J. Appl. Environ. Biol. Sci., 4(9S)416-423, 2014

ISSN: 2090-4274
Journal of Applied Environmental and Biological Sciences
www.textroad.com

A Comparative Study on Consumer Behavior of Farm, Nonfarm Households of Pakistani Punjab

Saima Ishaq

Mphil Scholar, Department of Economics, NCBA&E

Received: September 12, 2014
Accepted: November 23, 2014

ABSTRACT

The present study seeks to unfold the consumption patterns of farm, nonfarm rural households of Pakistani Punjab. The secondary data published by Punjab Economic Research Institute (PERI) will be used very firstly in this case. PERI follows crop agro ecological division of Punjab and selects farm, nonfarm households by stratified random sampling technique from three zones named as Rain fed, Partially Rain fed, and irrigated zones. Linearized version of almost ideal demand system is employed in static frame work for the year 2010. Seemingly Unrelated Regression Modeling is employed to calculate expenditure, compensated and uncompensated price elasticities for farm and nonfarm households separately for 10 basic food items including wheat, rice, poultry and different meats. The Impact of age and education status of head household, along with family size of the particular household is also incorporated to calculate direct and cross price effects. The revealed differences of elasticities will highlight the divergence of behavior among the two groups of study as well it may guide the policy makers for targeted price and food policies for rural households in Punjab.

KEYWORDS: Consumer behavior, LA-AIDS, SUR, Compensated and uncompensated elasticities.

1 INTRODUCTION

In applied micro econometrics, consumer behavior is traced by observing the actual buying decisions of individuals. The buying decisions are taken as the description of their preferences within budget, prices and other real life constraints. As economics is a social science and its theories always rely on certain assumptions. Assumptions about consumer behavior are introduced into the theory of demand through the specification of a utility function. The utility function measures the level of satisfaction an individual experiences as a result of consuming a particular bundle of commodities (goods and services) per unit of time (Johnson et al., 1984).

There had been described two broad approaches to measure consumer behavior of individuals. In first approach we define a utility function which satisfies certain axioms of choice. Consumer optimizes his utility at the point of tangency of indifference curve and budget constraint, and the optimization of utility function subject to budget constraint gives birth to the demand function. Alternatively, we start estimation with a predefined demand system and impose the restrictions of demand theory including completeness, transitivity and non satiation of preferences (Blanciforti et al., 1986).

When working with predefined demand systems we have got two methods to estimate demand systems, nonparametric functional forms, where we do not impose any restrictions on the nature of parameters, and parametric flexible functional forms which are good enough to capture linear and nonlinear trends of household and aggregate data (Barnett and Serletis, 2008).Amongst flexible functional forms Almost Ideal Demand System is considered the best because of its distinguished features of satisfying first and second order requirements of optimizing consumer behavior. As well as it satisfies axioms of choice theory including aggregation, symmetry, and negative semi definite substitution matrix. (Alston et al., 1994; Muellbauer and Van de Ven, 2004).The linearized version of AIDS named LA-AIDS provides a first order approximation to the expenditure function; satisfies the axioms of consumer choice and allows for investigating interdependence amongst products (Johnston and DiNardo, 2000).

The function of any demand system estimation is to measure the responsiveness of consumers towards different factors including income, prices, tastes, location, family size, gender, age and so on. This response is being measured by reading conventional price and income elasticities as well as other elasticities specific to the objective of the study. When a commodity faces a fall or rise in its price, the consumer becomes worse

*** Corresponding Author:** Saima Ishaq, Mphil Scholar, Department of Economics, NCBA&E, leaves.of.heaven@gmail.com

off or better off, the fall/rise in the price casts two impacts, real income changes and purchasing power changes. The Uncompensated or Marshellian price elasticities measure both the income and price effects of these changes whereas compensated or Hicksian elasticities, are used to measure only price effects(Johnson et al.).

