



DETERMINANTS OF CEREAL CONSUMPTION PATTERNS – A COMPARATIVE STUDY OF MAJOR RURAL BLOCKS OF STATES AND INDIA

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ABSTRACT

The significant changes in all the sectors of the economy have a direct impact on the welfare of the people. The leading review of developing country surveys reveals that the income, consumption and saving are the best measures of the economic component of living standards. Out of these three measures the consumption is the macroeconomic variable of our concern for the study as more reliable data are available for it as compared to the other two variables. There are several food consumption items of which cereal is the most important item as proportion of cereal consumption is highest among items of food consumption. The issue of household food security has been one of the major concerns in India. There is an on-going debate on welfare implications of status of food-grain consumption.

This study examines the patterns of cereal consumption expenditure functions under Keynes's Absolute Income Theory of Consumption Function. Keynes in his "General Theory" (1936) laid the foundations of modern macroeconomics. According to Keynes, as income increases, consumption increases, but not as much as the increase in income.

In this paper attempts have been made to analyze the consumption pattern of cereal in the rural parts of major states including Gujarat and in the rural India. We have found in our study that there is significant difference for cereal consumption expenditure for rural states and rural India (using Krushical Walis test). The pair wise comparison using Conover-Inman Test suggest that there are significant differences for Cereal Consumption Expenditure between the pairs of Gujarat with all states considered and India at rural level except HR, KT, MP, MH, PN, RJ, TN and UP. We have also established the following order for cereal consumption expenditure amongst Rural Sates and Rural India (using Jonckheere Terpstra test).

HR<PN<GJ<MP<MH<RJ<UP<KT<TN<INDIA<KR<AP<BH<OR<CSG<WB<J&K<AS<JK

This shows the importance of cereals as an item of consumption in the food basket of the rural families. . We hope that the findings reported by this study will provide an empirical basis for the on-going discussion on agricultural diversification and changes in consumption pattern.

KEYWORDS: Cereals Consumption Expenditure, Total Consumption Expenditure, Rural Major States, Rural India



1. INTRODUCTION

The significant changes in all the sectors of the economy have a direct impact on the welfare of the people. The leading review of developing country surveys reveals that the income, consumption and saving are the best measures of the economic component of living standards. Out of these three measures the consumption is the macroeconomic variable of our concern for the study as more reliable data are available for it as compared to the other two variables. There are several food consumption items of which cereal is the most important item as proportion of cereal consumption is highest among items of food consumption. The issue of household food security has been one of the major concerns in India. There is an on-going debate on welfare implications of status of food-grain consumption.

This study examines the patterns of cereal consumption expenditure functions under Keynes's Absolute Income Theory of Consumption Function. Keynes in his "General Theory" (1936) laid the foundations of modern macroeconomics. According to Keynes, as income increases, consumption increases, but not as much as the increase in income. This study shows the importance of cereals as an item of consumption in the food basket of the rural families. The findings reported by this study will provide an empirical basis for the on-going discussion on agricultural diversification and changes in consumption pattern.

Here it should be noted that per capita total consumption expenditure is taken as a proxy variable for per capita income, because more reliable data are available for the former as compared to the latter. It may be useful in formulating various macroeconomic policies like food security, agriculture production related decisions etc.

Studies about the consumption pattern of the country, its states and some specific regions have been undertaken by some organizations, institutions, field experts and researchers for different periods of time. These studies have been found to be quite useful for further work in this area, both in India and abroad. Some of which are as under:

Goyal and Singh (2002) presented a paper entitled "Demand versus Supply of Food grains in India: Implication of Food security" at 13th International Management Conference, Wageningen, Netherlands, July 7-12, 2002. In this paper they addressed the issue of shift in food consumption pattern over the years. The expenditure elasticity was used as proxy of income elasticity. The study revealed that the per capita consumption of cereals was higher in the rural areas

as compared to the urban areas and the expenditure elasticity of different cereals in rural and urban areas had continuously declined over the study period of time.

Gangopadhyay and Willima (2004) studied the pattern of consumption expenditure of India on the basis of data of per capita consumption expenditure collected by National Sample Survey (NSSO). The study reported that the per capita consumption is reflected in a lower weightage to necessities and higher weightage to the items that improve quality of life. This is not only for the country as a whole but across the states also.

