

IMPACT OF MSP, AUC AND PRODUCTIVITY ON OVERALL PRODUCTION OF SELECTED CROPS IN INDIA : A STUDY

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ABSTRACT

Main aim of this article was to examine the relationship between MSP/SMP, area under cultivation, productivity and overall production of selected crops in India. It also examined impact of MSP/SMP, area under cultivation, productivity on overall production of Rice, Wheat, Pulses, Cotton and Sugarcane. In this study required data were collected form 1980-81 to 2009-10 and analysed according to the objectives of the present study. The results indicate that area under cultivation and productivity were most significant predictor and MSP/SMP were not significant predictor of production in case of Rice, Pulses, Cotton and Sugarcane. However, MSP, area under cultivation and productivity were only found significant in wheat production in India.

Keywords: MSP, SMP, Area under Cultivation, Productivity, Agricultural Production

INTRODUCTION

Agriculture sector is contributing significant role in Indian economy; about 56 per cent of population are depends up on agriculture and most of rural peoples getting employment from agriculture and allied sector. Therefore, the government of India and state government providing support to agriculture sector through Minimum Support Price (MSP) for selected crops, Statutory Minimum Prices (SMP) for sugarcane, agricultural finance, subsidized inputs, technology, irrigation facilities, marketing and storage facilities, electricity etc. However, research literature shows that MSP/SMP, area under cultivation (AUC), productivity are major determinates of agricultural production. Therefore, the present study was conducted to examine that, how they affects on overall agricultural production India.

OBJECTIVES

The specific objectives of the present study are as under:

1. To examine impact and importance of MSP/SMP in determination of overall production of rice, wheat, pulses, cotton and sugarcane in India.

2. To recognize the impact of area under cultivation (AUC) and productivity of rice, wheat, pulses, cotton and sugarcane on overall production of these crops.

LITERATURE REVIEW

The government have attempting continually for development through veracious packages and policy of market intervention via MSP and SMP of selected crops. At present the Government of India has implementing MSP policy as tool for intervene in agriculture produce markets and regulate agro-market in India. The minimum support prices (MSP) covers 23 commodities i.e. 7 cereals, 4 pulses, 8 oilseeds, copra, raw cotton, raw jute and tobacco; Statutory Minimum Prices (SMP) for sugarcane. However, the first attempt based on New Economic Policy (NEP) was initiated in 1990 with The Draft Agricultural Policy Resolution (1990) focusing on increased output, efficiency in resource management and technologies etc. While till MSP and SMP is important issue in agriculture in India. Acharya,(2001); Ranade (1980) and Kamat and Kamat, (2007), mentioned that, MSP is now viewed as a form of market intervention on the part of the State and also as one of the supportive measures to the agricultural producers. In India there is very positive impact on wheat and paddy production detected. However, Sinha (2000) mentioned that mismatch of agriculture education, research and resource management in agriculture have adversely affected on agricultural production in India. According to Reddy (2004) and Kumbhar (2010) lack of an assured market price is one factor in the poor performance of pulses than foodgrains in India. Market price is always greater than the MSP announced by the government for pulses. Iqbal and Merwe (2010) mentioned that, production of wheat and rice were increased due to rise in MSP by the Government. All available literature clears that, there were positive relationship between MSP and production of related crops up to some extent.

However, some researchers posited that agriculture inputs are important factors in the determination of overall agriculture production than MSP or SMP (Sarma, 1975). Patil & Sirohi, (1987) posited that the facilities of tube-well irrigation and mechanical power helped the farmers in raising the cropping intensity of their farms. Singh (2001) concluded that cropping intensity was mainly dependent on annual water availability in the specific region and availability of the farm power. Verma (2006) concluded that farm mechanization enhances the production and productivity of different crops due to timeliness of operations, better quality of operations and precision in the application of the inputs. Kamlakar (2006) concluded that the productivity growth and shift in cropping pattern were major factors that accounted for the growth of crop output in the Maharashtra state. Sahu & Rajasekhar (2002) mentioned that credit facilities plays important role in agricultural production. Different studies also indicated that MSP is not only determinates of cropping pattern and production of agriculture commodities. Some of the studies focused that, productivity, irrigation, power availably, mechanisation are important detriments of agricultural production.

