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## **Changing Consumption Pattern of Agricultural Commodities in Uttar Pradesh: An Inter Regional Analysis**

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### ABSTRACT

The consumption pattern in India underwent a sweeping structural change and now it tends towards assuming a new mobility. India has been projected as the next consumer powerhouse. The economy witnessed structural and compositional changes in the consumption basket of rural and urban sectors and across income groups over the last three decades. Among all states in India, Uttar Pradesh is one of the fastest developing states. The analysis of changing food consumption pattern over time would help in designing appropriate policies related to food production and distribution. Thus the present study empirically revealed striking difference in the consumption pattern of households across rural and urban sectors, regions and income categories in Uttar Pradesh. The findings were in conformity with Engel's law. The analysis of consumption pattern, using two rounds of consumption expenditure survey conducted by NSSO, also revealed a structural shift towards high value agricultural commodities like milk, fruits, vegetables and non-vegetarian products in the state. Structural shift was evident among all the regions, but with inter-regional variations. High disparity among income classes and rural-urban disparities in MPCE were observed. The structural shift and diversification of food basket has definite implications on food security and welfare of the households in state Uttar Pradesh.

**Key Words: Inter-regional, Consumption, Agricultural Commodities, Uttar Pradesh**

**JEL: Q11, Q12, E2**

### I

### INTRODUCTION

Human life is nourished and sustained by consumption. The abundance of consumption is the life blood of human development. Consumer is the king or sovereign in the economic empire. Consumption habits and pattern are determined by a complex set of socio-economic, cultural, religious, psychological, ethical and environmental factors. Typically, a country's consumption pattern reveals a clear picture of its standard of living, poverty level, human development and the nature of its economic growth. The world consumption has expanded at an unprecedented pace over the 20th century. Consumption boom could be witnessed across the world resulting from phenomenal progress of technology and business management. India has been projected as the next consumer powerhouse. The economy witnessed structural and compositional changes in the consumption basket of rural and urban sectors and across income groups over the last three decades. Radhakrishna (2005) observed a substantial shift from the consumption of food items to non-food items in

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general and within food groups from cereals to non-cereal food items and from 'coarse' to 'fine' cereals. Changing consumption pattern has resulted in decline in per capita household demand for foodgrains (Radhakrishna and Ravi, 1992; Kumar and Kumar, 2003). Kumar and Mathur (1996) showed that structural shift was negative for rice, coarse cereals, pulses, milk and sugar and positive for wheat, edible oil, vegetables, fruits, meat, fish and eggs. Musebe and Kumar (2002) examined the consumption pattern of the households belonging to different social and economic categories and found that scheduled castes, scheduled tribes, very poor households, landless and illiterate households had relatively low diversification in their diets.

Among all states in India, Uttar Pradesh is one of the fastest developing states in India and has shown a healthy growth path during the last decade. Growth in population, income and wealth over the years is expected to put increasing pressure on food. Even if the share of agricultural gross domestic product (GDP) in total GDP continue to fall, the absolute levels of food consumption are expected to continue rising and with a major shift towards HVAC. The analysis of changing food consumption pattern over time would help in designing appropriate policies related to food production and distribution. Thus the present study attempts to examine region wise changing consumption pattern of agricultural commodities in Uttar Pradesh.

## II

### DATA AND METHODOLOGY

The consumption pattern of agricultural commodities was analysed temporally, spatially and across the income classes using household level consumption data from consumption expenditure survey conducted by National Sample Survey Organisation (NSSO). To study the temporal consumption pattern data was taken from rounds number 43 and 66 pertaining to the periods 1987-1988 and 2009-10 respectively. Unit level data regarding consumption of food commodities during last 30 days was extracted and used for the analysis. To study spatial consumption pattern, Uttar Pradesh was divided into four geographical regions, viz., Eastern, Western, Central and Bundelkhand regions. The monthly per capita consumption expenditure (MPCE) was taken as a proxy of income and used synonymously hereafter. Broadly, to study consumption pattern of agricultural commodities, per capita consumption and budget shares of food groups were estimated as follows.

#### *Per Capita Consumption and Budget Share*

Monthly per capita consumption for food groups was estimated using following formula:

$$MPC = \frac{\sum_{i=1}^n C_i}{\sum_{i=1}^n f_i}$$

where, MPC = monthly per capita consumption (kg)/expenditure (Rs),  $C_i$  = monthly consumption/expenditure on food item by i-th household, n = number of sample household, and  $f_i$  = family size of i-th sample household.

