581	95	602	546	6489
2012-13	2,497	1,206	4,302	101	593	568	6376
2013-14	2,499	1,244	4,361	101	567	549	6471
2014-15	2,628	1,277	4,479	96	647	495	6502
2015-16	2,576	1,353	4,451	93	615	526	6502
2016-17	2,542	1386	4,537	102	571	522	6502
2017-18	2,530	1,422	4,533	115	669	559	6549
2018-19	2,553	1,447	4,558	109	708	625	6550

Source: Economic Survey of Haryana, 2019

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Table 7: Production of Major Crops in Haryana (000 tonne)

Agricultural Production of Major Crops ('000' ton)						
Year	Wheat	Rice	Total F/grain	Sugarcane	Cotton ('000' bales)	Oilseeds
1966-67	1059	223	2592	5100	288	92
1970-71	2342	460	4771	7070	373	98
1980-81	3490	1259	6036	4600	643	188
1990-91	6436	1834	9559	7800	1155	638
2000-01	9669	2695	13294	8170	1383	571
2005-06	8853	3194	13006	8310	1502	830
2010-11	11578	3465	16568	6042	1747	965
2011-12	13119	3757	18370	6953	2616	758
2012-13	11117	3941	16146	7500	2378	972
2013-14	11800	4041	16970	7427	2027	899
2014-15	10457	3989	15340	7035	1939	729
2015-16	11351	4142	16330	6992	995	841
2016-17	12310	4451	17877	8167	2046	956
2017-18	12263	4880	18032	9633	1626	1121
2018-19	12573	4516	18144	8505	2013	1277

Source: Economic Survey of Haryana, 2019 -20 Table 8: Changing Sectoral Composition, Haryana (percent)

Year	Agriculture	Industry	Services
1969-70	60.7	17.6	21.7
Base year 1993-94			
1993-94	42.5	26.2	31.3
1994-95	42.4	26.7	30.9
1995-96	39.4	28.3	32.3
1996-97	39.2	27.1	33.7
1997-98	35.6	28.4	36.0
1998-999	34.9	28.8	36.3
1999-2000	33.9	28.2	37.9
2000-01	32.6	27.9	39.5
2001-02	31.1	28.0	40.9
2002-03	29.3	27.8	42.9
2003-04	29.5	27.5	43.0
Base year 2004-05			
2004-05	23.1	32.9	44.0
2006-07	21.3	32.1	46.6
2009-10	17.44	29.92	52.64
2011-12	16.8	28.7	54.5
2012-13	15.6	27.7	56.7
2013-14	15.0	27.0	58.0
2014-15	14.1	27.0	58.9
2015-16	18.2	30.5	51.3
2016-17	17.8	30.5	51.7
2017-18	17.6	31.5	50.9
2018-19	17.5	32.3	50.2
2019-20	16.6	32.8	50.6

Source: Economic Surveys of Haryana, Various years

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