There had been an immense treatment of consumer behavior measurement internationally, over the past three decades this area has been explored owing to the invention of complete demand systems (Barnett and Serletis). When we uncover the studies with reference to Pakistan we find most of the studies relying on forsaken techniques of consumer behavior measurement (Aziz and Malik).With a few exceptions working with demand system on micro data such as (Farooq et al., 1999), (Haq et al., 2011), (Mudassar et al., 2012),most of the studies are based mostly on data provided by household economic survey of Pakistan (Aziz and Malik, 2010). This is the first study exploring PERI data for Punjab Rural households, Prior to it were (Farooq et al., 1999) investigated farm households consumption patterns for different food items covering only three districts of rice wheat zone of Punjab and most recently (Haq et al., 2011) ,(Mudassar et al., 2012) applied the same model using HIES data for urban and rural Punjab. None of the previous studies has provided the elasticities based on farm and nonfarm groups of agro ecological zones of the rural Punjab.

The overall aim of this study is to estimate and interpret the demand relations of basic food items in Punjab's agro ecological zones by means of a system- wide approach. The objectives of the study include:

- To develop a model through which the demand relations of selected food items can be estimated and easily updated for future use.
- To compare farm and nonfarm consumption patterns for the same food items.

The arrangement of next chapters includes section two covering literature review with reference to Pakistan and international studies on consumer behavior measurement. Section three is devoted to discussion on methodological aspects and section four covers results and discussion. Lastly I end up with some conclusive remarks and policy implications.

2. LITERATURE REVIEW

The present section describes the comprehensive literature review relevant to Pakistan and international research on consumer demand estimation by complete demand system such as AIDS.Deaton and Muellbauer (1980) presented the demand system named as Almost ideal demand system for measuring consumer behavior in static and dynamic framework, the system was claimed to be Almost ideal because of its capacity to serve as an ideal tool for demand analysis. The writers had derived the share equations for measuring budget shares based on PIGLOG preferences. Restrictions of additivity, symmetry and negative semi definiteness were imposed and verified coherent with the model. The generic version of model was being tested on British household's data for eight nondurables from 1954 to 1974.

Bhalotra and Attfield (1998)had done a comprehensive study on the intra household resource allocation across rural Punjab. The writers have calculated the impact of household size and composition on the consumption patterns of the households. The main outcome is the nonexistence of discrimination amongst different family ties. There is no confirmation of systematic differences in the consumption patterns of children, adult, female workers, female dependants, and elderly dependants as well. This study highlighted the social norms of Pakistani rural society, where the elderly and dependants are served as good as breadwinners. Farooq et al. (1999) has measured the demand behavior of paddy and wheat growing farm households of the rural Punjab. Almost ideal demand system is applied to calculate income and price elasticities incorporating household size covering age groups in three broad categories, children, adolescent, and adults. The data is collected from 177 households of Daska, Gujranwala, and Ferozewala tehsils in the rice wheat zone of irrigated Punjab during 1995.The general restrictions of the demand theory are rejected ,whilst the own price elasticities are found to be negative and significant.

Haq et al. (2011) have exploited HIES data of 5972 households of Pakistani Punjab. They had explored the demand pattern for the major eight categories of food. The main segregation is of the rural and urban Punjab households. The additional explanatory variables to compare the demand patterns are the literacy level and profession of the household heads. The demand system employed here is LA-AIDS, most of the compensated and uncompensated elasticities are found to be significant and having expected signs, while the surprising outcome is having fruits, meat ,and cooking oil as normal goods for all households, so we don't find the evidence for general phenomenon of the same thing to be luxury at low income levels and necessity or normal at high income levels. Sher et al. (2012) has measured the impact of income size on food demand by using PSLM household data of 2007-2008.Double logarithmic form for measuring the income elasticity

is used for five income group ranges provided by data .The Engel Law is verified by having a relative decline in food demand at high income levels for most of the food items.

Lazaridis (2004) has investigated about the olive oil consumption, as well as other three food oils in Greece. He has estimated the elasticities by LA-AIDS in time series data, and solved the matter through seemingly unrelated regression, the Heckman Procedure is used to solve the system, and the simultaneous analysis is done for the sample of self producing households to the ones who buy olive oil. The resulted elasticities are being compared for both kinds of households. Log linear analogue of Laspayers price index instead of conventional stone price index is used as price index. The most striking factor behind household demand patterns is taste in real life which is being used as an additional explanatory variable as a function of education, family size and location is explicitly defined as well. The results indicate the significance of own production to consumption of olive oil.Raknerud et al. (2007) had estimated LA-AIDS in quarterly time series scenario by applying seemingly unrelated regressions. The analysis is done for nine non-durable commodities and relevant year income and price elasticities are being estimated .The effect of random variables such as season and time trend are also being augmented on the traditional AIDS model. Income and own price elasticities are calculated under homogeneity restrictions. Although the homogeneous model is formally rejected by statistical tests, it performs well with respect to interpretability, parameter stability

