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An Econometric Analysis of Engel's Curve: Study of Consumption Expenditure in Rural Households of North Coastal Districts of Andhra Pradesh

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ABSTRACT
Over the decades, the economy has experienced significant structural shifts. Millions of households experienced impressive welfare transformation causing substantial changes in the consumption pattern. The present paper attempts to analyze the pattern of consumption expenditure of rural households in both food and non-food consumption expenditure due to the changes in income and occupation of the people in North Coastal Andhra Pradesh. The study has analysed 19 items both food and non-food items (Food-7 and Non-Food-12) and as well as both irrigated and rain fed area in North Coastal Region in the state of Andhra Pradesh ie Visakhapatnam, Vijayanagaram, Srikakulam. Engel elasticity technique is used to analyse the data collected from 360 households.

KEY WORDS*: Households, Consumption, Irrigation, expenditure, Engel elasticity*

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I. INTRODUCTION

In India households are the largest contributors to the national pool of savings. The concept of saving plays an important role in economic analysis. During pre-Independence period in India, people spent most of their income on consumption and only a small proportion of income was left in the form of savings. As a result, the saving rate was very low especially in the rural sector. Since the attainment of Independence in 1947, the major objective of the government policy has been the promotion of saving and capital formation as they are the primary instruments of economic growth.

The consumption pattern of the rural sample households in North Coastal Andhra Region has been analysed by studying the difference in food and non-food consumption expenditure on different items between the two areas i.e., irrigated area and rainfed area and also among the districts.

The primary objective of the consumption behaviour analysis according to Rahman et.al.(2013) "to examine the relationship between expenditure on individual items and the total expenditure in order to understand how household consumption expenditure on various items is influenced by changes in total expenditure".

This paper has been made to analysed by the studying difference in the expenditure on food and non-food items of the consumption baskets. The NSSO classifies expenditure in 33 items. But the present study has been analysed 19 items both food and non-food items (Food-7 and Non-Food-12) both irrigated and rainfed area in North Coastal Region in the state of Andhra Pradesh

OBJECTIVES OF THE STUDY

1. To Study the consumption expenditure of weekly food items in the North Coastal Andhra region.
2. To Study the consumption expenditure of weekly Non- food items in the North Coastal Andhra region.
3. To offer suggestions for better improvements in the selected study area.

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II. METHODOLOGY

The study is based on primary data. The data has been collected interview schedule conducted by the researcher from 360sample households. For the selection of the sample the purposive sampling method was adopted for the selection of the study area and the simple random technique was adopted for the selection of the sample households. A detailed interview schedule has been prepared and canvassed to all the 360 households in the study area.

Variables	Irrigated Area				Rainfed Area			
Food Items	Coefficient	Std. Error	t	Sig.	Coefficient	Std. Error	t	Sig.
Constant	1.605	0.192	8.338	0.0000	1.582	0.149	10.621	0.000
Cereals	.115*	0.04	2.876	0.005	.164*	0.024	6.876	0.000
Grocery	.217*	0.056	3.859	0.000	.361*	0.036	10.026	0.000
Fish and Meat	.057**	0.022	2.565	0.012	.123*	0.022	5.559	0.000
Fruits	.028*	0.01	2.758	0.007	0.005	0.008	0.578	0.565
Vegetables	.366*	0.054	6.788	0.000	.205*	0.027	7.67	0.000
Milk & Eggs	.106*	0.027	3.86	0.000	.149*	0.02	7.638	0.000
Others	.256*	0.02	12.659	0.000	.117*	0.02	5.958	0.000
	Adjusted R Square=0.909 F-Value =157.240 Significance =0.000				Adjusted R Square=0.955 F-Value=296.798 Significance value=0.000			

Engel elasticity for Food items:

Table-1: Engel elasticity for Consumption expenditure of Weekly Food Items in North Coastal Andhra Region

Table-2:Engel elasticity for Consumption expenditure of Weekly Food Items in Irrigated Area and Rainfed area

Variables	Coefficients	Std. Error	t	Sig.
(Constant)	1.682*	0.13	12.951	0.000
Cereals	.140*	0.024	5.89	0.000
Grocery	.299*	0.034	8.691	0.000
Fish and Meat	.059*	0.016	3.608	0.000
Fruits	.020*	0.007	2.726	0.007
Vegetables	.255*	0.029	8.76	0.000
Milk and Eggs	.124*	0.018	6.768	0.000
Others	.216*	0.015	14.294	0.000
	Adjusted R Square = 91.7 F-Value =330.539 Significance Value =0.000			

The Engle elasticity for food items i.e., Cereals, Grocery, Fish and meat, Fruits, Vegetables, Milk and Eggs, other items has been presented in Table-1. It can be seen from the Table-1that all the seven food items are statistically significant at 1 percent probability level. All these variables put together explained 91.7 percent explained of variation in the dependent variable i.e., total per capita expenditure. It is observed from the Table-1 that, the value of elasticity of such items is not greater than one and thus it is necessary items. Ten percent increase in total per capita expenditure of food would lead to 2.99 percent increase in demand for grocery, 2.55 percent increase in demand for vegetables, 2.16 percent increase in other items, 1.4 percent increase in demand for cereals, 1.24 percent increase in demand for milk and eggs. Therefore, the Engel elasticity for food items less than one, implying that the demand for food items under consideration is inelastic.

