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Socio Economic Indicators in Consumption Patternsof Punjab and Kerala: An Analysis usingAlmost Ideal Demand System

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Abstract

Consumption is the predominant component of aggregate demand in an economy and so the study of consumption patterns is essential in understanding economy of any state. The states of Punjab and Kerala have similar economic indicators, yet there is remarkable non-economic disparity between the two states. The consumption patterns of the two states are studied in this paper using Almost Ideal Demand System(AIDS). The analysis empirically proves that the restrictions of homogeneity are valid in the Almost Ideal Demand System. Further it is shown that even though a large disparity exists between the social and demographic structures in the two states analyzed, yet theconsumption patterns of individual households for various commodities within these states are remarkably similar.

Introduction

Econometric studies of household expenditure are very important because of the usefulness of the estimated demand parameters in many key issues. These range from the purely behavioural aspects of demand forecasting to welfare issues of poverty and inequality measurement which depend crucially on the estimated equivalence scales and on demographic demand parameter estimates. The analysis of consumption patterns enables policymakers to have an exact knowledge of the future demand of different commodities and to match supply with changing pattern of demand.

A complex set of socio-economic, cultural, religious, psychological, and environmental factors determine the consumption pattern of a society. Also, with the growth and development of societies, consumption patterns undergo transformation. The Human Development Report of 1998 reads: "consumption clearly contributes to human development when it enlarges the capabilities and enriches the lives of people without adversely affecting the wellbeing of others" (UNDP, 1998: pp.1).

Various studies have been done for individual states to get the demand elasticities and consumption patterns of states in India but there is shortage of studies when it comes to comparison of states with similar income level but stark differences in their non-economic factors. Two such states are Punjab and Kerala, which are similar on the income scale but possess stark difference in their non-economic performance. In this paper we analyze the consumption expenditure pattern, both in the level and type of commodities of consumption that happened in Punjab and Kerala during the recent years.

In this study, the population census data of 2011is used to mark the contrast between these states.The analysis is done using data from the 68th round of the NSSO for the year 2011-12 and the relevant consumer price indices.

Parameter	Punjab	Kerala
Population Growth	**13.89%**	**4.91%**
Sex Ratio	**895**	**1084**
Child Sex Ratio	**846**	**964**
Literacy	**75.84%**	**94%**
Female literacy	**70.73%**	**92.07%**
Urban Population	**37.48%**	**47.07%**

Figure: Broad comparison of the non-economic parameters of Kerala & Punjab, source: Census 2011

Even though these two states rank on similar footing when it comes to Economic prospects, yet the non-economic parameters have a disparate effect for the twostates.
The existence of economic and noneconomic factors are already pointed out by Eminent Economists A.Marshall, G.Myrdall and A.Sen. After receiving the Nobel Prize in 1998, A.Sen said that "there is no national and international economic and social development and international peace and security - without democracy and human rights". There are some of the major non-economic factors with a significant impact on economic growth and social development and which are used in the economical science research. These are: culture, religion (so, for example, observed countries can be catholic or protestant), the role of family, class, tradition, the role of the individual, social and political dependence etc.

Finally, the impact of socio-economic factors that differ in these two states leading to spending on different commodities is also studied. The level of earnings inequality in a country, state, society, or community is linked with the consumption patterns of the population. With our analysis, we find a relationship between socioeconomic indicators and their impact on consumer spending patterns on different commodities in Punjab and Kerala. Non-Economic factors such as Education, Demography, Urban Rural Disparity etc. influence the decision to consume both food and non-food commodities.

The following literature, in the form of research papers by various authors, is considered in the study of this paper.

- **Deaton & Muellbauer(1980) [3]** introduced a new system of demand equations, **the Almost Ideal Demand System(AIDS),** in which the budget shares of the various commodities are linearly related to the logarithm of real total expenditure and the logarithm of real prices. The model is an improved one over Stone's analysis and has advantage over**Translog and Rotterdam model**. The model can be used to test the

homogeneity and symmetry properties through linear restrictions on the fixed parameters.

- **Padma P,E. V. Ramasamy, T. V. Muralivallabhan, A. P. Thomas (2016) [6]**: The authors have tried to picture the changing scenario of the household consumption patter for the state of **Kerala**. Since Sustainability is considered as a remedy for the environmental issues arising due to overconsumption of natural resources. In this context, the general household consumption pattern in India and—one of its states—Kerala was studied for a period of **50 years**. GenerallyMonthly Per-capita Consumption Expenditure**(MPCE)** is linked with consumption, disparities in consumption pattern among different sectors of the society and sustainability at large. This study is based on the data from NSSO. The findings of this study indicate that the MPCE has gone up for India and Kerala during the study period. The state of Kerala has an increased MPCE than the country; the rate of increase is twofold for its rural sector and **1.5fold** for the urban sector.