ŞAHİNLİ (2013) have studied the demand patterns of Turkish households over the time range of 2002-2011.The study used panel data mode because of the combination of 12 districts and 10 years. AIDS demand system is exploited to measure the expenditure elasticities as well compensated own price elasticities for twelve major categories of household expenditures including durables as well as non durables. All expenditure elasticities are significantly positive showing all goods as normal goods on aggregation basis. The price elasticities are significant and negative for all groups as well clothing, furniture, house appliances, home care services, entertainment health, food away home and other goods and services found to be highly price elastic. Ordinary least square technique was applied. Negative and positive serial correlation was also detected amongst few items.

Mhurchu et al. (2013) have worked on national household surveys of 2008,2009 of New Zealand for measuring own price and cross price elasticities for 24 food categories. The comparison of statistics is provided for the two ethnic groups under consideration of household income size on quintile base. From the top quintile to the lowest income quintile five groups are being divided, for income ranging from 16,373$ to 180,259$. The overall comparison is done by applying AIDS model to the data for each year. Out of 24 food groups ,12 appear as non responsive to income changes .The real life phenomenon of high income and low expenditure share on food is also justified in this analysis, as households belonging to uppermost income group spend only 8 % of their expenditures on food ,whilst the lowest ones income groups spend around 23% on food items. Additionally price elasticities are 40% more high in lowest income groups revealing their weak purchasing power. Income wise price elasticities are significant as well the patterns of Maori households' expenditures are more sensitive to income changes.

Bett et al. (2012)have presented the demand analysis of indigenous chicken, exogenous chicken, beef, mutton, goat as well other meat options for 930 urban and rural households in Kenya. The study collected primary data from the six counties under the governance of Kenya. They have considered demographic such as household size and proportion of different ages, household location and family size, education and age of the head of the households for measuring the impact on consumption decisions. The resulted uncompensated and compensated elasticities are found to be significant. The socioeconomic variables also found to be significant as well.

3. DATA SOURCES AND METHODOLOGY:

Punjab Economic Research Institute (PERI) was established before partition in 1919, its data reports on household's budget surveys of Punjab for farm and nonfarm households got published since 1928 .Punjab is divided by PERI into two regions Barani region and irrigated region on the basis of source of irrigation. The Barani or rain fed region is further divided into Barani and partial Barani, while the irrigated region has got three classifications as cotton wheat zone, rice wheat zone, mixed wheat zone (Ata, 2009).

The linearized AIDS or LA/AIDS had been very popular in empirical analysis for its particular characteristics. Glewwe (2001) and Eales and Unnevehr (1994) has discussed various features in favor of the model including its convenience to estimation and relative easy interpretation. The system got edge over other estimation techniques such as linear expenditure system or Rotterdam model for having its local flexibility which allows for complete aggregation of consumers for demand measurement. Nevertheless its functional form satisfies the axioms of choice exactly, works well with micro data. The system has got well

defined preferences based on price independent generalized log or PIGLOG class of preferences, which are well defined in demand theory and incorporate with restrictions of homogeneity, symmetry of demand theory Glewwe (2001). By Pollak and Wales (1978),household characteristics can be included in AIDS model through the identity where δ_{ij} is the cross parameter for household demographics including family size, age and education level of the head household.
By substituting

$$\alpha^*_i = \alpha_i + \sum_j \delta_{ij}$$ i =1…. 10 are food items , j=1… 3 are age, family size and education.
We get

$$w_i = \alpha_i + \sum_{j=1}^{10} \gamma_{ij} \ln p_j + \ln \frac{x}{p} + \sum_{j=1}^{3} \delta_{ij} z_j + \epsilon_i$$

(Alston et al.) have provided detailed discussion on various possible forms of elasticities for LA-AIDS model including the following equations chosen for current analysis:

(i)Uncompensated price elasticities:

$$e_{ij} = \frac{\gamma_{ij} - \beta_i}{w_i} w_j - \delta_{ij} \text{(i)}$$

(ii) Compensated price elasticities:

$$e^{\circ}_{ij} = \frac{\gamma_{ij}}{w_i} + w_j - \delta_{ij} \text{(ii)}$$

(iii) Expenditure elasticities:

$$\rho_i = \frac{\beta_i}{w_i} + 1 \qquad \text{(iii)}$$

All elasticities are calculated by seemingly unrelated regression model in SAS. The detailed expansion of the elasticities for 10 food items is provided in Appendix 1.