Chatterjee, Ray et. al. (2006) examined how the pattern of India's food consumption has been changing as a consequence of its faster economic growth. The calculations are based on the 43rd (1987-1988) and 57th (2001-2001) round of the NSSO. The main conclusion of this study is that the per capita consumption of total cereals has continued to fall in both urban and rural households, while that of edible oils, vegetables and fruits have continued to increase in urban and rural regions.

Sengupta, Raveendran et. al. (2008) examined the socio-economic profile of people of India in different periods of time with a view to know how economic growth process has impacted their level of consumption. Authors have worked on the data sets available from NSSO. They have classified each sample household as accordingly belonging to the 'extremely poor', 'poor', 'marginal', 'vulnerable', 'middle income', and 'high income' groups.

Nathalie P. (2011) prepared a research paper on "food and prices in India: Impact of Rising food prices on welfare". This study shows that there are differential impacts on different categories of households. Rural households are more vulnerable than urban households. In addition, the poorest households of both sectors are more penalized by rising food price than the richest households. The impact depends also on the commodity which price has increased. Indeed, an increase in cereal prices affects more the households than the same increase in fruit price.

Praduman, Anjani et. al. (2011) prepared a research paper entitled "estimates of demand elasticity for food commodities in India". In this paper, the food demand in India has been examined in the context of a structural shift in the dietary pattern of its population. The result has reinforced the hypothesis of a significant diversification in the dietary pattern of households in recent years and has found stark differences in the

consumption pattern across income quartiles. The study has revealed that these estimated income elasticities vary across income classes and are lowest for cereals group and highest for horticultural and livestock.

Oldiges C.(2012) presented a special article entitled "cereal consumption and per capita income in India" in EPW with volume number 6. This paper examines the relationship between per capita cereal consumption and per capita income in India.. It turns out that per capita cereal consumption remains much the same at different levels of per capita income, though it does vary substantially with education levels, household size, occupation patterns and urbanization. The recent decline of cereal consumption over time may reflect changes in these non-income factors. While cereal consumption seems unrelated to per capita income, it is positively related to per capita expenditure

Zhou Tian ,et al.(2012): prepared a report on "Food Consumption Trends in China". This report examines the recent trends in China's food consumption, with a focus on the period of 2000-2010. Insights into such trends should be most valuable in understanding this potentially enormous food consumption market.

In this paper attempts have been made to analyze the consumption pattern of cereal in the rural parts of major states including Gujarat and in the rural India.

IV. ANALYSIS AND FINDINGS

(1) Shapiro-Wilk Test:-

cereal consumption expenditure (Rural levels of States and India)						
States	Kolmogorov-Smirnov(a)			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
AP	0.197	19	0.051	0.916	19	0.095
AS	0.194	19	0.057	0.926	19	0.149
BH	0.189	19	0.072	0.901	19	0.051
GJ	0.178	19	0.115	0.933	19	0.201
HR	0.152	19	.200	0.926	19	0.148
KT	0.185	19	0.088	0.915	19	0.090
KR	0.143	19	.200	0.949	19	0.378
MP	0.256	19	0.002	0.862	19	0.010
MH	0.224	19	0.013	0.920	19	0.115
OR	0.249	19	0.003	0.934	19	0.208
PN	0.194	19	0.059	0.921	19	0.118
RJ	0.151	19	.200	0.925	19	0.140
TN	0.296	19	0.000	0.707	19	0.000
UP	0.153	19	.200	0.934	19	0.202
WB	0.160	19	.200	0.935	19	0.218
JK	0.187	12	.200	0.922	12	0.307
CSG	0.169	11	.200	0.960	11	0.771
J&K	0.211	11	0.184	0.949	11	0.635
India	0.156	19	.200	0.935	19	0.217

II.OBJECTIVES OF THE STUDY

The major objective of the study is (i) to test the significance of difference of cereal consumption (ii) to do pair wise comparisons of Gujarat states with other states and India and (iii) suggest order for cereal consumption expenditure individually for each state and at national level for rural parts.

III. RESEARCH METHODOLOGY

A.Reference Period:-

The study covers a period of 20 years from 1993-1994 to 2011-2012. The period of twenty years is considered to be big enough to underline the trends in any activity and to infer conclusions.

B.Data Collection:-

The study is exclusively based on secondary source of data. Therefore, published reports of selected rounds of official surveys carried out by the Central Statistical Organization (CSO), the NSSO (National Sample Survey Office), the Ministry of Statistics and Program Implementation (MOSPI) journals and web-sites have been used.