- **Bellet C & Sihra E, (2016) [1]:** The authors highlighted the fact that "**Even under the direst necessity, Indian households do not seem to spend their budget in a rational of survival**: *households from lower castes choose to consume less food and more visible items than similar households from high castes, and this difference is stronger for the poor"*. Using variations in upper caste wealth across regions, the authors show that disadvantaged castes substitute visible consumption for food when upper castes are relatively richer. In regions where Upper Castes are twice richer, low caste households spend up **to 8%** more on visible and similarly less on food. Focusing mainly on the 3 major Indian caste group they perform the empirical analysis on the two disadvantaged social groups which inherit a low level of structural status, the middle caste (MC) and the low caste (LC). This paper also tries to prove empirically the Veblen Hypothesis.

Apart from these research papers, notable research by **Zachariah et.al(2002) [8]**who studied the impact of Migration on Kerala's Economy and society considering it to be one of dynamic factors for the state's development, by **Dubey(2009)[4]** who looked at the intra and interstate disparities in the states of Kerala and Punjab and by **Kannan(2005) [5]** wholooked at the role of Remittances and social development in Kerala, are taken into consideration.

Preliminaries

The Household Income and Consumption Expenditure Survey provides information on socio-economic structures, living conditions and expenditure patterns of households.The National Sample Survey Organization (NSSO) conducts surveys on Household Consumer Expenditures which is the sum total of monetary values of all the items (i.e. goods and services) consumed by the household on domestic account. The data from the NSSO 68th round Consumption Expenditure Survey for the year 2011-12 on the states of Punjab and Kerala is used to analyze the consumption pattern. Now as the survey doesn'tcontains data on prices, information on Consumer Price Indexes, was obtained from the website of Ministry of Statistics and Programme Implementation.

Most of data related work regarding cleaning of data, its proper manoeuvring of the same was done in MS EXCEL.To analyse the impact of socio economic indicators on consumption patterns of these two states, we considered the following data:

- Block 8 i.e. Household Consumer Expenditure in order to see the Value of Consumption of different commodities across different households (Household and Commodity Level Data)
- Block 4 i.e. Demographic Characteristics in order to see the Males and Females in a particular household, Education level and Age Group of individuals (Individual Level Data)
- Block 3 i.e. Household Characteristics which include Religion, Social Group and Sector of the households (Rural or Urban) along with the land owned with Households measured in hectares (Household Level Data)
- Price Indices for different commodity groups.

How the data is dealt with for estimation purpose?

Initially the data for consumption expenditure has been considered where value of consumption of different commodities is available. The data available for value of consumption was as per two different recall periods including 30-day recall period and 365-day recall period for different commodities. In order to have the value for Monthly Per-capita Consumption Expenditure (MPCE) for all the commodities, we have converted the consumption values of 365-day recall period to 30-day recall period by using following formula: $\text{Value of Consumption in 365 Days} * (30/365)$.

Further, for each commodity, we now have the Final Consumption Value (includes Value of Consumption under 30-day recall period and Value of Consumption under 365-day recall period converted to monthly value). Further, we have different food commodities mapped to different food groups namely, Clothing, Education, Food, Food and Beverages, Fuel and Lighting, Housing, Transport and Miscellaneous. The Expenditure of Households are summarised according to these 8 groups. The MPCE is calculated as summation of expenditure on all these groups.

For considering the impact of socio-economic indicators on consumption,the Demographic Characteristics and Household Characteristics data is used. These were mapped to households using HHIDs (Household IDs) as a common variable.

The data of demographics as number of Males and Females in each household, number of children in each household i.e. belonging to age group of 0-15 years of age, Education level of households i.e. number of individuals in a household that are graduate or above is considered.

For Household characteristics we considered Land owned by different households and different dummy variables were created.

Religion Dummy includes 1 for Hinduism and Sikhism and 0 for other religions in Punjab, whereas in Kerala the dummy variable 1 only includes Hinduism and 0 for other religions.

Social Group Dummy has been created in a way where Other Backward Class, Scheduled Caste and Scheduled Tribe has been assigned 1 and others have been assigned 0.

For considering the role of belonging to different sectors, Household belonging to rural areas have been assigned 1 and those belonging to urban areas have been assigned 0.