HYPOTHESIS

The present study was conducted to test followings hypothesis:

- H¹**: MSP is good determinant of overall production of rice, wheat, pulses, cotton and sugarcane in India

H²: Area under cultivation is good determinant of overall production of rice, wheat, pulses, cotton and sugarcane in India

H³: Productivity of is good determinant of overall production of rice, wheat, pulses, cotton and sugarcane in India

METHODOLOGY AND SCOPE

All required data were collected through secondary data sources and collected data analysed using SPSS 19.0 versions. According to the need of this study regression test were performed to examination of correlation and predictive ability of the dependent variables used in this study. For the hypothesis testing results of regression test were used. In this study, author has covered only selected five crops (i.e. rice, wheat, pulses, cotton and sugarcane) and all results were depends up on time series data of the selected crops from 1980-81 to 2009-10.

RESULTS OF REGRESSION ANALYSIS

Table 1 indicates that R values (simple correlation) with dependent variables were ranging from .990 to .999; it shows good relationship between predictors and dependent variables. R Square indicates the prediction power of independent variables for dependent variable. Close value of R Square to 1 indicates strong predictive ability of the independent variables. Table No. 1 indicates that R Square values of the selected crops ranging from .980 to .999 it indicates that productivity, area under cultivation and MSP can predict the overall production of selected crops almost 98 to 99 per cent correctly.

Table 1. Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
Rice	.999 ^a	.999	.999	.49315
Wheat	.999 ^a	.999	.998	.52372
Pulses	.990 ^a	.980	.978	.17966
Cotton	.998 ^a	.995	.995	.39111
Sugarcane	.999 ^a	.998	.998	2.31824
a. Predictors: (Constant), Productivity, AUC, MSP				

Note: Results are based on respected secondary data from 1980-81 to 2009-10

* Results are based on respected secondary data from 1982-83 to 2009-10

** Results are based on respected secondary data from 1982-83 to 2009-10

ANOVA Results

ANOVA indicates that the predicting variables are significant or not significant for predicting dependent variable. Table 2 shows that all results of the ANOVA test were found significant because it indicates that **F values** relating to Rice, Wheat, Pulses, Cotton and Sugarcane were **significant at .000 levels**.

Table 2. ANOVA^b

Model		Sum of Squares	df	Mean Square	F	Sig.
Rice	Regression	5922.574	3	1974.191	8117.579	.000 ^a
	Residual	6.323	26	.243		
	Total	5928.897	29			
Wheat	Regression	5213.361	3	1737.787	6335.737	.000 ^a
	Residual	7.131	26	.274		
	Total	5220.493	29			
Pulses	Regression	38.129	3	12.710	393.749	.000 ^a
	Residual	.775	24	.032		
	Total	38.903	27			
Cotton	Regression	763.659	3	254.553	1483.167	.000 ^a
	Residual	3.947	23	.172		
	Total	767.606	26			
Sugarcane	Regression	82687.395	3	27562.465	5128.608	.000 ^a
	Residual	139.731	26	5.374		
	Total	82827.126	29			
Predictors: (Constant), Productivity, MSP, Area Under Cultivation.						
b. Dependent Variable: Production						

Note: Results are based on respected secondary data from 1980-81 to 2009-10

* Results are based on respected secondary data from 1982-83 to 2009-10

** Results are based on respected secondary data from 1982-83 to 2009-10

Predictors of Agriculture Production

In the regression analysis, lower value of significance (<.050) indicates greater and strong predictive power of the predictors. To understand best predictors of overall production author has used coefficients of the predictors of respected crops. Table 3 indicates that:

1. MSP was not significant ($t = 1.843$, $P = 0.77$) in the determination of production of rice, however, AUC and productivity are good predictors of rice production in India.
2. In case of wheat production MSP, AUC and productivity are significant factors and good determinants of wheat production in India.
3. MSP was not significant ($t = 0.165$, $P = 0.870$) in the determination of production of pulses, however, AUC and productivity are good predictors of pulses production in India.
4. MSP was not significant ($t = 1.044$, $P = 0.307$) in the determination of production of cotton, however, AUC and productivity are good predictors of cotton production in India.