The share of food groups in total consumption expenditure was measured using following formula:

$$W_g^t = \frac{MPC_{Eg}^t}{\sum_{g=1}^m MPC_{Eg}^t} \times 100$$

where,  $W_g^t$  = share of g-th food group in total food consumption expenditure in t-th period,  $MPC_{Eg}^t$  = monthly per capita consumption expenditure on g-th food group in t-th period, and g = number of food groups (g=1, 2...m) in food basket.

Per capita consumption and budget shares were estimated for each income group and regions at two points of time to assess the spatial and temporal changes in consumption pattern. Per cent change in per capita consumption; budget share over the period under consideration were finally tabulated to interpret results.

### III

#### RESULTS AND DISCUSSION

Income of the household which is one of the important factors affecting consumption of both the food and non-food products was observed to vary across geographical areas and rural and urban sectors depending upon varying employment opportunities. Consequently, the consumption pattern also varied across different regions and rural and urban sectors.

#### *Spatial and Income Group Wise Consumption Expenditure in Uttar Pradesh*

To examine region wise consumption pattern of food products, MPCE and food expenditure was estimated separately across geographical regions and rural and urban sectors. The estimated MPCE and food expenditure at 2008 prices showed greater variability across sectors and income groups with urban sector having about 65 per cent higher income than rural sector and total MPCE was found to be 937 in Uttar Pradesh, for very poor urban sector was having 15 per cent higher income than rural sector, 27.43 per cent more for poor, 49.67 per cent for middle class and 86.34 per cent more for rich class. A similar pattern was found for food expenditure. Further, very poor households were found to be spending about 61 to 63 per cent of income on food as compared to rich who spent about 32 to 41 per cent with rural households spending greater proportion of MPCE on food than urban households (Table1). Thus, rich households spent more on non-food items and poor households spent more on food items. This effect was more pronounced for rural areas as compared to urban

areas. This validated Engel's law which states that as income increases, proportion of total expenditure on non-food items increases and expenditure on food items decreases though actual expenditure may increase.

TABLE 1. SECTOR AND INCOME GROUP WISE HOUSEHOLD EXPENDITURE IN UTTAR PRADESH IN 2009-10

Income Group	MPCE			Food expenditure			RUD (per cent)*	
	Rural	Urban	Total	Rural	Urban	Total	MPCE	Food expenditure
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
V. Poor	478	549	493	302	336	309	14.85	11.26
Poor	678	864	716	(63.21)	(61.16)	(62.68)	27.43	15.63
Middle	904	1353	1010	403	466	420	49.67	26.46
Rich	1654	3082	2129	(59.49)	(54.00)	(58.61)	86.34	45.08
Total	829	1365	937	495	626	530	64.72	33.00
				(54.81)	(46.23)	(52.50)		
				681	988	784		
				(41.15)	(32.07)	(36.82)		
				438	582	467		
				(52.82)	(42.65)	(49.84)		

\*RUD (per cent): rural-urban difference  $\{(urban-rural)/rural*100\}$ .

Figures in parentheses are share of food expenditure in total consumption expenditure.

### *Region Wise Household Expenditure in Uttar Pradesh*

The state has witnessed a marginal disparity in income across the regions (Table 2). A substantial difference in rural-urban MPCE was noticed among all regions, the rural-urban difference (RUD) was more pronounced in central plain region i.e. 94 per cent as compared to other regions. For Eastern region, rural-urban difference was 39 per cent, 57.42 per cent in Western region and 44.45 per cent in Bundelkand region. Substantial rural-urban differences among all the regions as well as Uttar Pradesh indicated a wide gap in purchasing power of households in rural and urban areas. In Uttar Pradesh expenditure on food commodities varies greatly among the regions, it was highest in Western region (Rs.506) and lowest in Bundelkhand region (Rs.438). On the other hand, Eastern region had highest share on total food expenditure (52.22 per cent) followed by Central Plain region (50.23 per cent). The share of rural population in total food expenditure was higher than urban population although the absolute expenditure on food was higher in urban area than rural area in all the regions. The absolute expenditure on food was 33 per cent higher in urban areas than rural areas in Uttar Pradesh. Further, RUD in food expenditure was highest in Central plain region. The contribution of Eastern region on total food expenditure varies from 48 per cent to 53 per cent. Highest variation was noticed in western region where it varies from 42 per cent to 52 per cent. This indicate increasing inequality among rural and urban areas and led to differences in consumption pattern between rural and urban sectors and across the regions.

TABLE 2. REGION WISE HOUSEHOLD EXPENDITURE IN UTTAR PRADESH 2009-10

Income Group (1)	MPCE			Food expenditure			RUD (per cent)*	
	Rural (2)	Urban (3)	Total (4)	Rural (5)	Urban (6)	Total (7)	MPCE (8)	Food expenditure (10)
Eastern	810	1128	845	428 (52.82)	549 (48.69)	441 (52.22)	39.17	28.31
Western	895	1408	1043	470 (52.53)	596 (42.31)	506 (48.54)	57.42	26.79
Central plain	757	1470	903	415 (54.91)	601 (40.91)	454 (50.23)	94.31	44.75
Bundelkhand	919	1327	1013	422 (45.99)	490 (36.95)	438 (43.25)	44.45	16.07
Total	829	1365	937	438 (52.82)	582 (42.65)	467 (49.84)	64.72	33.00

\*RUD (per cent): Rural-urban difference  $\{(\text{urban-rural})/\text{rural} \times 100\}$ .

Figures in parentheses are share of food expenditure in total consumption expenditure.

### *Region Wise Consumption Pattern of Agricultural Commodities in Uttar Pradesh (2009-10)*

The consumption pattern of major commodities was studied both spatially and among rural and urban households for 2009-10 (Table 3). In the total consumption expenditure, food constituted highest share in all the regions and both the rural and urban sectors. The share of food in total consumption expenditure was about 52.82 per cent and 42.65 per cent in rural and urban sectors, respectively. Among the food items, cereals constituted major component in the food basket of rural households followed by milk, vegetables, pulses, edible oils, non-vegetarian items and fruits with the share of about 31, 19, 13, 8, 7.3 and 1.63 per cent in total food expenditure, respectively. The same pattern was observed in urban sector, here also cereals was the leading component followed by milk, vegetables, pulses, edible oils, non-vegetarian items and fruits with a share of 25, 23, 12, 7, 6, 3.24 and 3.21 per cent, respectively. Thus, the share of cereals and pulses was higher in rural sector, while the share of HVACs, viz., milk and fruits was higher in the urban sector. Higher consumption of cereals in the rural sector may be because of high calorie requirement, easy and cheap availability of cereals and payment of wages in kind form in the rural sector. Vegetables and edible oils which are necessary commodities of food basket had almost equal share in both the regions. Among the regions, the highest share in consumption of cereals was observed in Central Plain region (33.28 per cent) in rural sector and Eastern region (28.40 per cent) in urban sector. Thus, cereals consumption was found to be more biased towards non-traditional regions as compared to traditional cereals producing region (Eastern region). The share of pulses in total food expenditure was marginally more in rural sector (8.34 per cent) as compared to urban sector (7.40 per cent). Milk was found to be second major food item after cereals, contributing 18.68 and 23.31 per cent share in food budget of rural and urban households, respectively in Uttar Pradesh. The share of milk in total food

expenditure was the highest in Western region followed by Bundelkhand region in both rural and urban sectors. The eastern region recorded the lowest share of milk in total food expenditure among the regions. Wide variation in milk consumption among the regions might be because of differences in food habits of households and relative availability of milk. Similarly, the share of non-vegetarian products and vegetables was the highest in Eastern region. In Bundelkhand region the share of non-vegetarian products and vegetables was the lowest. The share of Eastern region was the highest in fruit expenditure followed by western region in rural Uttar Pradesh while in urban areas the share of western region was the highest followed by central plain region.

Thus, it can be generalised that the share of HVACs was not uniform among the regions and showed inter-regional variations. The inter-regional variations may be due to some differences in tastes and preferences of consumers across the regions because of large cultural diversity and consequent differences in food histories across different regions of the state.