Seperability and Aggregation

Now since the data we have has consumption expenditure on several item groups, which includes various food items, durables, non-durables, flow variables etc. We decided to apply the concept of Seperability and Aggregation principles, which is based on two stage Budgeting and Composite Commodity Theorem as first proposed by Hicks. Though we didn't separate the data further yet rather we aggregated the various items as particular groups. Hence, we mainly dealt with the first stage of the 2 stage budgeting, which is primarily expenditure on broad groups. Group prices were used for our analysis, which we got from MoSPI. We added up the expenditure of various items within each group to come up to that particular group expenditure.We have mapped the data as given in the APPENDIX.

The data is aggregated into 8 broad groups:

- Clothing
- Education
- Food
- Food consisting of Beverages & tobacco
- Fuel & Lighting
- Housing
- Transport
- Miscellaneous (which include goods like personal care items, entertainment, consumer services etc.)

Demographic & Household data:
Apart from data on consumption expenditure, we also considered various demographic and household characteristics for the 2 states as follows:

Like for Demographic characteristics we considered variables like:

- Number of Females
- Number of Males
- Education Qualification
- Number of Children

whereas for household characteristics we considered:

- Religion
- Social Group (Caste)
- Rural Urban divide

All these characteristics are key socio-economic factors, the effect of which we want to find on demand estimation of our study.

Religious Composition

A simple analysis of the religious composition shows that both Hinduism & Sikhism hold the largest percentage among religions for Punjab (44% & 50% respectively) while other religions don't find much representation with Islam distant second, at 6%. Whereas the same analysis for Kerala shows that Hindus consisted of 54% of the religious composition & Islam coming second at 24% followed by Christianity. Though Hinduism seems to be the dominant religious group but the difference is more skewed in Punjab as against Kerala.

As our data is based on a cross section rather than also on time series, we cannot empirically test for Dynamic specification of the demand systems.

The AIDS modeldoesn't require to put the restrictions of Symmetry, Homogeneity & Additivity explicitly or algebraically. Though additivity restriction should be already present in the household data, which is also the case in our datasets, yet the problem lies with the Substitution matrix being symmetrical and the restriction of homogeneity. While aggregating the data for households, Deaton &Muellbauer proposed to deflate the expenditure with a sophisticated measure of household size taking various household characteristics into account (parameter k) in the model, with k = 1 for the households having same tastes. As our analysis is considered with the demographic parameters, this parameter is of considerable importance for us, however to calculate the sophisticated measure along with data restrictions has prevented us to get hold of this parameter. Hence, for our purpose we are taking this parameter to be equal to 1.But the Statistical command which we are considering, described later, has the significant advantage of having a built in program for putting up the various demographic parameters in to the model & using the same we have come up to our results for comparison of the two states. Ideally, we should have attempted to model the variation of parameter k with household characteristics in a cross-section study of household along with time series data, data limitation has prevented us to test this proposal.

Methodology

The estimation of the parameters of demand equations can be done in two different ways. The first one consists of specifying estimable single equation demand function in a pragmatic fashion without recourse to economic theory and the other uses the theory of demand as a guideline for the choice of functional forms and variables to be included. The Almost Ideal Demand System developed by Deaton and Muellbauer (1980) has received considerable attention.

The Almost Ideal Demand System has some advantages as listed below:

- Gives an arbitrary first order approximation.
- Exactly satisfies the axioms of choice.
- Aggregates perfectly over consumers without invoking parallel linear Engel curves.
- Possesses a functional form which is consistent with known household budget data.
- Simple to estimate, avoiding the need for non-linear estimation.
- Can be used to test the restrictions of homogeneity and symmetry through linear restrictions on fixed parameters.

The PIGLOG class of preferences which are represented via the cost or expenditure function $c(u,p)$ for utility u and price vector p and defines the minimum expenditure necessary to attain a specific utility level at given prices, are used and is given by:

(1) $$log\, c(u,p) = (1-u)\, log\{a(p)\} + u\, log\{b(p)\}$$

where u lies between 0 (subsistence) and 1 (bliss) so that the positive linearly homogeneous functions *a*(p) and b(p) can be regarded as the costs of subsistence and bliss, respectively.
Next specific functional forms for $log\ a(p)$ and $log\ b(p)$ are taken. For the resulting cost function to be a flexible functional form, it must possess enough parameters so that at any single point its derivatives$\partial c/\partial p_i$, $\partial c/\partial u$,$\partial^2 c/\partial p_i \partial p_j$, $\partial^2 c/\partial u \partial p_i and\ \partial^2 c/\partial u^2$ can be set equal to those of an arbitrary cost function. We let

(2) $$log\, a(p) = a_o + \sum_k \alpha_k\, log\, p_k + \frac{1}{2}\sum_k \sum_j \gamma^*_{kj}\, log\, p_k\ \ log p_j$$

(3) $$log\, b(p) = log\, a(p) + \beta_o \prod_k p_k^{\beta_k}$$

The Almost Ideal Demand System cost function is written as

(4) $$log\, c(u,p) = \alpha_o + \sum_k \alpha_k\, log\, p_k + \frac{1}{2}\sum_k \sum_j \gamma^*_{kj}\, log\, p_k\, log\, p_j\ \ + u\, \beta_o \prod_k p_k^{\beta_k}$$

where α_i, β_j, and γ^*_{kj} are parameters. The function$c(u,p)$ is linearly homogeneous in p (as it must be to be a valid representation of preferences) provided that

$$\sum_i \alpha_i = 1, \sum_j \gamma^*_{kj} = \sum_k \gamma^*_{kj} = \sum_j \beta_j = 0$$

The demand functions can be derived directly from equation (4).

The price derivatives of the cost functions are the quantities demanded:

$$\partial \mathrm{c(u,p)}\ /\partial p_i = q_i.$$

Multiplying both sides by $pi/c(u,p)$, we find,

(5) $$\frac{\partial log c(u,p)}{\partial log p_i} = \frac{p_i q_i}{c(u,p)} = w_i$$

where wi is the budget share of good i.

Logarithmic differentiation of (4) gives the budget shares as a function of prices and utility:

$$\frac{\partial log c\,(u,p)}{\partial log\, p_i} = \alpha_i + \sum_j \gamma_{ij}\, log\, p_j + \beta_i u \beta_o \prod p_k^{\beta_k}$$

That is

$$(6) w_i = \alpha_i + \sum_j \gamma_{ij}\, log\, p_j + \beta_i u \beta_o \prod p_k^{\beta_k}$$

where

$$(7) \gamma_{ij} = \frac{1}{2}\,(\gamma_{ij}^* + \gamma_{ji}^*).$$

For a utility-maximizing consumer, total expenditure x is given by x = c(u,p), which can be inverted to u as a function of p and x, the indirect utility function. Performing this for (4) and substituting the result into (6), we have the budget shares as a function of p and x. These are the AIDS demand functions in budget share form:

$$(8) w_i = \alpha_i + \sum_j \gamma_{ij}\, log\, p_j + \beta_i\, log\left\{\frac{x}{P}\right\}$$

where P is a price index defined by

$$(9)\ log\, P = \alpha_o + \sum_k \alpha_k\, log\, p_k + \frac{1}{2}\sum_k \sum_j \gamma_{kj}\, log\, p_k\, log\, p_j$$

The restrictions on the parameters of (4) along with (7) imply restrictions on the parameters of the AIDS equation (8). These are taken in the following three sets:

Adding up:

$$(10) \sum_{i=1}^{n} \alpha_i = 1, \qquad \sum_{i=1}^{n} \gamma_{ij} = 0, \qquad \sum_{i=1}^{n} \beta_i = 0$$

Homogeneity:

$$(11) \sum_j \gamma_{ij} = 0$$

Symmetry:

$$(12) \gamma_{ij} = \gamma_{ji}$$

The expressions for the income elasticities and non-compensated cross price elasticities for the AIDS are given by:

$$\eta_i = 1 + \frac{\beta_i}{w_i}, \mathrm{i} = 1,2,\ldots..,\mathrm{n}$$

$$\eta_{ij} = \frac{1}{w_i}\left[\gamma_{ij} - \beta_i\left(a_j + \sum_j \gamma_{kj}\ \log \mathrm{p}_k\right)\right] - \delta_{ij} \qquad \mathrm{i,j} = 1,2,\ldots,\mathrm{n}$$

The comparison between the two states is based on**2 Regression Models**using the Demand equation model. Further STATA is used in the estimation of AIDS model.

The main consideration of this paper is to look for the effects of socioeconomic parameters, the command of QUAIDS, developed by Brian Poi, is used. The command of QUAIDSis ideal as it has a built in feature to take various demographic parameters into consideration. Although the command is built upon the work of Banks, Blundell, and Lewbel (1997), who themselves have extended the model for AIDS by Deaton (1980), but one can use the QUAIDSmodel with no quadratic term which gives the model by Deaton & Muellbaeur.
The QUAIDScommand fits an AIDS model, with or without the quadratic expenditure term and with or without demographic variables. The following command is used to estimate the AIDS model:

quaids $varlist_{expshares}$ [*if*] [*in*], anot(#)
{prices($varlist_{prices}$) | lnprices($varlist_{lnprices}$)}
{expenditure($varname_{exp}$) | lnexpenditure($varname_{lnexp}$)}
[demographics($varlist_{demo}$) noquadratic nolog vce(*vcetype*) level(#)]

The ***bootstrapping technique***for running our AIDS model to get bootstrapped random errors after multiple iterations. Since we are considering a model which caters to demographics, we ran our regression using bootstrap command. In general, the bootstrap is used in statistics **as a resampling method to approximate standard errors**, confidence intervals, and p-values for test statistics, based on the sample data. This method is significantly helpful when the theoretical distribution of the test statistic is unknown. In Stata, one can use the bootstrap command or the **vce(bootstrap)** option (available for many estimation commands) to bootstrap the standard errors of the parameter estimates.

RESULTS & INFERENCE

The estimates of β classify the commodity groups as luxuries or necessities. For β <0, it indicates that the commodity group is a necessity and for β >0, it indicates that the commodity group is luxury. For Punjab and Kerala both, it can be concluded that Clothing, Food, Food and Beverages and Fuel groups are necessities whereas the rest of the commodity groups are luxuries.

$\boldsymbol{\gamma_{ij}}$for all commodity groups in both the states indicates that the data exhibits **Homogeneity** (as total expenditure and all prices increase by the same proportion, then there is no change in the demand of the i^{th} good)**.** However,$\sum \boldsymbol{\gamma_{ij}}$ is coming out to be close to 0, albeit with some fractions, yet we can see the large picture that its coming to be equal to 0 and thus confer to the **homogeneity restriction** as per required.

Results of AIDS Modelfor Punjab:

Commodity Group *i*	α_i	β_i	γ_{i1}	γ_{i2}	γ_{i3}	γ_{i4}	γ_{i5}	γ_{i6}	γ_{i7}	γ_{i8}	$\sum\gamma_{ij}$
Clothing (*i=1)*	**.016****	**-.026****	**-.021**	**-.734**	**-.128**	**.281**	**-.085**	**-.961**	**.187**	**1.45**	-0.011
Education (*i=2)*	**.550****	**.334****	**-.734**	**.034**	**-.043**	**.26**	**-.114**	**.32**	**-.866**	**1.135**	**-0.008**
Food (*i=3)*	**-.293****	**-.391****	**-.128**	**-.043**	**.134**	**.613**	**.2304**	**-.023**	**.067**	**-.851**	**-0.000**
Food & beverages (*i=4)*	**.063**	**-.084****	**.281**	**.26**	**.613**	**-.124**	**-.57**	**-1.39**	**.160**	**.763**	**-0.007**
Fuel (*i=5)*	**-.054****	**-.137****	**-.085**	**-.114**	**.2304**	**-.57**	**-.811**	**.124**	**-.256**	**1.499**	**0.0174**
Housing (*i=6)*	**.112****	**.0057**	**-.961**	**.32**	**-.023**	**-1.39**	**.124**	**-.200**	**.398**	**1.73**	**-0.002**
Transport (*i=7)*	**.369****	**.238****	**.187**	**-.866**	**.067**	**.160**	**-.256**	**.398**	**-.09**	**.400**	**0**
Miscellaneous (*i=8)*	**.234****	**.0611****	**1.45**	**1.135**	**-.851**	**.763**	**1.499**	**1.73**	**.400**	**-6.1**	**0.026**

*** denotes significance, the substitution matrix has come out to be **symmetric*** $\gamma_{ij} = \gamma_{ji}$

For Punjab, a proportional increase in prices and expenditure will increase expenditure on Transport and Miscellaneous commodity groups and decrease expenditure on rest of the commodity groups.

Results for demographic Parameters:

Commodity Group *i*	Females η_1	Males η_2	Grad & above η_3	No. of children η_4	Land own η_5	Religion dummy η_6	Social group η_7	Rural-Urban η_8
Clothing (*i=1)*	**-.002****	**-.004****	**-.0034***	**.0023****	**-2.77e-07**	**.0013**	**.0003**	**.0042**
Education (*i=2)*	**.0176****	**.0233****	**.0113**	**.0046**	**2.32e-07**	**.0283**	**-.0052**	**-.0255**
Food (*i=3)*	**-.028****	**-.030****	**-.0026**	**-.0006**	**9.67e-07**	**-.0237**	**-.0097**	**.00426**
Food & beverages (*i=4)*	**-.006****	**-.012****	**.0026**	**-.0020**	**-2.59e-06**	**-.012**	**.0108****	**.022****
Fuel (*i=5)*	**-.005****	**-.007****	**-.007***	**.002**	**5.29e-07**	**-.0048**	**-.001**	**.001**
Housing (*i=6)*	**.007****	**.0082****	**.0007**	**-.006****	**8.41e-07**	**.0114****	**.008****	**-.0180****
Transport (*i=7)*	**.0143****	**.015****	**-.0012**	**-.003**	**-7.04e-08**	**.009**	**.005**	**.0050**
Miscellaneous (*i=8)*	**.0035****	**.007****	**.0003**	**.003**	**3.71e-0**	**-.008**	**-.008****	**.0007**

*** denotes significance*

ConsideringDemographic factors:

As the **number of children** increases, the budget share of clothing increases as expected. This could be because till the age of 14 years, the human body shows substantial growth, which in turn leads to higher demand for clothing.

The impact of **rural-urban** dummy is positive in case of **Food & Beverages** indicating that people living in **rural areas** allocate a higher budget share to **Food & Beverages** as compared to people living in **Urban areas** in Punjab. One of the reason could be that in Punjab at least 50% of the population consumes alcohol and two-thirds of the population still lives in rural areas. Addiction to alcohol also plays a key role in higher spending on it.

The **rural-urban** dummy is negative and significant in case of Housing. The Rural population significantly devotes less share to housing expenditure. This could be attributed to factors like low rent in rural areas, high maintenance in urban areas etc.

The dummy variable **Social Group** is positive and significant. This indicates that the **OBC, ST, SC** and **other categories** spend a higher proportion of their budget share on **Food and Beverages** as compared to the **General category**. This is expected as a higher proportion of most of the categories excluding General category resides in rural areas. The people belonging to general category tends to spend a significantly less proportion of the budget on **housing** as compared to other categories, which is surprising. In case of **miscellaneous** goods, the people belonging to General category tends to devote a higher share of the budget to it as compared to other categories.

The **religion dummy** for **Housing** is positive and significant which means that Hindus residing in Punjab spends significantly higher proportion on Housing than the proportion of budget being spent on housing by people belonging to other religion.

Results of AIDS Model for Kerala:

Commodity Group *i*	α_i	β_i	γ_{i1}	γ_{i2}	γ_{i3}	γ_{i4}	γ_{i5}	γ_{i6}	γ_{i7}	γ_{i8}	$\sum \gamma_{ij}$
Clothing (*i=1*)	**-.0277**	**-.0372****	**.0047**	**-.092**	**.007**	**8.17**	**-.151**	**.108**	**.066**	**-8.11**	**-0.034**
Education (*i=2*)	**.303****	**.174****	**-.092**	**-.058**	**.079**	**-.077**	**-.110**	**.077**	**.022**	**.160**	**0.001**
Food (*i=3*)	**-.2996**	**-.423****	**.007**	**.079**	**.008**	**13.6**	**.594**	**-.929**	**-.081**	**-13.2**	**0.078**
Food& Beverages (*i=4*)	**-.112****	**-.0790****	**8.17**	**-.077**	**13.6**	**-.024**	**-.001**	**.010**	**-.007**	**-21.6**	**0.071**
Fuel (*i=5*)	**-.0673**	**-.115****	**-.151**	**-.110**	**.594**	**-.001**	**-.007**	**.002**	**-.002**	**-.330**	**-0.005**
Housing (*i=6*)	**.198****	**.0624****	**.108**	**.077**	**-.929**	**.010**	**.002**	**-.059**	**-.026**	**.816**	**-0.001**
Transport (*i=7*)	**.329****	**.179****	**.066**	**.022**	**-.081**	**-.007**	**-.002**	**-.026**	**.125**	**-.094**	**0.003**
Miscellaneous (*i=8*)	**.674**	**.238****	**-8.11**	**.160**	**-13.2**	**-21.6**	**-.330**	**.816**	**-.094**	**42.5**	**0.142**

*** denotes significance, the substitution matrix has come out to be* ***symmetric*** $\gamma_{ij} = \gamma_{ji}$

For Kerala, a proportional increase in prices and expenditure will decrease expenditure on Clothing, Fuel and Housing, and increase expenditure on rest of the commodity groups.

Results for demographic Parameters:

Commodity Group *i*	Females η_1	Males η_2	Grad & above η_3	No. of children η_4	Land own η_5	Religion dummy η_6	Social group η_7	Rural-Urban η_8
Clothing (*i=1*)	**-.005****	**-.007****	**-.003**	**.0001**	**-2.43e-06**	**.0053****	**-.003**	**-.0006**
Education (*i=2*)	**.006****	**.007**	**.008**	**-.0002**	**5.45e-06**	**-.0017**	**.0015**	**.0069**
Food (*i=3*)	**-.034****	**-.040****	**.002**	**.012**	**-.000**	**.006**	**-.001**	**-.034**
Food& beverages (*i=4*)	**-.005****	**.0010**	**.0025**	**-.000**	**1.39e-06**	**-.003**	**.0034**	**-.001**
Fuel (*i=5*)	**-.004****	**-.006****	**-.002**	**.0031**	**-2.65e-06**	**.001**	**.003**	**.001**
Housing (*i=6*)	**.0134****	**.014****	**.0028**	**-.008****	**3.31e-06**	**-.0018**	**.0009**	**.0219**
Transport (*i=7*)	**.0131****	**.0205****	**-.011****	**-.011****	**-8.02e-06**	**-.0027**	**.0048**	**.0049**
Miscellaneous (*i=8*)	**.016****	**.0112****	**.0014**	**.005**	**.0000142**	**-.003**	**-.010**	**.0004**

*** denotes significance*

Considering Demographic characteristics:
The coefficient of **Female** and **Male** on **Clothing** indicates that in Kerala people generally tends to spend less on clothing irrespective of the gender. This could be because in Kerala the **Lungi,** locally known as **Kaili** or **Kalli Mundu,** is worn by both men and women.They believe in the simple dressing sense compared to other states, which in turn leads to lower expenditure on clothing. The religion dummy indicates that the **Hindus** residing in Kerala spent significantly more than the average of the remaining population.

The coefficient of **Social group** is insignificant for all the commodity groups considered, indicating that there is no difference in the expenditure level of **Generals** as compared to **OBC, ST, SC and others** for all the commodity groups under consideration.
Even though roughly 50% people live in urban areas, there is no significant difference in the expenditure levels of **Urban** and **Rural** people in case of all the commodity groups.
The coefficient on **Land Owned** is not statistically different from 0 for all the commodities considered. This implies that the amount of land that a person holds doesn't change his expenditure pattern. This is surprising since land inequality in Kerala is the highest among all Indian states in 2009-2010.

Literacy rate in Kerala is very high. The **Female** tends to expend more of the budget on education. It might be because they themselves are literate and therefore know the importance of education.
Both the **Male** and **Female** tend to spend less amount on **food** and **food & beverages** since it is negative in most of the cases. This might be due to the dietary habits.

Considering the commodity group **Fuel and Lighting**, we observe that both **female and male** spends less on it. This may be due to less requirement for it. As the **number of children** increases, both the expenditure on **housing and transportation** falls as expected. Increase in the number of the household members will not significantly increase the demand for durables. For example – A family of 2 have a 4-seater car. With the birth of a child, it won't increase the demand for the car or need to buy a bigger car.
The **Education** variable indicates that as the **number of graduates** in a house increases, the expenditure on transportation will fall. The number of **Male and Female** in a house positively affects the expenditure **on transport, housing and miscellaneous**.

Conclusion

The study of role of Socio-Economic indicators in consumption patterns for two economically similar states Punjab and Kerala, which included economic and noneconomic factors to show significant impact of demography and social structure on the demand pattern of a household, yield the following conclusions:

- None of the variables considered have any detectable effect on the value share for any of the commodity groups as none of the γ_{ij} are statistically significant. Similarly, the prices of the different commodity groups have no effect on the value share for any of the commodity groups. The analysis empirically proves that the restrictions of homogeneity are valid in the Almost Ideal Demand System.

- Land ownership, which for centuries has defined the economic status of a household, seems to have no impact on its expenditure decision irrespective of the state.

- Increase in educated individuals (with a Graduation degree or above) devotes a significantly lower proportion of their budget on Clothing and Fuel. In case of commodities like Clothing, Food, Food & Beverages and Fuel, the budget share on these commodity groups decreases with an increase in the number of Male and Female in the households. Whereas for Education, Housing, Transport and Miscellaneous commodity groups, the budget share of these groups increases with the increase in number of male and female in a family.

- Having more children actually reduces housing expenditure across both the states and can be due to economies of scale because an increasing number of kids can use the same house or it could be because more expenditure of the household is now being diverted to other commodities that are either more necessary or don't exhibit an economy of scale like food or clothing.

- In both Punjab and Kerala,gender specific expenditure seems to be on similar lines even though there exists a huge disparity in their state specific sex ratios. Males and Females in both the states give a higher priority to their education while they appear to be lowering their expenditure on tobacco and other intoxicants.

REFERENCES

1. Bellet C & Sihra E,(2016) *Less Food for More Status Caste Inequality and Conspicuous Consumption in India*, LIEPP working paper, Paris: Laboratory for Interdisciplinary Evaluation of Public Policies.
2. Bhattacharya N (1967), *Consumer Behavior in India: An Application of the Linear Expenditure System*, Economic and Political Weekly, Vol 2, Issue 47.
3. Deaton A &Muellbauer (1980), *An Almost Ideal Demand System*, The American Economic Review, Vol 70, No. 3.
4. Dubey A(2009), *Intra-State Disparities in Gujarat, Punjab, Kerala, Orissa and Punjab*, Economic and Political Weekly, Vol 44, Issue 26/27.
5. Kannan K (2005), *Kerala's Turnaround in Growth: Role of Social Development, Remittances and Reform*, Economic and Political Weekly, Vol 45, Issue 1, pp 548-554.
6. Padma P.,E. V. Ramasamy, T. V. Muralivallabhan, A. P. Thomas (2016), *Changing Scenario of Household Consumption Pattern in Kerala: An Emerging Consumer State of India*, Social Indicator Research: An International and Interdisciplinary Journal for Quality of Life Measurement, Springer, Vol 35(2), pp 797-812.
7. Poi, Brian P. (2012), *Easy Demand-System Estimation with Quaids*, The Stata Journal, Vol 12(3)pp 433-446.
8. Zachariah, E.T. Mathew and S. Irudaya Rajan (2001), *Impact of Migration on Kerala's Economy and Society*, International Migration, Vol 39(1), 63-87.

APPENDIX
Mapping of Commodity groups to commodity items:

Commodity Group	Item Group
Clothing	Clothing and bedding
Education	Medical (institutional)
	School books & other educational articles (includes newspaper, library charges, stationery, internet charges, etc.)
	Tuition fees & other fees (includes private tutor, school/college fees, etc.)
Food	Cereals & cereal products (includes muri, chira, maida, suji, noodles, bread (bakery), barley, cereal substitutes, etc.)
	Edible oil and Vanaspati
	Egg, fish & meat
	Fruits & nuts (includes mango, banana, coconut, dates, kishmish, monacca, other dry fruits, etc.)
	Pulses & pulse products (includes soybean, gram products, besan, sattu, etc.)
	Salt & spices (includes dry chillies, curry powder, oilseeds, garlic, ginger, etc.)
	Sugar (includes gur, candy (misri), honey, etc.)
	Vegetables
Food, beverages, tobacco	Milk
	Milk products (includes milk condensed/powder, baby food, ghee, butter, ice-cream, etc.)
	Other food items (includes beverages such as tea, coffee, fruit juice and processed food such as biscuits, cake, pickles, sauce, cooked meals, etc.)
	Pan, tobacco & intoxicants
Fuel & Lighting	Fuel & light
Housing	Consumer taxes and cesses (includes water charges, etc.)
	Cooking and household appliances (includes electric fan, air conditioners, sewing machine, washing machine, pressure cooker, refrigerator, heater, toaster, etc.)
	Furniture and fixtures (includes bedstead, Almira, suitcase, carpet, paintings, etc.)
	Rent/ house rent
	Repair and maintenance (of residential buildings, bathroom equipment, etc.)
	Sundry articles (includes electric bulb, tube light, glassware, bucket, washing soap, agarbati, insecticide, etc.)
Miscellaneous	Consumer services excluding conveyance (includes domestic servant, tailoring, grinding charges, telephone, legal expenses, pet animals, etc.)
	Crockery & utensils (includes stainless steel utensils, casseroles, thermos, etc.)
	Entertainment (includes cinema, picnic, sports, club fees, video cassettes, cable charges, etc.)
	Footwear
	Goods for recreation (includes TV, radio, tape recorder, musical instruments, etc.)
	Jewellery & ornaments
	Medical expenses (non-institutional)
	Other personal goods (includes clock, watch, PC, telephone set, mobile handset, etc.)
	Personal care and effects (includes spectacles, torch, umbrella, lighter, etc.)
	Therapeutic appliances (includes glass eye, hearing aids, orthopaedic equipment, etc.)
	Toilet articles (includes toothpaste, hair oil, shaving blades, etc.)
Transport	Conveyance (includes porter charges, diesel, petrol, school bus/van, etc.)
	Personal transport equipment (includes bicycle, scooter, car, tyres & tubes, etc.)