In the irrigated area, the analysis reveals that all the variables statistically significant at 1 percent probability level except fish and meat which is significant at 5 percent probability level. In rainfed area except the variable vegetables, all are statistically significant at 1 percent level (Table-2). The value of Engel elasticity for food items in irrigated area reveals that 10 percent increase in total per capita expenditure of food leads to 3.66 percent increase the demand for Vegetables, 2.56 percent increase of other items, 1.15 percent increases the demand for cereals and 1.06 percent increases the demand for Milk and eggs. In the rainfed area, 3.61 percent increase in the demand for grocery, 2.05 percent increase the demand for Vegetables and 1.64 percent increases the demand for cereals.

Table-3: Engel elasticity for Consumption expenditure of Weekly Food items in Districts

Vegetables	**Srikakulam**				**Vizianagaram**				**Visakhapatnam**			
Food Items	Coeffi-cient	Std. Error	t	Sig.	Coeffi-cient	Std. Error	t	Sig.	Coeffi-cient	Std. Error	t	Sig.
Constant	1.019	0.144	7.074	0.000	1.351	0.162	8.346	0.000	2.63	0.409	6.424	0.000
Cereals	.066**	0.027	2.419	0.017	.133*	0.031	4.357	0.000	0.062	0.104	0.601	0.555
Grocery	.477*	0.039	12.09	0	.458*	0.048	9.602	0.000	-0.034	0.11	-0.306	0.763
Fish and Meat	.061*	0.013	4.895	0.000	.129*	0.028	4.628	0.000	0.108	0.107	1.008	0.326
Fruits	.019*	0.006	3.004	0.003	0.008	0.008	1.045	0.3	0.105	0.078	1.357	0.19
Vegetables	.344*	0.033	10.568	0	.186*	0.032	5.8	0.000	.368*	0.117	3.152	0.005
Milk and Eggs	.156*	0.019	8.219	0.000	.120*	0.018	6.832	0.000	-0.027	0.108	-0.246	0.808
Others	.106*	0.016	6.617	0.000	.130*	0.022	5.769	0.000	.342*	0.035	9.821	0.000
	Adjusted R Square=0.959 F-Value=342.422 Significance Value=0.000				Adjusted R Square=0.961 F-Value=276.513 Significance Value=0.000				Adjusted R Square=0.913 F-Value=41.720 Significance Value=0.000			

District wise analysis (Table-3) reveals that in Srikakulam district, the Engel elasticity of food items all variables are statistically significant at 1 percent level except the value of cereals is significant at 5 percent probability level. In Vizianagaram district, all the variables are turned out to be statistically significant at 1 percent probability level except the variable fruits. But in both the districts, mostly the Engel elasticity of grocery indicates that 10 percent change in total per capita expenditure of food leads to 4.77 percent and 4.58 percent increase the demand for grocery. In Visakhapatnam district, only the variables fruits and other items are statistically significant at 1 percent level. The Engel elasticity coefficient of vegetables and other items indicates that 10 percent increase in total per capita expenditure indicates that an increase of 3.68 and 3.42 percent the demand for vegetable and other items.

Hence it can be concluded that, in the irrigated area, the Engel elasticity of demand for food items like Grocery, Vegetables, other items are highly increased if the total expenditure increases where as in the rainfed area, mostly Grocery and Vegetables are influencing the total expenditure.

Table-4: Engel elasticity for Consumption expenditure of Weekly Non-Food Items in North Coastal Andhra Region

Non-Food items	Coefficient	Std. Error	t	Sig.
(Constant)	1.645	0.142	11.561	0.000
Cloth	.085*	0.018	4.826	0.000
Foot wear	-.047**	0.018	-2.575	0.011
Entertainment	.041***	0.022	1.869	0.063
Transport	.156*	0.012	12.498	0.000
Cable charges	.121*	0.037	3.241	0.001
Phone charges	.078*	0.018	4.385	0.000
Personal care cosmetics	0.037	0.026	1.44	0.151

Dhobi charges	0.05	0.033	1.511	0.132
Electricity charges	.116*	0.029	4.017	0.000
Medical charges	.285*	0.015	19.116	0.000
Education charges	.243*	0.01	23.6	0.000
Religious festivals and intoxicants	.047**	0.023	2.089	0.038
	Adjusted R Square = 0.935 F-Value=301.045 Significance=0.000			

The Engel elasticity for Non-Food items:

The Engle elasticity for non-food items i.e., cloth, foot wear, entertainment, transport, cable charges, phone charges, personal care cosmetics, dhobi charges, electricity charges, medical charges, education charges, religious and intoxicants expenditure has been presented in Table-4 In the total study area, all the variables are statistically significant at different significance levels except the variables personal care cosmetics and dhobi charges are not significant even at 10 percent level. The Engel coefficient of the variables medical charges and education charges indicates that 10 percent increase in total per capita expenditure of non-food would lead to 2.85 percent and 2.43 percent increase the demand for expenditure on medical and education.

The analysis relating to area wise (Table-5), in the irrigated area, the variables cloth, entertainment, transport, cable charges, electricity, medical charges and education charges are statistically significant at different significance levels. In the rainfed area, except foot wear and entertainment all the variables are significant at different significance levels. In both the areas the Engel coefficient of the variables medical charges and education charges indicates that 10 percent increase in total per capita expenditure of non-food would lead to 2.74 percent and 2.31 percent and 2.90 percent and 2.602 percent increase the demand for expenditure on medical and education.

District wise analysis (Table-6) reveals that in Srikakulam district, the Engel elasticity of food items all variables are statistically significant except the value of foot wear, entertainment, dhobi charges, electricity charges and religious festivals and intoxicants expenditure. In Vizianagaram district, cloth, entertainment, cable charges, electricity charges and education charges are turned out to be statistically significant at different significance levels. In Visakhapatnam district, except foot wear, phone charges and personal care cosmetics are statistically significant at different significance levels. The coefficient of Engel elasticity of medical charges and education charges indicates that 10 percent increase in total per capita expenditure of non-food would lead to an increase of 3.19 and 3.14 percent the demand for such items in Srikakulam district, 2.75 percent and 2.17 percent in Vizianagaram district. But in Visakhapatnam district the Engel elasticity of cable charges, medical charges, education charges, dhobi charges and electricity charges indicates that 10 percent increase in total per capita expenditure of non-food would lead to 2.17percent, 1.92 percent, 1.52 percent, 1.49 percent and 1.37 percent increases the demand for such items.

Table-5: Engel elasticity for Consumption expenditure of Weekly Non-Food Items in irrigated area and Rainfed area

	Irrigated Area				Rainfed Area			
Variables	Coefficient	Std. Error	t	Sig.	Coefficient	Std. Error	t	Sig.
(Constant)	1.665	0.206	8.073	0.000	1.461	0.21	6.975	0.000
Cloth	.107*	0.027	3.922	0.000	.083*	0.025	3.278	0.001
Foot wear	-0.054	0.037	-1.459	0.147	-0.023	0.024	-0.954	0.342
Entertainment	.063**	0.03	2.08	0.04	-0.005	0.033	-0.142	0.887
Transport	.167*	0.018	9.396	0.000	.132*	0.019	7.063	0.000
Cable charges	.132**	0.055	2.421	0.017	.110*	0.052	2.105	0.038
Phone charges	0.048	0.033	1.464	0.146	.085*	0.022	3.976	0.000
Personal care cosmetics	0.042	0.039	1.086	0.28	.064***	0.038	1.677	0.096
Dhobi charges	-0.02	0.051	-0.39	0.697	.079***	0.046	1.726	0.087
Electricity charges	.182*	0.051	3.565	0.001	.070***	0.037	1.886	0.062
Medical charges	.274*	0.023	12.054	0.000	.290*	0.02	14.216	0.000
Education charges	.231*	0.015	15.62	0.000	.260*	0.014	18.011	0.000
Religious festivals and intoxicants	0.038	0.029	1.31	0.193	.103*	0.04	2.61	0.01
	Adjusted R Square=0.926 F-Value=133.943 Significance value=0.000				Adjusted R Square=0.949 F-Value=184.657 Significance value=0.000			

Table-6: Engel elasticity for Consumption expenditure of Weekly Non-Food items in Districts

Variables	Srikakulam				Vizianagaram				Visakhapatnam			
	Coefficient	Std. Error	t	Sig.	Coefficient	Std. Error	t	Sig.	Coefficient	Std. Error	t	Sig.
(Constant)	1.333	0.218	6.11	0.000	1.123	0.441	2.544	0.014	1.878	0.221	8.485	0.000
Cloth	.087*	0.023	3.759	0.000	.197**	0.08	2.475	0.016	.068**	0.029	2.343	0.022
Foot wear	-0.031	0.036	-0.862	0.391	-0.043	0.074	-0.572	0.57	0.006	0.029	0.216	0.83
Entertainment	0.017	0.027	0.641	0.523	.152**	0.067	2.278	0.026	.092*	0.034	2.758	0.008
Transport	.129*	0.02	6.414	0.000	0.193	0.123	1.567	0.123	.098*	0.026	3.825	0.000
Cable charges	.151*	0.059	2.572	0.012	.153**	0.065	2.36	0.022	.217*	0.057	3.818	0.000
Phone charges	.112*	0.021	5.328	0.000	-0.084	0.095	-0.885	0.38	0.007	0.036	0.203	0.84
Personal care cosmetics	.059***	0.035	1.686	0.095	0.187	0.112	1.666	0.101	0.006	0.036	0.171	0.865
Dhobi charges	0.054	0.048	1.115	0.268	0.052	0.098	0.531	0.597	.149**	0.066	2.269	0.027
Electricity charges	-0.003	0.07	-0.048	0.962	.275*	0.065	4.246	0	.137*	0.036	3.833	0.000
Medical charges	.319*	0.015	21.846	0.000	.217*	0.024	9.12	0.000	.192*	0.033	5.89	0.000
Education charges	.314*	0.013	24.078	0.000	0.077	0.09	0.85	0.399	.152*	0.024	6.318	0.000
Religious festivals and intoxicants	0.05	0.045	1.111	0.269	0.077	0.066	0.85	0.399	0.091	0.029	3.141	0.003
	Adjusted R Square=0.961 F-Value=212.459 Significance Value=0.000				Adjusted R Square=0.890 F-Value=52.532 Significance Value=0.000				Adjusted R Square=0.945 F-value=104.698 Significance Value=0.000			

Table-7: Engel elasticity for Consumption expenditure of Weekly Food and Non-Food Items in North Coastal Andhra Region

Variables	Coefficient	Std. Error	t	Sig.
(Constant)	1.793	0.181	9.896	00.000
Cereals	.049***	0.028	1.744	0.083
Grocery	.107*	0.041	2.605	0.01
Fish and Meat	0.022	0.016	1.37	0.173
Fruits	0	0.009	0.05	0.961
Vegetables	.094**	0.039	2.409	0.017
Milk and Eggs	0.028	0.021	1.303	0.195
Others	0.018	0.02	0.897	0.371
Cloth	.072*	0.018	3.96	0.000
Foot wear	-.073*	0.019	-3.92	0.000
Entertainment	0.022	0.025	0.889	0.375
Transport	.138*	0.013	10.612	0.000
Cable charges	.084***	0.046	1.844	0.067
Phone charges	.076*	0.017	4.362	0.000

Personal care cosmetics	.049***	0.029	1.723	0.087
Dhobi charges	0.006	0.037	0.171	0.864
Electricity charges	.072**	0.031	2.319	0.022
Medical charges	.229*	0.016	14.59	0.000
Education charges	.210*	0.01	20.919	0.000
Religious festivals and intoxicants	.052**	0.03	1.754	0.081
	Adjusted R Square=0.948 F-Value=172.298 Significance=0.000			

The Engle elasticity for Food and Non-food items:

The Engle elasticity for food and non-food items together i.e., cereals, grocery, fish and meat, Fruits, vegetables, milk and eggs, other items, cloth, foot wear, entertainment, transport, cable charges, phone charges, personal care cosmetics, dhobi charges, electricity charges, medical charges, education charges, religious festivals and intoxicants expenditure has been presented in Table-7

III. CONCLUSION:

With regard to the Engel elasticity of food and non-food items, in the total study area, all the variables are statistically significant at different significance levels except the variables fish and meat, fruits, milk and eggs, other items, entertainment, cable charges and dhobi charges are significant at 10 percent level. The Engel coefficient of the variable foot wear is negatively associated with total food and non-food consumption expenditure. The Engel elasticity of demand is more for the medical charges and education charges. The analysis relating to area wise, in the irrigated area, the variables grocery, cloth, transport, personal care cosmetics, electricity charges, medical charges and education charges are statistically significant at different significance levels. In the rainfed area, grocery, vegetables, milk and eggs, foot wear, cable charges, personal care cosmetics, education charges, religious festivals and intoxicants are significant at different significance levels. In both the areas the Engel elasticity of demand is more in the case of medical charge and grocery in irrigated area and religious and intoxicants, education charges and grocery in rainfed area.

IV. SUGGESTIONS:

With regard to the consumption expenditure the study reveals that the Percapita Consumption Expenditure (MPCE) on non-food items is relatively more in irrigated area when compared to the rainfed area. Hence it is suggested that the rural households are to be educated on the importance of savings for facing the unexpected events in the life and old age survival and so on. As a result, the saving rate will be increased and formal financial institutions will be strengthened.

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