4. RESULTS AND INTERPRETATION

The following section presents tables on compensated, uncompensated and expenditure elasticities followed by the relevant discussion.

Table 4.1
Uncompensated Price Elasticities

	Wheat	Rice	Cereal	Milk	Desi Ghee	Vanaspati Ghee	Mutton	Beef	Poultry	Eggs
Wheat	0.398	-0.278	0.115	-0.432	-0.267	-0.313	0.105	0.009	-0.044	-0.015
Rice	-1.635	-0.178	0.248	0.212	0.413	-0.326	0.260	-0.049	0.251	-0.108
Cereal	22.719	8.462	-27.213	-5.125	5.262	-6.148	2.506	-3.172	4.886	-0.011
Milk	-0.459	0.012	-0.025	-0.747	0.092	-0.013	-0.046	-0.019	-0.035	0.015
Desi Ghee	-2.015	0.327	0.147	0.213	-0.329	-0.219	-0.250	0.139	-0.499	-0.072
Vanaspati Ghee	-0.571	-0.095	-0.068	0.219	0.022	-0.026	-0.068	0.185	-0.080	-0.056
Mutton	2.695	1.290	0.384	-2.252	-1.319	-1.253	-0.302	0.255	-1.882	0.070
Beef	0.053	-0.038	-0.099	0.059	0.240	0.501	0.065	-1.508	0.101	-0.056
Poultry	-0.442	0.341	0.198	-0.312	-0.630	-0.391	-0.489	0.122	0.399	0.138
Eggs	-0.212	-0.339	-0.005	0.701	-0.133	-0.522	0.063	-0.175	0.356	-0.147

Table 4.2
Compensated Price Elasticities

	Wheat	Rice	Cereal	Milk	Desi Ghee	Vanaspati Ghee	Mutton	Beef	Poultry	Eggs
Wheat	0.599	-0.243	0.116	-0.162	-0.231	-0.212	0.112	0.044	-0.019	-0.005
Rice	-1.381	-0.134	0.250	0.554	0.458	-0.198	0.268	-0.004	0.283	-0.095
Cereal	22.117	8.357	-27.216	-5.936	5.155	-6.451	2.486	-3.278	4.810	-0.043
Milk	-0.119	0.072	-0.023	-0.288	0.153	0.158	-0.035	0.040	0.008	0.033
Desi Ghee	-1.304	0.452	0.151	1.171	-0.203	0.138	-0.226	0.264	-0.409	-0.035
Vanaspati Ghee	-0.422	-0.069	-0.067	0.420	0.049	0.049	-0.063	0.211	-0.061	-0.048
Mutton	3.339	1.403	0.388	-1.386	-1.205	-0.930	-0.280	0.368	-1.800	0.104
Beef	0.243	-0.004	-0.098	0.315	0.274	0.597	0.071	-1.475	0.125	-0.047
Poultry	-0.145	0.394	0.200	0.087	-0.578	-0.242	-0.479	0.174	0.436	0.154
Eggs	-0.098	-0.319	-0.004	0.855	-0.112	-0.464	0.067	-0.155	0.370	-0.141

Table 4.3
ExpenditureElasticities

Wheat	Rice	Cereal	Milk	Desi Ghee	Vanaspati Ghee	Mutton	Beef	Poultry	Eggs
0.721	0.912	-2.167	1.224	2.558	0.536	2.313	0.683	1.066	0.412

Non-Farm Households 2010

Table 4.4
Uncompensated Price Elasticities

	Wheat	Rice	Cereal	Milk	Desi Ghee	Vanaspati Ghee	Mutton	Beef	Poultry	Eggs
Wheat	0.490	-0.274	0.011	-0.580	0.072	-0.489	0.002	-0.025	-0.004	0.119
Rice	-1.690	-0.418	0.011	0.305	0.522	-0.201	0.229	-0.772	0.865	0.009
Cereal	2.087	0.340	-8.138	-0.603	1.243	-0.186	4.072	0.329	-0.450	0.104
Milk	-0.509	0.047	-0.002	-0.582	0.004	0.188	-0.003	-0.021	-0.078	-0.029
Desi Ghee	0.083	0.474	0.038	-0.289	-1.495	-0.072	0.103	-0.130	-0.283	-0.353
Vanaspati Ghee	-0.864	-0.027	-0.002	0.742	0.046	0.237	-0.417	0.113	-0.040	-0.072
Mutton	-1.026	1.040	0.639	-1.281	0.511	-6.891	2.794	2.473	-1.109	-1.471
Beef	-0.504	-0.812	0.011	-0.493	-0.115	0.078	0.490	-0.055	-0.506	-0.046
Poultry	-0.703	1.123	-0.017	-1.468	-0.380	-0.598	-0.269	-0.719	-0.013	0.223
Eggs	2.144	0.038	0.011	-0.754	-1.139	-0.822	-0.903	-0.095	0.620	-0.117

Table 4.5
Compensated Price Elasticities

	Wheat	Rice	Cereal	Milk	Desi Ghee	Vanaspati Ghee	Mutton	Beef	Poultry	Eggs
Wheat	0.678	-0.240	0.012	-0.326	0.105	-0.394	0.008	0.008	0.020	0.128
Rice	-1.373	-0.362	0.012	0.732	0.578	-0.042	0.240	-0.716	0.905	0.025
Cereal	2.421	0.399	-8.136	-0.153	1.303	-0.018	4.084	0.388	-0.408	0.122
Milk	-0.234	0.095	-0.001	-0.213	0.053	0.326	0.006	0.027	-0.044	-0.014
Desi Ghee	0.619	0.568	0.040	0.431	-1.400	0.197	0.121	-0.036	-0.216	-0.325
Vanaspati Ghee	-0.785	-0.013	-0.002	0.849	0.060	0.277	-0.415	0.127	-0.030	-0.068
Mutton	0.176	1.251	0.645	0.337	0.725	-6.287	2.834	2.685	-0.957	-1.408
Beef	0.039	-0.716	0.014	0.237	-0.018	0.351	0.508	0.040	-0.437	-0.018
Poultry	0.081	1.261	-0.013	-0.411	-0.241	-0.204	-0.243	-0.581	0.086	0.264
Eggs	2.427	0.088	0.012	-0.374	-1.088	-0.680	-0.894	-0.045	0.656	-0.102

Table 4.6
Expenditure Elasticities

Wheat	Rice	Cereal	Milk	Desi Ghee	Vanaspati Ghee	Mutton	Beef	Poultry	Eggs
0.679	1.139	1.201	0.986	1.924	0.285	4.321	1.951	2.821	1.016

4.1. Expenditure Elasticities Comparisons

Expenditure elasticities for farm households, nonfarm households are discussed and compared in the following:

- Wheat is a normal good for households in each case and inelastic to change in expenditures. The lest elasticity is found for nonfarm households ,showing only .6 rise on spending on wheat on average by 1 % rise in total expenditure on food items.
- Rice is considered as a luxury item for nonfarm households with expenditure elasticity (1.13) followed by all farm households (0.91).These two elasticities are near to cut off point between luxury and necessity products.
- Cereals are inferior food item for farm households (-2.16) and luxury food item for nonfarm households (1.20).This shows a divergence of preferences between farm and nonfarm households. Since rural farm households of Punjab are not provided with packed store variety of cereals like in developed part of Pakistan. Rural households consider it a byproduct of and do not spend much on it with rise in their incomes.
- Milk is a luxury item for farm households (1.22) and near to luxury for nonfarm households (0.98) on average.
- Desi ghee is highly elastic to expenditure changes, and a luxury item for households in each case with elasticities respectively (2.55),(1.92) for farm households, nonfarm households.
- Vanaspati ghee is a necessity food item for all households.
- Mutton is highly sensitive to expenditure changes, a 1 % rise in total expenditure on food items leads, 2.31 %, 4.32% rise in spending on average for farm households, nonfarm households respectively.
- Beef is a necessity for farm households (0.68), a luxury item for nonfarm households (1.95).
- On average more is spent on poultry by all households when they face rise in expenditures, while eggs are more sensitive to expenditure changes for nonfarm households only.

4.2. Price Elasticities Comparisons

Wheat is having positive own price elasticity in each case, which shows its special reference to farm households as the farmers grow wheat themselves ,rise in price of wheat on average leaves them better off ,also wheat is an unmatchable item for households having no close substitute with elasticity greater than 1. All cross price relationships are in elastic for wheat in all households' case.

Again rice acts as a necessity item for households in three cases .It is the major part of necessities for rural households for they prefer it on all other items. The only food item influencing rice demand is wheat, fall of 1 % in wheat price brings on maximum 1.82 % rise in rice price for all farm households on average and vice versa for other case the impact of wheat price on rice demand is elastic. All other cross price relationships are not effective in any case.

Cereals again are most responsive to price changes, with 8.13 elasticity for nonfarm households, and 27.2 level of own price elasticity for farm households. This is the only item having eight cross price relationships highly elastic for farm households. Nevertheless nonfarm households report relatively less cross price relationships. Wheat, desighee and mutton through price change impact the demand for cereals for nonfarm households.

Milk is a necessity item for all households, and not receptive to price changes. All cross price elasticities are very small in magnitude. The own price elasticity of desighee is 1.4 for nonfarm households followed by all rural households with 1.1 units, while farm households have inelastic demand for desighee on average. Only farm households have cross price elasticities between desighee, wheat and desighee, milk greater than 1. For nonfarm and all households' case we find no elastic cross price relationship.

The Rural farm households are not provided with much options for cooking oils variety, as the data questionnaires reveal only two options for cooking as desi ghee and vanaspati ghee. Desi ghee's price is as good as double to vanaspati ghee, so substitution is not found effective in demand for desighee case by price changes for farm households. Vanaspati ghee being the only economic option for most of the households remains very much inelastic to price changes. The only cross price relationship found bit near to 1 are of milk and wheat for nonfarm households with elasticity (0.7) and (0.8) on average. The remaining cross elasticities in other cases as well are least effective to change vanaspati ghee demand.

There is no common pattern diagnosed for mutton for each case. For farm households mutton demand is not responsive on average to price changes. Wheat, rice, milk and vanaspati ghee have got elastic cross price relationships with mutton so these food items can change the demand for mutton by the change in their prices. Excluding cereals and desighee all left cross price relationships are elastic.

None of the food items influence the demand for beef through price changes. All cross price elasticities in three cases are far from 1. But farm and nonfarm households have difference of preference for beef. Beef is an elastic commodity for farm households with own price elasticity equal to 1.50 contrary to farm households with least elasticity 0.04.

Poultry is having inelastic demand in each case along with cross price relationships ineffective. But there are two exceptions of elastic cross price elasticity of milk and rice with poultry for nonfarm households. Over all poultry is the basic source of protein for all households on average.

Eggs are again having very low cross elasticity indicating it as a necessity item for all households on average in each case. We find only two cross price relationships elastic for eggs and wheat and eggs and desighee in case of nonfarm households. This indicates fall in prices of wheat and desighee impacts households to spend more on buying eggs on average.

5. CONCLUSION AND POLICY IMPLICATIONS

Consumer behavior analysis seeks for the measurement of consumer decisions for consumption choices. There might be various justifications for a specific consumer behavior including psychological, ethical, social, demographical, economic, and environmental. Here we had touched the economic i.e. income and prices and demographics such as age, education and family size as justifications behind the consumption choices for certain food items. The sample selected for the analysis consists of rural farm and nonfarm households of Barani(rainfed), partial Barani, and irrigated zones of Punjab. We have estimated expenditure, compensated and uncompensated price elasticities by complete demand system LA-AIDS. The three set of elasticities are calculated and compared for farm households, and nonfarm households.

The elasticities suggested most of the food items including wheat, rice, vanaspati ghee, poultry, chicken and milk as basic or necessities for farm and nonfarm households. Desi ghee, mutton remained luxury items in all cases while beef and eggs vary from luxury to necessity across farm and nonfarm households. The

main finding is the relative better economic position of farm households in making consumption decisions for most of the food items.

According to Haq et al. (2011) the international rise in essential food items has led to a hike in food insecurity and poverty in many developing countries as well Pakistan. Henceforth empirical research on this subject can serve as a tool for predicting future direction of demand in response to prices. More price elastic food items can raise government revenues if fall of prices is maintained by the government. Moreover disaggregated analysis can help in better understanding of rural consumer's consumption patterns creating right food policies for these households. The analysis of demand patterns also serves as a basis for welfare comparisons of farm and nonfarm households of rural Punjab.

