Determinants of Food Consumption Expenditures in Pakistan

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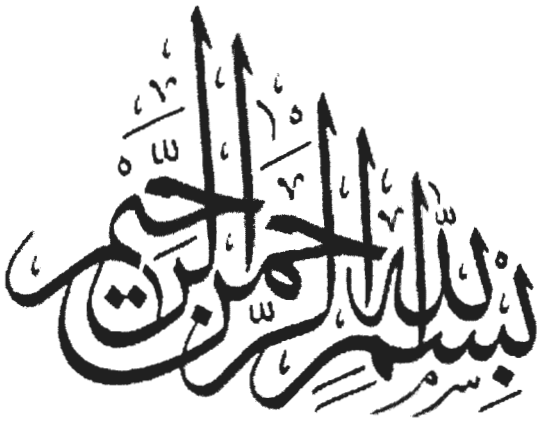

Allah will exalt in degree those of you who believe and those who have been granted knowledge.

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Dedicated to my

Parents

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Abbreviations

BNU	Beacon house National University
FAO	Food and Agricultural Organization
GDP	Gross Domestic Product
GOP	Government of Pakistan
HIES	Household Integrated Economic Survey
MFE	Meat, Fish and Egg
OLS	Ordinary Least Squares
PBS	Pakistan Bureau of Statistics
PSLM	Pakistan Social and Living Standards Measurement
SDPI	Sustainable Development Policy Institute
UNFPA	United Nation Fund for Population Activities
USDA	United States Development Agency
UN	United Nations
Veg fruit	Vegetables and Fruit
WFP	World Food Program

Abstract:

This study examine the impact of socio-economic factors on foodexpenditures in Pakistan at aggregate and disaggregates level (Province vies) considering rural and urban areas. In this study we use Household Integrated Economic survey (HIES) 2011-12 data, and variables are household income, education level of household head, household size, number of employees in a household and number of working hours per household. The results show significant impact of family income, house hold size, working hours and number of employees on food expenditureat aggregate as well as disaggregate level. Income of household is a major determinant of food expenditure while other socio-economic variables have a very small impact on food expenditure.

Chapter 1

Introduction

Pakistan is basically an agrarian country and developing country has been ranked as six most populous country in the world (U.S census 2008). Pakistan has been ranked on 145th position out of 187 countries which is very low (UNDP, 2011).

In Pakistan agricultural sector play a role as a vertebral column in economy it contribute 23% to GDP, and engage 42% of total work force in this sector. This sector also sometime contributes to exports earnings [Alam (2008)].

Pakistan is the 12th largest producer of rice, 4th largest producer of cotton, 5th largest producer of sugarcane and 9th largest producer of wheat among the top producer of the world as per statistics of fiscal year 2005. [Memon, *et al* (2008)]. Despite the fact that Pakistan is an agrarian country, it remains net importer of many agricultural products and its 74 districts are food deficient (WFP, SDPI 2003). Over the past two decades many changes have beenoccurring in the world economy as well as in Pakistan economy.

The food consumption patterns are changing but there are several factors which have caused changing in the consumption pattern of food among the most important is the growth in income, the growth in income has cause to shift in the consumption patterns and this income consume to more expensive food commodities during the latest decades. (Arshad and Haq 2010).

There are some other factor which have a great influence on the consumption of foodlike price changes, size and composition of household, number of earning

hands in family, educational level, geographical cultural and climatic conditions of the region, lifestyle of the people etc., and these changes in consumption pattern of food show that the status of welfare of the people. In 2008 increase in international price for basic food items, have increased the risk of food insecurity and poverty in all developing countries, including Pakistan (ADB, 2008, FAO, 2008).

Poor people can be extremely suffer during the coming four years if this price trend continues and no action has been taken by the government to replenish their purchasing power (BNU, 2008). In this case there are many chances of massive school dropouts, child mortality and malnutrition (UN, Inter Agency mission assessment, 2008).

The FAO define the food security "to ensure that all people at every time have economically and physical access to the basic food which they need".

First priority of poor people is food they spend all of their money on food consumption. In poor countries major portion of income people is normally consumed on kitchen expenditures while in rich countries people of truly spend their money on non-food items and other services. In our country a difference exist on food expenditure and other services between different income groups and is also differentiated on the basis of rural and urban areas.

A part from price and income effects, few other structural factors are very crucial in measuring the food consumption basket of households of a country.

Urbanization is the main cause of structure shift in food consumption (Hnang and Bious, 2001).

According to Huang and Bious, these shifts in consumption are the changes in preference structure due to the structure transformation of societies.

Over the past two decades Pakistan economy has faced many several changes. In the South Asian countries, Pakistan is the fastest urbanizing country in2030, its urban population may equal to the rural population (UNFPA, 2007).From 2000 onward the economic growth increase by resulting in new job opportunities. A huge number of people migrated to urban areas in order to avail the new job opportunities in industrial and service sectors. Due to this structural shift consumption pattern changes over time.

The quality of net buyer is increasing due to the cause of increase world population and urbanization. To provide food to rural and urban dwellers and to overcome the demand patterns, changes in land use and irrigation water is inevitable (Matuschke, 2009).

To analyse or investigate the consumption basket of households over a long time is very important in order to find out those factors which pave the way to cover for such changes, it is very necessary to measure demand elasticity's which explain the level of demand of individual consumer given the structure of relative price, individual characteristics and real income (Mittal, 2006).

Therefore many researchers haveanalysed the household food consumption pattern in Pakistan. These studies are different with each other not only in their

scope, but also have a different in data sources and time period for which the data has been analysed. Most of the studies have used time series data and cross section data. Majority of them have used single equation for estimation (Ali, 1981) (Siddique, 1982) have tested the conformity of Engels law (Malik and Ahmed, 1985) (Malik et al, 1987) these studies are use at least old decade data (Haq et al, 2011) haveanalysed food demand pattern of Punjab (Safia et al, 2010) also haveanalysed the food consumption pattern for district Nowshera, (Hina and Kanwal, 2012) estimates the consumption patterns of Pakistan to test the validity of Engels law.

Recently the researcher have carried out empirical research on food consumption patterns keeping in view the developments in the field of health care in order to raise awareness among the masses regarding healthy and balance diet. Rapid increase in population growth rate directly influence the food consumption pattern and also effect the food demand in least developed countries (IBRD). About two third population of Pakistan lives in rural areas and face a lotof problems in attaining daily basic food.

Keeping all this in view, the current study aims to estimate the food consumption patterns in Pakistan keeping in view the socioeconomic factors affecting the food expenditures inPakistan. This study also aims toanalyse the changes in food expenditures pattern in Pakistan.

1.1 Significance of the Study:

The purpose of all developments is to improve living standards of the people by meeting their consumption needs. The best satisfaction and fulfilment of basic needs of the people would necessitate increasing the national product. Sustenance or ability to meet basic needs of people is one of the major core values of development. This can be materialized, among others, through raising income level of the people. This in turn may improve the education and health level of the people. Food security plays an important role in this regard. Because better health requires balanced food. It has therefore important policy implication for the policy makers.

This study was therefore aimed at to study the effect of socio economic factors of food consumption expenditures in Pakistan. The consumption of food and their determinants were the main focus of the study. This piece of research will be an addition to the existing stock of knowledge regarding the analysis of socio economic factors of food consumption expenditures pattern. The finding of the study and suggestions offered by this research attempt may help the policy makers in poverty alleviation, which is a big challenge for the developing nations. The conclusion drawn will provide the background information to be used as a basis for further research and for future policy recommendations by the planners.

1.2 Objective of the Study:

The main objective of the study is to determine the effect of socio economic factor on the food expenditures pattern in Pakistan.

To analyse the changes of Household food expenditures pattern in rural and urban regions of Pakistan.

1.3 Organization of the Study:

This study is comprised of five chapters. First chapter describes to topic and also explain background of the study. In the second chapter all the relevant literatures have been reported and gap in the literature has been found. Third chapter discusses data materials and methods of the study. Fourth chapter analyse the data and discus the results. Fifth chapter finally devoted to the findings, summary conclusion and recommendations.

Chapter 2

Literature Review

This chapter is divided into two sub sections. In section 1 we have cited the international studies focusing on food consumption and expenditure pattern. In next section a quick review of the food consumption patterns with reference to Pakistan has been made details of both of the sections are as follow .

2.1International Studies:

To investigate the effect of socioeconomic factors having direct and indirect effect on food pattern and diet status of children under age of five Abdalla et al. (2013) carried out a study for three villages of Gadarif state, Sudan. For this purpose they used secondary analysis of 150 children data. Most of the villagers were either farmers or workers. A semi-structured questionnaire was used to interviewed the mothers, about the social norms affecting both mother and child's diet and health status and information regarding socioeconomic status of the household was also collected. From the results they concluded that poor knowledge of mother regarding nutrition; low socioeconomic and demographic factors were main causes of poor health issues among infants. They recommended that maternal education, infrastructure improvement are required for maintain children's nutritional status in the region.

Akira *et al.* (2003) study the change in food consumption expenditure in Malaysia. They measure consumption through Engel equations for food items using household expenditure survey data. Results show that the consumption pattern diversified with increase in incomeland. The elasticity of food at home is

relatively high for expenditures of milk, and dairy products, fruits vegetables and meat.

Allan (1999) estimated food and dietary pattern in urban households, using household survey data for Indonesia purpose of the study was to measure the importance of socioeconomic variables which explain the differences in consumption patterns and nutrition. Results show that the role of women education plays a great role in household expenditures.

To check the impact of socioeconomic and demographic factors effect on food away from home for United States, Byrne and Capps (1996) made a study for this purpose. The investigate the impact on food away from home and marginal effect and elasticity were estimated by using inverse Mill's ration and Probit estimation technique. From the results they deduced that income is having significant positive impact on consumption of food away from home. From the results they also concluded that this phenomenon of consumption of food away from home is mostly common among the households of Midwest and South as compared to the Northeast part of US. They also revealed that the behaviour of consumption of food away from home is more common among White group of people as compared to Black race people. They found from the results deduced by using Probit model technique that expenditure elasticity's were positive and less than one.

Biouset *al.* (1996) examined changes in demand for food for Taiwan, using cross section data for 1981-91 disaggregated by urban and rural areas by occupation. They concluded that demand for food was influenced not only by increase in

income and price, but it also depends on improvement in standard of living of the people. They also determined that demand for food is dependent on advance marketing and occupational changes.

Beydoun*et al.* (2007) observed the effect of socioeconomic status on diet quality of fruits and vegetables intake among US adults and its effects on modification by nutritional knowledge. Cross sectional data survey of food intake by individual on 4356 US adults aged 20-65 years is used for the analysis. Socioeconomic variables used in the study are education and poverty income ratios. The results show that for the improvement of overall diet quality, socioeconomic intervention must be connected with health education programs targeting all segments of the US population.

Davis *et al.* (1983) explore the impact of socioeconomic characteristics on aggregate food expenditure for raciallydifferent low income households. Double logarithm functional form is used to explain the response of household food expenditure to socioeconomic factors. Household income, family size and food stamp program have a significant positive impact on food expenditure. They also argue that nutritional knowledge of the homemaker increased the efficiency of food purchasing activities.

Dennisuk*et al.* (2011) discuss food consumption and expenditure behavioursof low income American youth and Urban African using primary data. