RELATIONSHIP BETWEEN INCOME AND HOUSEHOLD EXPENDITURE IN PUNJAB: AN ENGEL'S ELASCITY APPROACH

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Abstract: The Government of India introduced economic reforms in various sectors of the economy in July, 1991. The consumption expenditure was expected to change after the reform. Dietary diversification increases with increasing family income. In worldwide terms, Indian Punjab produces 2% of the world's cotton, 2% of its wheat and 1% of its rice. With industrialization, modernisation, human behaviour have gone a tremendous change. It has influenced the consumption and spending patter of both rural and urban consumers are changed. The study about the consumption expenditure was conducted on the basis of the data collected from two districts i.e. Faridkot and Ludhiana. 200 consumers from urban area and 200 consumers from rural area were selected randomly so as to make a comparative analysis of structure and pattern of consumption expenditure on food items. To achieve the basis objective of the study, three forms of regression analysis were employed by taking the income as independent variable and the consumption expenditure as dependent variable. For each form, Engel's elasticities were calculated. The regression forms included linear, double-log and semi-log. The study showed that there was a non-linear relationship between expenditure on majority of consumption items and income among rural consumers. The dynamics of food expenditure is that the low income group incurred a higher proportion of their income on food consumption as compared to that among high income group.

Keywords: Food items, non-food items, consumption items, low income group, high income group, household expenditure, rural consumer, urban consumer.

Introduction

The Government of India introduced economic reforms in various sectors of the economy in July, 1991. The economic reforms were expected to influence the national income and the standard of living of the people. Thereby the consumption expenditure was expected to change after the reform. Generally economic reforms refer to the special efforts aimed at the removal of economic imperfection in an economy.

Dietary diversification increases with increasing family income. Consumption of milk and animal products increases with increase in income. In the highest income group, they are the major sources of protein in the diet. There is also an increase in the intake of vegetables with increasing family income. However, the current high levels of consumption of sugar and oil in the highest income group are a matter of concern. Health education efforts are underway to reduce the current high levels of consumption of "empty" calories Punjab's GDP is ₹3.17 lakh crore. Punjab is one of the most fertile regions in India. The region is ideal for wheat-growing. Rice, sugar cane, fruits and vegetables are also grown. Indian Punjab is called the "Granary of India" or "India's bread-basket".[39] It produces 10.26% of India's cotton, 19.5% of India's wheat, and 11% of India's rice. The Firozpur and Fazilka Districts are the largest producers of wheat and rice in the state. In worldwide terms, Indian Punjab produces 2% of the world's cotton, 2% of its wheat and 1% of its rice.

According to the *2008 Global Hunger Index*, Punjab has the lowest level of hunger in India. Less than one-fourth of children below the age of five are underweight, although Punjab "came off worse than countries like Gabon and Vietnam when measured on the index" (Times of India, 15.10.2008).

With industrialization, modernisation, human behaviour have gone a tremendous change. There four major determinants and expectations are cultural, socio-economic, personal and psychological. On the one side the economic growth have brought changes in tastes and preferences and urbanization has resulted in changing consumption pattern away from traditional food commodities to processed and high value commodities. It has influenced the consumption and spending pattern of both rural and

urban consumers are changed. In rural areas the shift in consumption pattern is more in those regions that are experiencing greater improvement in infrastructure.

Objective

To examine the relationship between income and household expenditure in Punjab through Engel's elasticity approach

Review of Literature

Savneet Sethia (2006) observed that India's faster economic growth over 1990s has raised per capita income (expenditure) and has significantly impacted its food consumption patterns by causing a change in the structure of food consumption patterns observed earlier during pre-reforms period. The percentage of private final consumption expenditure (PFCE) on food items had declined from 53.7% to 48.4% and on non food items it showed fluctuating trend and has increased from 46.3% to 51.6% in the pre reform period (1970-1991). While in the post reform period (1991-2004), the expenditure on food items had decline from 49.9% to 35.4% whereas expenditure on non food items showed a steady increased from 50.1% to 64.6%. The above comparative discussion on national income and consumption expenditure indicated that there was a significant difference in the pre and post reform period.

Gupta and Mishra (2014) examined regional patterns of food consumption and in rural India. The study pertained to lower and upper income classes and was based on data from NSS, 66st round (2009-10). Consumption items like milk, pulses, fruits, and vegetables, cereal are chosen for the analysis and expenditure incurred on those items were analyzed to find the influences of socio-Economic groups, income, household size. The effects of socio-economic and regional variables on consumption of different food items have been estimated using multiple regression analysis. It was found that decline in cereal especially coarse cereal intake whereas consumption of other items like fruits, vegetables, meat products has slightly increased particularly in rural India. The study showed that consumption of all food items is lower among scheduled castes and scheduled tribe households than the other caste households

Kiron Mor and Savneet Setia (2014) observed that consumption expenditure is increasing due to increase in urbanization, breaking up of the traditional joint family system, desire for quality food, lack of time which translates in to an increased need for convenience. The study analyses the pattern of consumption expenditure of urban households to show the frequent changes in both food and non-food consumption expenditure due to the changes in income and occupation of the people. The study examines the impact, the actual distribution of monthly per capita incomes and other selected characteristics of different income classes. In this context the present study attempts to analyze the consumption pattern of the households in rural and urban areas of Haryana to understand the changes that is taking place in the consumption habits among the population through different rounds of NSS. The consumption expenditure showed significant differentials not only between the groups (rural vs. urban) but also within the group. Low expenditure elasticity for cereals and high expenditure elasticity for other food items signifies a shifting food consumption pattern in both rural and urban areas as income increases. Education, income, occupation and location were significant determinants of consumption expenditure of the households.

NCAER (2014) observed that Indian diet is diversifying with fruit/vegetable and animal-based food share increasing and cereal and pulses declining. The implication is that the implementation of the cereal-based National Food Security Act will have only a limited impact in achieving the goal of providing nutritional security to the vulnerable section of the population. There is need to include higher protein food such as pulses or protein-enriched cereals or cereal flours in the program. It is worth mentioning that at present India is exporting a major share of its high protein soybean meal while the country is facing a protein-deficiency. Technology to incorporate soybean products in the diet should be encouraged. Despite large imports, the overall decline in per capita pulse consumption is also of concern. There is need to increase pulse production in the country as international availability of pulses is limited. With the rising level of income, per capita fat consumption is growing rapidly and the share of vegetable oil in the overall calorie intake is increasing necessitating large imports. Unless domestic production increases the import requirement will continue to grow with rising per capita income.

Sonika Gupta, Kalpana Singh (2016) noted that it can be widely known that consumption expenditure is one of the major components of GDP and it is equally important to both macro-economists and micro-economists. The paper focuses on studying the trend of private final consumption expenditure in the Indian economy over the last four decades (1972-73 to 2011-12). The study has also analysed the trend of food and non-food consumption pattern in both urban and rural areas and interstate differences in consumption pattern over the same period by using data from NSSO survey reports, RBI and CSO. The findings of the study present that from 1972-73 onwards there has been a shift from traditional food items to non-food items, however the expenditure on food continued to remain higher in rural areas as compared to urban areas. Traditional food basket dominated by cereals among other changes is now seeing higher expenditure on beverages and milk & milk products. Analysis of non-food expenditure showed that from 1972-73 till 2011-12, weightage of miscellaneous goods & services has risen, these include

educational and medical expenses, etc. in both urban and rural areas. The state-wise analysis of monthly per-capita consumption expenditure revealed that both in urban and rural areas, the states that have overall high per-capita expenditure also have both high food and non-food expenditure. It further pointed that there are fewer states above the all-India average in urban areas than rural areas. Findings further show that non-food consumption expenditure carries higher weightage in urban areas compared to rural areas.

Research Methodology

The study about the consumption expenditure was conducted on the basis of the data collected from two districts i.e. Faridkot and Ludhiana. Purposive random sampling method was employed to select the sample for the present study. A suitable sample of 200 consumers form urban and an equal number from rural areas of two districts were selected. From the two selected districts, one block each was selected randomly. From each of the selected block one city and four villages were taken for the study. Then 200 consumers from urban area and 200 consumers from rural area were selected randomly so as to make a comparative analysis of structure and pattern of consumption expenditure on food items. To achieve the basic objective of the study, three forms of regression analysis were employed by taking the income as independent variable and the consumption expenditure as dependent variable. For each form, Engel's elasticities were calculated. The regression forms included linear, double-log and semi-log.

Regression Models	**Elasticity**
i) **Linear Form**	
$Y = \beta_0 + \beta_1 X + \varepsilon$	$\beta_1(X/Y)$
ii) **Double Log Form**	
$\ln Yi = \ln \beta_0 + \beta_1 \ln X + \varepsilon$	β_1
iii) **Semi-Log Form**	
$Yi = \beta_0 + \beta_1 \ln X + \varepsilon$	$\beta_1(1/X)$

Results and Discussion

The results obtained after analyzing the collected data have been discussed hereunder:

Part-1   Family Income of Consumers in Punjab

1.1   Per Household per Annum Family Income of Consumers in Punjab

Table 1.1 showed per household per annum family income of urban and rural consumers. It was clear from Table 1.1 that per household per annum family income was Rs. 373948.91 in urban areas and Rs. 331204.03 in rural areas in Punjab.

Table 1.1: Source wise family income among consumers in Punjab
(Rs./Household/Annum)

Sources of Income	Urban		Rural	
	Amount	%age	Amount	%age
Agriculture	32624.88	8.72	153379.44	46.31
Salaries	126416.04	33.81	43703.28	13.20
Business	87076.92	23.29	35018.86	10.57
Labour	17468.69	4.67	37330.70	11.27
Self-Employment	70647.63	18.89	39026.84	11.78
Pension	12291.36	3.29	5059.24	1.53
Remittances	5930.80	1.59	8084.83	2.44
Sale of Assets	4651.80	1.24	4861.56	1.47
Interest on Lending/ Deposits	13982.64	3.74	3486.12	1.05
Miscellaneous	2858.16	0.76	1253.16	0.38
Total Income	373948.91	100.00	331204.03	100.00

Out of the total family income in urban areas, highest income of the order of Rs. 126416.04 (33.81%) came from salaries, followed by Rs. 87076.92 (23.29%) contributed by business, Rs. 70647.63 (18.89%) from self employment, Rs. 32624.88 (8.72%) from agricultural activities and Rs. 17468.69 (4.67%) from labour. The lowest proportion i.e. Rs. 2858.16 (0.76%) was contributed by the miscellaneous activities, followed by Rs. 4651.80 (1.24%) from sale of assets, Rs. 5930.80 (1.59 %) from remittances, Rs. 12291.36 (3.29 percent) from pensions and Rs. 13892.64 from interest on lending/deposits.

In rural areas, out of total family income, the highest income i.e. Rs. 153379.44 (46.31%) came from agricultural activities, Rs. 43703.23 (13.20%) from salaries, Rs. 39026.84 (11.78%) from self-employment, Rs. 37330.70 (11.27%) from labour and Rs. 35018.86 (10.57%) from business. The lowest income i.e. Rs. 1253.16 (0.38%) came from miscellaneous sources, followed by Rs. 3486.12 (1.05%) from interest on lending/deposits, Ra. 4861.56 (1.47%) from sale of assets, Rs. 5059.24 (1.53%) from pension, and Rs. 8084.83 (2.44%) from remittances.

The table showed that highest proportion in total income was contributed by salaries in urban areas, whereas in rural areas highest proportion was contributed by agricultural activities. This revealed that salaries and business in urban areas and agriculture in rural areas emerged as the major sources of family income of consumers in Punjab.

1.2　Per Capita per Annum Family Income of Consumers in Punjab

Per capita annual family income of urban and rural consumers has been compared in Table 1.2.

Table 1.2: Source wise family income among consumers in Punjab (Rs./Capita/Annum)

Sources of Income	Urban	Rural	%gap Urban over Rural	t-value
Agriculture	6098.11	26582.23	-77.06	8.57**
Salaries	23629.17	7574.23	211.97	13.21**
Business	16276.06	6069.13	168.18	10.39**
Labour	3265.18	6469.79	-49.53	5.67**
Self-Employment	13205.16	6763.75	95.23	7.63**
Pension	2297.45	876.82	162.02	9.49**
Remittances	1108.56	1401.18	-20.88	3.22**
Sale of Assets	869.50	842.56	3.20	1.53**
Interst on Lending/Deposits	2613.58	604.18	332.58	15.84**
Miscellaneous	534.24	217.19	145.98	7.91**
Total Income	69896.99	57401.04	21.77	3.18**

The total per capita income among urban consumers came to be Rs. 69896.99 per annum and Rs. 57401.04 among rural consumers. Total per capita income of urban consumers was significantly higher by 21.77 percent than the rural consumers. This was also confirmed by the t-value of 3.18. Per capita income from agricultural activities was significantly less by 77.06 percent among urban consumers as compared to the rural consumers. This was also shown by the t-value of 8.57. The reason behind this may be main occupation of rural consumers is agriculture. Similarly per capita income from labour and remittance was significantly less by 49.53 percent 20.88 percent respectively in urban areas as compared to that in rural areas. This was also indicated by the respective t-values of 5.67 and 3.22. On the other hand per capita income from salaries was significantly higher by 211.97 percent among urban consumers as compared to the rural consumers. The result was also confirmed by the t-value of 13.21. This may be due to the reason that in urban areas service class is greater than the rural areas. Similarly, income from business, self-employment, pension, interest on lending/deposits and miscellaneous activities was significantly higher by 168.18 percent, 95.23 percent, 162.02 percent, 332.58 percent and 145.98 percent respectively in urban areas as compared to that in rural areas. This was also confirmed by the respective t-values.

It is clear from the above table that a significant contributor in per capita income among rural was the agricultural activities and that among urban was salaries.

1.3　　Concentration of per Capita Family Income among Consumers

The concentration of per capita family income among urban and rural consumers was estimated through Gini-coefficients based on the decile groups. The results have been shown in Table 1.3.

Table 1.3: Concentration of per capita family income among urban and rural consumers

Decile Group	Urban	Rural
10 Percent	1.59	1.16
20 Percent	5.71	5.11
30 Percent	10.54	9.67
40 Percent	15.23	14.38
50 Percent	26.24	24.48
60 Percent	33.63	31.34
70 Percent	47.45	44.51
80 Percent	59.37	57.26
90 Percent	74.41	67.54
100 Percent	100.00	100.00
Gini Ratio	0.3517	0.3891

It is clear from Table 1.3 that the bottom 10 percent of the urban consumers could secure only 1.59 percent of the total per capita family income in urban areas, while the top 10 percent of them secured as high as 25.59 percent of total per capita family income. To make it more clear, bottom 50 percent of urban consumers had only 26.24 percent of total per capita family income while on the other hand, top 50 percent of them secured 73.76 percent of total per capita family income in urban areas.

In rural areas, bottom 10 percent of the consumers had only 1.16 percent of total per capita family income, while top 10 percent of them secured 32.46 percent of total per capita family income. We can see that bottom 50 per cent of the rural consumers had 24.48 percent, while top 10 percent of them could secure 75.52 percent of the per capita family income.

The analysis showed that though there were obvious disparities among urban and rural consumers regarding family income but the distribution of per capita family income was somewhat fair in urban areas as compared to that in rural areas. This finding was also supported by the Gini-coefficients for urban as well as for rural consumers, which came to be 0.3517 and 0.3891 respectively. The Gini-coefficient was more near to unity in case of rural consumers as compared to that among urban consumers. This revealed that family income was somewhat fairly distributed among urban consumers as compared to that among rural consumers. This highlighted that income disparity was more in rural areas than that in urban areas in Punjab.

Part-2　　Relationship between Income and Consumption Expenditure in Punjab

The dynamics of consumption expenditure on food items in relation to other consumption items in Punjab was assessed through evaluating the impact of change in income on different consumption items including food items. This was done by employing the regression analysis in linear, double log and semi-log forms. With the help of regression coefficients obtained through various forms of regression analysis, Engel's income elasticities of different items of consumption expenditure were worked out in order to see the quantum and direction of impact of change in income on these items. This was done for urban and rural areas separately and the results have been presented in Table 2.1, 2.2 and 2.3.

2.1:　　Urban Consumers

The impact of change in income on consumption expenditure of urban consumers has been shown in Table 2.1.

It is very clear from Table 2.1 that the impact of increased family income would be significantly positive on food items, intoxicants, household non-food routine items, clothing and footwear, transportation, services, ceremonies, housing and sanitation among urban consumers as per the t-values of regression coefficients in linear model. The regression coefficient of food items was 0.18, intoxicants 0.02, household routine items 0.08, clothing & footwear 0.03, transportation 0.06, services 0.15, ceremonies 0.27, housing 0.04 and that of sanitation 0.06. This indicated that an increase of one unit in income would lead to an increase of 0.18 units in the expenditure on food items, 0.02 units in the expenditure on intoxicants, 0.08 units in the expenditure on

household routine items, an increase of 0.03 units in expenditure on clothing and footwear, an increase of 0.06 unit in expenditure on transportation, an increase of 0.15 units in expenditure on services, an increase of 0.27 units in expenditure on ceremonies, an increase of 0.04 units in the expenditure on housing and an increase of 0.06 units in the expenditure on sanitation. The magnitude of R^2 was quite high ranging from 0.61 in case of sanitation to 0.96 in case of household routine items.

As per the double log model, the regression coefficient of food items (0.51), intoxicants (0.61), household routine items (0.74), clothing and footwear (0.96), transportation (2.14), services (1.82), ceremonies (1.98) and housing (1.41) was significantly positive. This indicated that an increase of one percent in family income would lead to an increase of 0.51 percent in the expenditure on food items, an increase of 0.61 percent in the expenditure on intoxicants, an increase of 0.74 percent in the expenditure on household routine items, an increase of 0.96 percent in the expenditure on clothing and footwear, an increase of 2.14 percent in the expenditure on transportation, an increase of 1.98 percent in the expenditure on social and religious ceremonies and an increase of 1.41 percent in the expenditure on housing. The magnitude of R^2 ranged from 0.79 in case of intoxicants to 0.95 in case of clothing and footwear. The same was very low to the tune of 0.34 in case of health care.

As per semi-log model the regression coefficients of food items (2095.72), intoxicants (234.47), household routine items (976.57), clothing and footwear (331.03), transportation (675.67), services (1857.25), ceremonies (3498.71) and housing (450.84) was significantly positive. This indicated that an increase of one percent in family income would lead to an increase of Rs. 20.96 in the expenditure on food items, Rs. 2.34 in the expenditure on intoxicants, Rs. 9.77 in the expenditure on household routine items, Rs. 3.31 in the expenditure on clothing and footwear, Rs. 6.76 in the expenditure on transportation, Rs. 18.57 in the expenditure on services, Rs. 34.99 in the expenditure on social and religious ceremonies and Rs. 4.51 in the expenditure on housing.
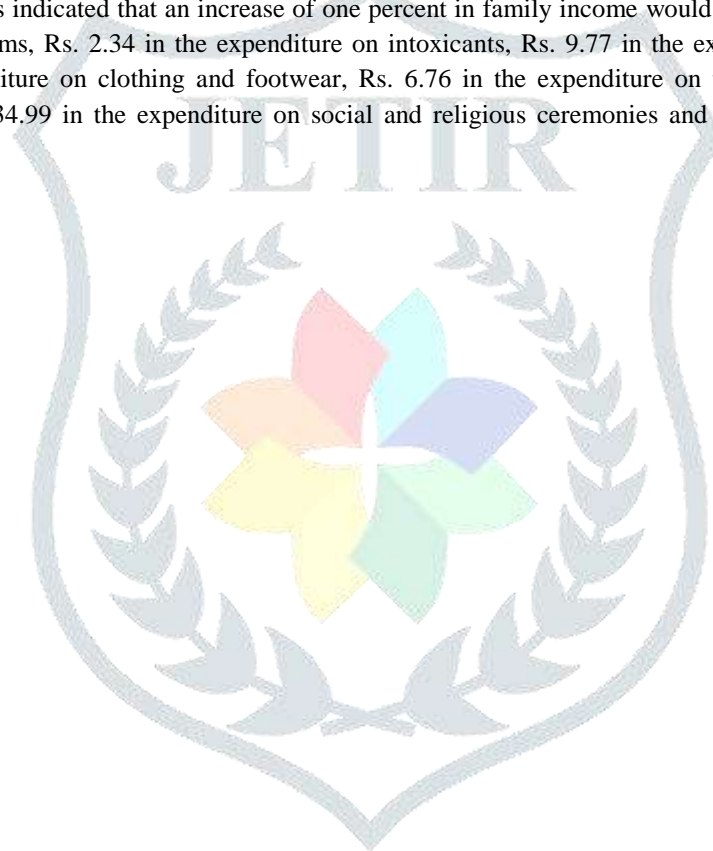
Table 2.1: Impact of change in income on expenditure on different consumption group in urban Punjab: Regression Analysis

Consumption Group	Linear			Double Log			Semi Log		
	α	B	R^2	α	β	R^2	A	β	R^2
Food Items	182.53	0.18	0.91	2.65	0.51	0.89	-7362.34	2095.72	0.94
t-value		4.63**			1.24			12.37**	
Intoxicants	7.24	0.02	0.93	-1.14	0.61	0.79	-124.17	234.47	0.56
t-value		7.26**			6.52**			14.56**	
Household Routine	4.89	0.08	0.96	-1.23	0.74	0.94	-4763.21	976.57	0.89
t-value		4.79**			11.67**			10.27**	
Clothings & Footwears	3.41	0.03	0.94	-2.64	0.96	0.95	-1631.23	331.03	0.93
t-value		8.44**			8.97**			8.97**	
Transportation	-34.68	0.06	0.94	-7.84	2.14	0.87	-3423.58	675.67	0.92
t-value		11.56**			6.32**			8.64**	
Services	-15.43	0.15	0.91	-6.89	1.82	0.87	7618.43	1857.25	0.88
t-value		14.23**			5.87**			6.28**	
Ceremonies	-22.49	0.27	0.92	-8.14	1.98	0.88	-10809.56	3498.71	0.85
t-value		7.37**			6.21**			4.53**	
Housing	-5.98	0.04	0.87	-3.04	1.41	0.84	-1967.45	450.84	0.81
t-value		9.89**			8.44**			4.11**	
Sanitation	6.57	0.06	0.61	-3.57	0.96	0.34	-7.31	1.67	0.24
t-value		4.67**			1.43				

Overall the analysis revealed that change in family income affected the expenditure pattern on food items in urban Punjab in a significantly positive manner. Similarly, the expenditure on intoxicants, household routine items, clothing and footwear, transportation, services, ceremonies and housing was also affected significantly by the change in family income in the positive manner.

2.2:   Rural Consumers

The impact of change in income on consumption expenditure of rural consumers has been shown in Table 2.2.

It is evident from Table 2.2 that the impact of increased family income would be significantly positive on clothing and footwear, transportation, services and ceremonies among rural consumers as per the t-values of regression coefficients in linear model. The regression coefficient of clothing & footwear came to be 0.03, transportation 0.03, services 0.12 and that of ceremonies 0.26. This indicated that an increase of one unit in income would lead to an increase of 0.03 units in expenditure on clothing and footwear, an increase of 0.03 units in expenditure on transportation, an increase of 0.12 units in expenditure on services and an increase of 0.26 units in expenditure on ceremonies. The magnitude of R^2 was very low to the tune of 0.28 in case of food items, 0.31 in case of intoxicants, 0.12 in case of housing and 0.26 in case of sanitation.

Table 2.2: Impact of change in income on expenditure on different consumption group in rural Punjab: Regression Analysis

Consumption Group	Linear			Double Log			Semi Log		
	α	β	R^2	α	B	R^2	α	β	R^2
Food Items	234.65	0.19	0.28	7.56	0.43	0.32	-2431.13	1902.87	0.24
t-value		1.37			1.34			1.34	
Intoxicants	8.43	0.01	0.31	-0.31	0.59	0.64	-367.34	132.86	0.32
t-value		0.97			2.71**			1.64	
Household Routine	21.26	0.07	0.74	-2.37	0.74	0.78	.1864.57	655.34	0.74
t-value		1.04			4.37**			3.58**	
Clothings & Footwears	1.04	0.03	0.81	-0.87	0.94	0.21	-1167.49	263.31	0.79
t-value		7.23**			5.23**			8.97**	
Transportation	-13.48	0.03	0.54	-12.67	2.17	0.19	-984.67	333.16	0.59
t-value		3.68**			3.67**			4.01**	
Services	-7.22	0.12	0.82	-34.68	1.88	0.84	-4538.69	1193.06	0.81
t-value		4.37**			5.98**			4.39**	
Ceremonies	87.54	0.26	0.91	-26.98	2.13	0.89	-6425.43	2505.30	0.88
t-value		7.43**			8.63**			5.24**	
Housing	-18.23	0.03	0.12	0.64	1.49	0.24	-963.27	293.03	0.19
t-value		1.23			1.89			1.27	
Sanitation	5.67	0.05	0.26	1.38	0.91	0.39	.1267.52	480.53	0.34
t-value		1.63			1.74			1.69	

As per the double log model, the regression coefficient of intoxicants (0.59), household routine items (0.74), clothing and footwear (0.94) transportation (2.17) services (1.88) and ceremonies (2.18) was significantly positive. This indicated that an increase of one percent in family income would lead an increase of 0.59 percent in the expenditure on intoxicants, an increase of 0.74 percent in the expenditure on household routine items, an increase of 0.94 percent in the expenditure on clothing and footwear, an increase of 2.17 percent in the expenditure on transportation and an increase of 2.18 percent in the expenditure on social and religious ceremonies. The magnitude of R^2 was very low to the tune of 0.32 in case of food items, 0.21 in case of clothing and footwear, 0.19 in case of transportation, 0.24 in case of housing and 0.39 in case of sanitation.

As per semi-log model the regression coefficients of household routine items (655.34), clothing and footwear (263.31), transportation (333.16), services (1193.06) and ceremonies (2205.30) was significantly positive. This indicated that an increase of one percent in family income would lead to an increase of Rs. 6.55 in the expenditure on household routine items, Rs. 2.63 in the expenditure on clothing and footwear, Rs. 3.33 in the expenditure on transportation, Rs. 11.93 in the expenditure on services and Rs. 22.05 in the expenditure on social and religious ceremonies.

Overall the analysis revealed that change in family income did not affect the expenditure pattern on food items in rural Punjab in a significant manner. However, the expenditure on household routine items, clothing and footwear, transportation, services and ceremonies was affected significantly by the change in family income in the positive manner.

2.3:   Engel's Expenditure Elasticities

The Engel's elasticity is an indicator of percent change in expenditure on various consumption items with one percent change in the family income. The Engel's expenditure elasticities as per three different regression models i.e. linear, double log and semi-log model, have been presented in Table 2.3.

Table 2.3: Engel's expenditure elasticities in relation to the family income

Consumption Group	Urban			Rural		
	L	DL	SL	L	DL	SL
Food Items	0.49	0.51	0.47	0.42	0.43	0.42
Intoxicants	0.66	0.61	0.64	0.67	0.59	0.63
Household Routine	0.78	0.74	0.79	0.77	0.74	0.77
Clothings & Footwears	0.91	0.96	0.93	0.90	0.94	0.89
Transportation	1.92	2.14	1.87	1.94	2.17	1.91
Services	1.54	1.82	1.51	1.61	1.88	1.59
Ceremonies	1.76	1.98	1.81	1.92	2.13	1.87
Housing	1.37	1.41	1.34	1.42	1.49	1.39
Sanitation	0.92	0.96	0.87	0.88	0.91	0.84

Note: 'L' stands Linear Function; 'DL' for Double Log function; and 'SL'' stands for Semi-Log Function

In urban areas, the highest elasticity of food expenditure was 0.51 under double log model. This showed that there would be an increase of 0.51 percent in expenditure on food items with an increase of one percent in family income among urban consumers. The elasticity of intoxicants expenditure was highest to the tune of 0.66 under linear model, which showed that an increase of one percent in family income would lead to an increase of 0.66 percent in the expenditure on intoxicants.

The elasticity of household routine items was highest of the order of 0.79 under semi-log model, which indicated that an increase of one percent in family income would lead to an increase of 0.79 percent in the expenditure on household routine items. The elasticity of expenditure on clothing and footwear was highest of the order of 0.96 under double log model. This revealed that there would be an increase of 0.96 percent in the expenditure on clothing and footwear with an increase of one percent in family income. The highest elasticity of expenditure on transportation came to be 2.14 under double log model, which showed that there would be an increase of 2.14 percent in the expenditure on transportation with an increase of one percent in the family income.

Similarly, the double log model suggested that there would be an increase of 1.82 percent in the expenditure on services with an increase of one percent in family income. The expenditure on social and religious ceremonies would increase by 1.98 percent after an increase of one percent in family income as indicated by the double log model. On the same pattern, the double log model suggested that there would be an increase of 1.41 and 0.96 percent increase in the expenditure on housing and sanitation respectively with an increase of one percent in family income.

The study showed that there was non-linear relationship between expenditure on majority of the consumption items and income among urban consumers. The analysis revealed that among urban consumers, the highest increase would be in the expenditure on transportation (2.14%), followed by 1.98 percent in expenditure on social and religious ceremonies, 1.82 percent in expenditure on services and 1.41 percent in expenditure on housing. This showed that the increase in the expenditure on transportation, ceremonies, services and housing would be more than the proportionate increase in the family income.

The increase in expenditure on clothing and footwear (0.96%) and sanitation (0.96%) was nearer to one, which indicated that the increase in expenditure on these consumption items would be in the direct proportion to the increase in family income. The increase in the expenditure on household routine items (0.74%) and intoxicants (0.61%) was less than the proportionate increase in family income. Moreover, the increase in expenditure on food items was the minimum to the tune of 0.51 percent, which revealed that the increase in expenditure on food items would be just half of the increase in family income. The analysis highlighted that among urban consumers, the food expenditure elasticity was the lowest in relation to the family income.

Among rural consumers, the highest elasticity of food expenditure was 0.43 under double log model, while the highest elasticity of intoxicants was 0.67 under linear model. The highest elasticity of expenditure on household routine items was 0.77 under linear as well as semi-log model, while the highest elasticity of expenditure on clothing and footwear was 0.94 under double log model.

The highest elasticity of expenditure on transportation was 2.17 under double log model and the same of the expenditure on services was 1.88 under double log model. The analysis further showed that the highest elasticity of expenditure on ceremonies was 2.13 under double log model, while the highest elasticity of expenditure on housing was 1.49 under double log model. Similarly, the highest elasticity of expenditure on sanitation was 0.91 under double log model.

Conclusion

The study showed that there was a non-linear relationship between expenditure on majority of consumption items and income among rural consumers. However, the relationship between expenditure on food items and income was not linear in rural areas. The analysis revealed that the increase in the expenditure on transportation, services, ceremonies and housing was above the proportionate increase in the income, while the increase in the expenditure on clothing & footwear and sanitation was just in proportionate increase in the income. However, the increase in expenditure on food items, intoxicants and household routine items was below the proportionate increase in income. The increase in expenditure on food items was even below half of the proportionate increase in income among rural consumers.

This proved the thesis of Engel that increase in expenditure on food items tends to be below the proportionate increase in the income. The major share of increased income goes to the non-food expenditure among masses. Thus the dynamics of food expenditure is that the low income group incurred a higher proportion of their income on food consumption as compared to that among high income group. This is due to the fact that either low income group or high income group, first of all fulfils the food requirements of the family and only with the surplus income, they go to opt for non-food consumption.

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