REFERENCES

1. Alston, J. M., Foster, K. A. and Green, R. D. (1994). Estimating Elasticities with the Linear Approximate Almost Ideal Demand System: Some Monte Carlo Results. *Review of Economics and Statistics*, 76(2), 351-356.
2. Ata, K. Q. M. A. (2009). *Farm Accounts, Family Budgets of Rural Families and Cost of Production of Major Crops in Punjab* (D. M. A. Quddus Ed.). Lahore,Pakistan: Punjab Economic Research Institute.
3. Aziz, B. and Malik, S. (2010). Household Consumption Patterns in Pakistan: A Rural-Urban Analysis. *Forman Journal of Economic Studies*, 6.
4. Barnett, W. A. and Serletis, A. (2008). Consumer Preferences and Demand Systems. *Journal of Econometrics*, 147(2), 210-224.
5. Bett, H., Musyoka, M., Peters, K. and Bokelmann, W. (2012). Demand for Meat in the Rural and Urban Areas of Kenya: A Focus on the Indigenous Chicken. *Economics Research International*, 2012.
6. Bhalotra, S. and Attfield, C. (1998). Intrahousehold Resource Allocation in Rural Pakistan: A Semi-Parametric Analysis.
7. Blanciforti, L. A., Green, R. D. and King, G. A. (1986). Us Consumer Behavior over the Postwar Period: An Almost Ideal Demand System Analysis.
8. Deaton, A. and Muellbauer, J. (1980). An Almost Ideal Demand System. *The American economic review*, 312-326.
9. Eales, J. S. and Unnevehr, L. J. (1994). The Inverse Almost Ideal Demand System. *European Economic Review*, 38(1), 101-115.
10. Farooq, U., Young, T. and Iqbal, M. (1999). An Investigation into the Farm Households Consumption Patterns in Punjab, Pakistan. *The Pakistan Development Review*, 293-305.
11. Glewwe, P. (2001). Lecture Notes, Consumption Economics-Apec 8401. *University of Minnesota, St. Paul, USA*.
12. Haq, U., Nazli, H., Meilke, K., Ishaq, M., Khattak, A., Hashmi, A. and Rehman, F. (2011). Food Demand Patterns in Pakistani Punjab. *Sarhad J. Agric. 27 (2): 305*, 311.
13. Johnson, S. R., Hassan, Z. A. and Green, R. D. (1984). Demand Systems Estimation.
14. Johnston, J. and DiNardo, J. (2000). Econometric Methods. *Econometric Theory*, 16, 139-142.
15. Lazaridis, P. (2004). Olive Oil Consumption in Greece: A Microeconometric Analysis. *Journal of family and economic issues*, 25(3), 411-430.
16. Mhurchu, C. N., Eyles, H., Schilling, C., Yang, Q., Kaye-Blake, W., Genç, M. and Blakely, T. (2013). Food Prices and Consumer Demand: Differences across Income Levels and Ethnic Groups. *PloS one*, 8(10), e75934.
17. Mudassar, K., Aziz, B. and Anwar, A. (2012). Estimating Consumer Demand of Major Food Items in Pakistan: A Micro Data Analysis. *Pakistan Journal of Life and Social Sciences (Pakistan)*.
18. Muellbauer, J. and Van de Ven, J. (2004). *Estimating Equivalence Scales for Tax and Benefits Systems*: National Institute of Economic and Social Research.
19. Pollak, R. A. and Wales, T. J. (1978). Estimation of Complete Demand Systems from Household Budget Data: The Linear and Quadratic Expenditure Systems. *The American Economic Review*, 348-359.
20. Raknerud, A., Skjerpen, T. and Swensen, A. R. (2007). A Linear Demand System within a Seemingly Unrelated Time Series Equations Framework. *Empirical Economics*, 32(1), 105-124.
21. ŞAHİNLİ, M. A. (2013). The Turkish Demand for Food. *Electronic Turkish Studies*, 8(8).
22. Sher, F., Ahmad, N. and Safdar, S. (2012). Income and Economies of Scale Effect on Household Food Demand Pattern in Pakistan Using Pslm Data.