MSP was not significant ($t = -.393$, $P = 0.698$) in the determination of production of cotton, however, AUC and productivity are good predictors of cotton production in India.

Table 3. Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Results about Hypothesis
		B	Std. Error	Beta			
Rice	(Constant)	-74.269	3.020		-24.594	.000	
	MSP	.002	.001	.025	1.843	.077	Not Supported
	AUC	1.835	.093	.226	19.792	.000	Supported
	Productivity	.040	.001	.786	43.137	.000	Supported
Pulses*	(Constant)	-12.463	.853		-14.606	.000	
	MSP	1.654	.000	.007	.165	.870	Not Supported
	AUC	.569	.037	.485	15.353	.000	Supported
	Productivity	.022	.001	.801	18.831	.000	Supported
Cotton**	(Constant)	-12.946	1.006		-12.87	.000	
	MSP	.000	.000	-.029	-1.044	.307	Not Supported
	AUC	1.496	.151	.259	9.937	.000	Supported
	Productivity	.053	.001	.838	40.027	.000	Supported
Sugarcane	(Constant)	-230.316	6.665		-34.556	.000	
	SMP	-.011	.028	-.006	-.393	.698	Not Supported
	AUC	65.654	1.454	.759	45.149	.000	Supported
	Productivity	.004	.000	.311	27.094	.000	Supported
Wheat	(Constant)	-53.663	2.776		-19.333	.000	
	MSP	.003	.001	.065	3.723	.001	Supported
	AUC	2.316	.140	.320	16.568	.000	Supported
	Productivity	.023	.001	.645	38.409	.000	Supported

a. Dependent Variable: Production

Note: Results are based on respected secondary data from 1980-81 to 2009-10

* Results are based on respected secondary data from 1982-83 to 2009-10

** Results are based on respected secondary data from 1982-83 to 2009-10

Policy Implications

According to the assumption of the present study the government's efforts should concentrate on followings;

Policy for Rice, Pulses, Cotton and Sugarcane Production in India: Empirical evidences (Table No. 3) shows that SMP were not positively affects on production of rice, pulses, cotton and sugarcane (t value of rice t= 1.843 sig .077; pulses t = .165 sig. .870, cotton t = -1.044 sig.307 and sugarcane t = -.393 sig.698). Therefore, the government should not concentrate on MSP/SMP of these crops. However, the government should concentrate their efforts for how to increase area under cultivation and productivity of these crops in India.

Here, MSP of the crops and its relation with production may be debatable issue however, we can't disrespect the facts. Therefore, the government should concentrate their efforts on irrigation, agriculture finance, marketing facilities, agro processing, HYPPVs, technology and other inputs.

Policy for wheat Production in India: Empirical evidences shows that MSP, AUC and productivity of wheat were significant factor ($t = 3.723$ sig. .001; $t = 16.568$ sig. .000 and $t = 38.409$ sig. .000) in case of overall wheat production in India. Therefore, the government should focus their policy for increase AUC and productivity of wheat including its MSP in India.

LIMITATIONS

The present study covered only three variables of the agriculture production function i.e. MSP/SMP, area under cultivation (AUC) and productivity because the main intension of this study was to examine the importance of MSP/SMP, AUC and productivity in the determination of overall production of crops under study. However, it is note that there are some other important factors also exists which have significantly affects on productivity and production of crops i.e. type of seeds, irrigation facilities, finance, fertilizers, pesticides, rainfall, technology etc.