TABLE 3. REGION AND SECTOR WISE SHARE OF FOOD COMMODITIES IN TOTAL FOOD EXPENDITURE IN UTTAR PRADESH IN 2009-10

Region (1)	<i>(per cent)</i>							
	Cereals (2)	Pulses (3)	Milk (4)	Edible oils (5)	Non-Veg (6)	Vegetables (7)	Fruits (8)	Food* (9)
Rural								
Eastern	32.85	9.06	13.34	7.69	4.52	14.40	1.79	13.34
Western	27.88	7.14	25.88	6.64	3.02	11.55	1.64	52.53
Central plain	33.28	9.18	16.35	8.13	2.67	12.34	1.37	54.91
Bundelkhand	32.76	6.74	23.37	7.68	2.28	10.92	1.51	45.99
Total	31.29	8.34	18.68	7.44	3.49	12.81	1.63	52.82
Urban								
Eastern	28.40	8.40	16.16	7.25	6.24	12.85	2.68	48.69
Western	23.71	6.66	26.79	6.04	2.51	12.25	3.52	42.31
Central plain	25.01	8.40	21.04	7.15	2.89	12.57	3.04	40.91
Bundelkhand	25.72	6.20	25.23	7.85	1.67	11.97	2.75	36.95
Total	24.99	7.40	23.31	6.63	3.24	12.43	3.21	42.65
Total								
Eastern	32.25	8.97	13.72	7.63	4.75	14.19	1.91	52.22
Western	26.46	6.97	26.19	6.43	2.84	11.79	2.28	48.54
Central plain	31.03	8.97	17.62	7.86	2.73	12.40	1.82	50.23
Bundelkhand	30.94	6.60	23.85	7.72	2.12	11.19	1.83	43.25
Total	29.71	8.10	19.84	7.24	3.43	12.72	2.02	49.84

\*The share of food expenditure in total consumption expenditure (MPCE).

#### *Region Wise Changes in Consumption Pattern of Uttar Pradesh from 1987-88 to 2009-10*

Changes in consumption pattern have been observed over the years. It was found that between 1987-88 and 2009-10 (Table 4), the share of food expenditure in MPCE reduced in all the regions and both the sectors. In the rural sector, its share reduced to -14.23 per cent while in urban sector the share of food declined to -22.94 per cent (25.7 per cent decline) in Uttar Pradesh during the period under consideration (Table

4). Cereals and pulses, which together constitute a major share in food basket and form a staple food group, registered a substantial decline in both the per capita consumption and their share in food expenditure in all the regions and both the sectors between 1987-88 and 2009-10. The decline was highest in case of cereals on the basis of share in food basket in all the regions of rural sector while pulses registered highest decline in per capita consumption of food commodities in rural as well as urban sector. In rural sector decline in share of cereals was the highest in Bundelkhand region with -26.01 per cent and decline of -27.45 per cent in per capita consumption, decrease in share of cereal in total food consumption was lowest in Western region with -16.05 per cent share (-30.66 per cent absolute). While in urban sector decline in share of cereal consumption was the highest in Bundelkhand region with -20.03 per cent (-24.25 per cent absolute) followed by Western region with -10.60 per cent (-15.42 per cent absolute) and decline in share of cereals was lowest in Central plain region with -6.29 per cent (-11.93 per cent absolute). Pulses registered highest decline in per capita consumption of food commodities with -38.53 per cent in rural sectors and -30.28 per cent decline in urban sector of Uttar Pradesh. The share of milk in total consumption in rural sector has increased in all the regions over the years while total consumption of milk registered declining trend.

TABLE 4. REGION AND SECTOR WISE CHANGE IN SHARE OF FOOD COMMODITIES IN TOTAL FOOD EXPENDITURE IN UTTAR PRADESH BETWEEN 1987-88 AND 2009-10

<i>(per cent)</i>								
Region (1)	Cereals (2)	Pulses (3)	Milk (4)	Edible oils (5)	Non-veg (6)	Vegetables (7)	Fruits (8)	Food* (9)
Rural								
Eastern	-23.93	-17.89	5.06	-3.81	40.71	58.47	38.76	-16.63
Western	-16.05	3.35	4.85	-26.62	38.23	45.98	-2.45	-13.06
Central plain	-19.98	-14.61	17.49	-16.54	18.56	43.01	-3.50	-7.89
Bundelkhand	-26.01	-39.24	8.34	-5.93	164.89	65.33	142.21	-33.85
Total	-19.13	-9.20	2.58	-14.45	36.39	52.83	10.88	-14.23
Urban								
Eastern	-10.02	-11.48	-4.27	-23.47	39.73	31.17	6.43	-16.84
Western	-10.60	8.12	13.73	-38.54	-34.31	26.98	25.26	-24.70
Central plain	-6.29	-1.68	7.44	-37.07	-9.16	24.70	2.71	-21.68
Bundelkhand	-20.03	-29.38	33.71	-36.78	-48.99	38.14	60.08	-34.17
Total	-8.99	-2.31	11.02	-34.75	-14.36	25.83	12.32	-22.94
Total								
Eastern	-22.52	-17.14	3.48	-6.87	40.57	54.54	31.27	-16.67
Western	-15.81	3.99	7.42	-30.47	8.60	40.77	15.04	-18.06
Central plain	-17.55	-11.78	14.30	-22.69	9.26	37.59	-0.23	-12.57
Bundelkhand	-25.30	-37.41	13.94	-15.76	48.22	57.82	107.59	-34.28
Total	-17.92	-8.19	5.38	-19.79	21.05	45.90	13.95	-17.04