C.Statistical Analysis:-

The basic methodology adopted in this study is use of some specific non-parametric tests like Shaiprowilk test; Krushical Walis test Conover-Inman test and Jonckheere Terpstra test on cereal consumption data. The Statistical Analysis has been done using MS-EXCEL and/or Statistical Package SPSS.

It can be seen from the normality test that data on cereal consumption expenditure does not follow Normal distribution (except for the states MP and TN).The data does not follow Normal distribution even after any transformation like log, square root, square, cube, cube root, sin inverse. So to test the significant difference for cereal consumption expenditure amongst rural states and rural India, Kruskal Wallis Test is used.

(2) Kruskal Wallis Test

H_0 : There is no significant difference for cereal consumption expenditure for rural states and rural India.

H_1 : There is significant difference for cereal consumption expenditure for rural states and rural India.

states	AP	AS	BH	GJ	HR	KT	KR	MP	MH	OR	PN
N	19	19	19	19	19	19	19	19	19	19	19
Mean rank	198.29	264.74	217.00	99.84	76.68	137.18	188.37	118.95	119.00	228.84	82.00
states	RJ	TN	UP	WB	JK	CSG	J&K	INDIA	total		
N	19	19	19	19	12	11	11	19	338		
Mean rank	129.16	140.05	134.47	255.26	267.92	235.64	257.91	170.53			

Kruskal Wallis Test

Cereal Consumption Expenditure (Rural levels of States and India)	
Chi-Square	134.431
df	18
Asymp. Sig.	0.000

Here p value is less than 0.05. So it can be said that there is significant difference for cereal consumption expenditure for rural states and rural India.

(3) Conover-Inman Test

The pair wise comparison is shown in the table below. It is seen that there are significant differences for Cereal Consumption Expenditure between the pairs of Gujarat with all states considered and India level except HR, KT, MP, MH, PN, RJ, TN and UP.

Conover-Inman Test for All Pair wise Comparisons (Rural levels of States and India)							
Group(i)	Group(j)	Statistic	p-Value	Group(i)	Group(j)	Statistic	p-Value
GJ	AP	3.897	0.000	GJ	PN	0.706	0.481
GJ	AS	6.527	0.000	GJ	RJ	1.160	0.247
GJ	BH	4.637	0.000	GJ	TN	1.592	0.112
GJ	HR	0.917	0.360	GJ	UP	1.371	0.171
GJ	KT	1.478	0.140	GJ	WB	6.152	0.000
GJ	KR	3.504	0.001	GJ	JK	5.854	0.000
GJ	MP	0.756	0.450	GJ	CSG	4.603	0.000
GJ	MH	0.758	0.449	GJ	J&K	5.358	0.000
GJ	OR	5.106	0.000	GJ	India	2.798	0.005

(4) Jonckheere-Terpstra Test

It is tried to establish whether any order follows for cereal consumption expenditure amongst Rural Sates

and Rural India. Non- parametric Jonckheere Terpstra test is used for order alternatives as data does not follow to Gaussian distribution.

Jonckheere-Terpstra Test

Cereal Consumption Expenditure (States Rural)	
Number of Levels	19
N	338
Observed J-T Statistic	39,857.000
Mean J-T Statistic	27,020.500
Std. Deviation of J-T Statistic	1,036.319
Std. J-T Statistic	12.387
Asymp. Sig. (2-tailed)	0.000

For Cereal Consumption expenditure it can be seen some order amongst Rural States and Rural India as p value is less than 0.05. The order is as follow:

HR<PN<GJ<MP<MH<RJ<UP<KT<TN<INDIA<KR<AP<BH<OR<CSG<WB<J&K<AS<JK

V. Limitation of the Study

1. An Econometric study usually has limitations, even when the models are rigorously specified. The study also may suffer from limitations, which are mentioned below:
2. The study is based on the secondary data obtained from NSSO, which collects the primary data through nationwide sample survey. The accuracy of the estimates and conclusions derived of study is, therefore, affected to the extent that the samples deviate from actual representative samples.
3. Total expenditure as a proxy of income is used due to unavailability of reliable data on income.
4. There may be some important independent variables which are not included in the model, which may deprive the model of its practical significance to some extent.
5. The conclusions may not be applicable to the individual commodities within a commodity group (i.e. Cereals) as only the broad groups of commodities have been considered.
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