CONCLUSION

The present study reveals that MSP and SMP were not only one of the significant determinants of agriculture production in India. However, area under cultivation and productivity of the crops were more important factors in India. Therefore, the government should focus their policy on how to increase area under crops and productivity of those crops which indented to increase overall production.

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Annexure –I

MSP , Area Under Crops, Productivity and Production of Selected Crops in India (MSP in Rs per Quintal, AUC in Million Hectares, Productivity in Kg./Hector and Production in Million Tonnes)											
Year (March)	Rice				Wheat				Pulses		
	MSP	AUC	P'vty.	Prod.	MSP	AUC	P'vty.	Prod.	MSP	AUC	P'vty.
1981	105.00	40.15	1,336.00	53.63	130.00	22.28	1,630.00	36.31		22.46	473.00
1982	115.00	40.71	1,308.00	53.25	142.00	22.14	1,691.00	37.45		23.84	483.00
1983	122.00	38.26	1,231.00	47.12	151.00	23.57	1,816.00	42.79	230.00	22.83	519.00
1984	132.00	41.24	1,457.00	60.10	152.00	24.67	1,843.00	45.48	245.00	23.54	548.00
1985	137.00	41.16	1,417.00	58.34	157.00	23.56	1,870.00	44.07	206.25	22.74	526.00
1986	142.00	41.14	1,552.00	63.83	162.00	23.00	2,046.00	47.05	290.00	24.42	547.00
1987	146.00	41.17	1,471.00	60.56	166.00	23.13	1,916.00	44.32	310.00	23.16	506.00
1988	150.00	38.81	1,465.00	56.86	173.00	23.06	2,002.00	46.17	316.25	21.27	515.00
1989	160.00	41.73	1,689.00	70.49	183.00	24.11	2,244.00	54.11	351.25	23.15	598.00
1990	185.00	42.17	1,745.00	73.57	215.00	23.50	2,121.00	49.85	424.00	23.41	549.00
1991	205.00	42.69	1,740.00	74.29	225.00	24.17	2,281.00	55.14	472.50	24.66	578.00
1992	230.00	42.65	1,751.00	74.68	280.00	23.26	2,394.00	55.69	533.75	22.54	533.00
1993	270.00	41.78	1,744.00	72.86	330.00	24.59	2,327.00	57.21	630.00	22.36	573.00
1994	310.00	42.54	1,888.00	80.30	350.00	25.15	2,380.00	59.84	685.00	22.25	598.00
1995	340.00	42.81	1,911.00	81.81	360.00	25.70	2,559.00	65.77	737.50	23.03	610.00
1996	360.00	42.84	1,797.00	76.98	380.00	25.01	2,483.00	62.10	775.00	22.28	552.00
1997	380.00	43.43	1,882.00	81.73	475.00	25.89	2,679.00	69.35	815.00	22.45	635.00
1998	415.00	43.45	1,900.00	82.54	510.00	26.70	2,485.00	66.35	878.75	22.87	567.00
1999	440.00	44.80	1,921.00	86.08	550.00	27.52	2,590.00	71.29	943.75	23.50	634.00

2000	490.00	45.16	1,986.00	89.68	580.00	27.49	2,778.00	76.37	1,082.50	21.12	635.00
2001	510.00	44.71	1,901.00	84.98	610.00	25.73	2,708.00	69.68	1,175.00	20.35	544.00
2002	530.00	44.90	2,079.00	93.34	620.00	26.34	2,762.00	72.77	1,290.00	22.01	607.00
2003	530.00	41.18	1,744.00	71.82	620.00	25.20	2,610.00	65.76	1,300.00	20.50	543.00
2004	550.00	42.59	2,077.00	88.53	630.00	26.60	2,713.00	72.15	1,375.00	23.46	635.00
2005	560.00	41.91	1,984.00	83.13	640.00	26.38	2,602.00	68.64	1,408.75	22.76	577.00
2006	570.00	43.66	2,102.00	91.79	650.00	26.48	2,619.00	69.35	1,468.75	22.39	598.00
2007	580.00	43.81	2,131.00	93.35	750.00	27.99	2,708.00	75.81	1,473.75	23.19	612.00
2008	645.00	43.77	2,202.00	96.69	1,080.00	28.15	2,802.00	78.57	1,637.50	23.86	625.00
2009	850.00	45.54	2,178.00	99.18	1,080.00	27.75	2,857.00	80.68	1,754.00	22.09	659.00
2010	950.00	41.87	2,133.00	89.13	1,100.00	28.34	2,907.00	80.71	1,864.00	23.39	632.00

P'vty. = productivity Prod. = Production

Source: Ministry of Agriculture, Government of India

Annexure –II

MSP , Area Under Crops, Productivity and Production of Selected Crops in India (MSP in Rs per Quintal, AUC in Million Hectares, Productivity in Kg./Hector and Production in Million Tonnes)								
Year	Cotton				Sugarcane			
	MSP	AUC	P'vty.	Prod.	SMP	AUC	P'vty.	Prod.
1981	0.00	7.82	152.00	7.01	13.00	2.67	57,844.00	154.25
1982	0.00	8.06	166.00	7.88	13.00	3.19	58,359.00	186.36
1983	0.00	7.87	163.00	7.53	13.00	3.36	56,441.00	189.51
1984	527.00	7.72	141.00	6.39	13.50	3.11	55,978.00	174.08
1985	535.00	7.38	196.00	8.51	14.00	2.95	57,673.00	170.32
1986	535.00	7.53	197.00	8.73	16.50	2.85	59,889.00	170.65
1987	540.00	6.95	169.00	6.91	17.00	3.08	60,444.00	186.09
1988	550.00	6.46	168.00	6.38	18.50	3.28	60,006.00	196.74
1989	600.00	7.34	202.00	8.74	19.50	3.33	60,992.00	203.04
1990	690.00	7.69	252.00	11.42	23.00	3.44	65,612.00	225.57
1991	750.00	7.44	225.00	9.84	22.00	3.69	65,395.00	241.05
1992	840.00	7.66	216.00	9.71	26.00	3.84	66,069.00	254.00
1993	950.00	7.54	257.00	11.40	31.00	3.57	63,843.00	228.03
1994	1,050.00	7.32	249.00	10.74	34.50	3.42	67,120.00	229.66
1995	1,200.00	7.87	257.00	11.89	39.10	3.87	71,254.00	275.54
1996	1,350.00	9.04	242.00	12.86	42.50	4.15	67,787.00	281.10
1997	1,380.00	9.12	265.00	14.23	45.90	4.17	66,496.00	277.56
1998	1,530.00	8.87	208.00	10.85	48.45	3.93	71,134.00	279.54
1999	1,650.00	9.34	224.00	12.29	52.70	4.05	71,203.00	288.72
2000	1,775.00	8.71	225.00	11.53	56.10	4.22	70,935.00	299.32
2001	1,825.00	8.53	190.00	9.52	59.50	4.32	68,577.00	295.96
2002	1,875.00	9.13	186.00	10.00	62.05	4.41	67,370.00	297.21
2003	1,875.00	7.67	191.00	8.62	69.50	4.52	63,576.00	287.38
2004	1,925.00	7.60	307.00	13.73	73.00	3.93	59,380.00	233.86

2005	1,960.00	8.79	318.00	16.43	74.50	3.66	64,752.00	237.09
2006	1,980.00	8.68	362.00	18.50	79.50	4.20	66,928.00	281.17
2007	1,990.00	9.14	421.00	22.63	80.25	5.15	69,022.00	355.52
2008	2,030.00	9.43	467.00	25.88	81.18	5.04	68,877.00	348.19
2009	2,500.00	9.41	403.00	22.28	81.18	4.42	64,553.00	285.03
2010	2,500.00	10.28	396.00	23.94	107.86	4.18	65,721.00	277.75
P'vty. = productivity Prod. = Production								

Source: Ministry of Agriculture, Government of India