\*The share of food expenditure in total consumption expenditure (MPCE).

On the other hand, in urban sector the share of milk in total expenditure has increased in all the regions (except Eastern region) as well as total consumption of milk in absolute terms has also shown increasing trend. It means urban sector is moving towards HVA commodities at faster rate. Edible oils had shown growth in both rural and urban sector of Uttar Pradesh in all the regions but their share in total

food consumption had declined in all regions and both sectors. The highest share in food basket was occupied by non-vegetarian food in rural sector but it registered negative share in urban sector. Between 1987-88 and 2009-10, fruits and vegetables witnessed substantial increase in their share in total food expenditure and increase in the share of vegetables was steeper in rural sector while increase in share of fruits was steeper in urban sector. Vegetables registered about 5.45 per cent increase in per capita consumption and its share in food budget increased to 52.83 per cent in rural Uttar Pradesh while in urban area the share of vegetables had increased to 25.83 per cent but per capita consumption of vegetables declined to -0.88 per cent.

Interestingly, per capita consumption and the share of total food expenditure in total consumption expenditure declined comparatively more in urban sector, while per capita consumption and the share of foodgrains in food expenditure declined relatively more in rural sector.

This indicated that urban households are moving away from food to non-food commodities comparatively faster than rural households and rural households are moving away from foodgrains to non-foodgrains comparatively faster than their urban counterparts. Rao (2000) also observed a steeper decline in per capita consumption of cereals in rural sector than in the urban sector.

#### IV

#### SUMMARY AND CONCLUSIONS

The monthly per capita consumption expenditure (MPCE) and food expenditure showed greater variability across the sectors and income groups with urban households having higher MPCE than their rural counterparts. With the increase in income, disparity in rural and urban income also increased particularly in higher income group who registered highest rural-urban differences in MPCE. Thus, income difference between rural and urban sectors and between income classes was found to be the prime reason for the differences in the consumption pattern in the rural and urban sectors and different income classes. A similar pattern was found for food expenditure. Very poor households were found to be spending about 61 to 63 per cent of income on food as compared to rich who spent about 32 to 41 per cent with rural households spending greater proportion of MPCE on food than urban households. Thus, rich households spent more on non-food items and poor households spent more on food items. This effect was more pronounced for rural areas as compared to urban areas. This validated Engel's law which states that as income increases, proportion of total expenditure on non-food items increases and expenditure on food items decreases though actual expenditure may increase.

In Uttar Pradesh expenditure on food commodities varies greatly among the regions, it was highest in Western region and lowest in Bundelkhand region. Share of rural population in total food expenditure was higher than urban population although the absolute expenditure on food was higher in urban area than rural area in all the



regions. This indicated increasing inequality among rural and urban areas and led to differences in consumption pattern between rural and urban sectors and across the regions. Among the regions, highest share in consumption of cereals was observed in Central Plain region (33.28 per cent) in rural sector and Eastern region (28.40 per cent) in urban sector. Thus, cereals consumption was found to be more biased towards non-traditional regions as compared to traditional cereals producing region (Eastern region). The share of HVACs was not uniform among the regions and showed inter-regional variations. The inter-regional variations may be due to some differences in tastes and preferences of consumers across the regions because of large cultural diversity and consequent differences in food histories across different regions of the state. Between 1987-88 and 2009-10 the share of food expenditure in MPCE reduced in all the regions and both the sectors. Cereals and pulses, which together constitute a major share in food basket and form a staple food group, registered a substantial decline in their share in food expenditure in all the regions and both the sectors between 1987-88 and 2009-10. Interestingly, the share of total food expenditure in total consumption expenditure declined comparatively more in urban sector. This indicated that urban households are moving away from food to non-food commodities comparatively faster than rural households.

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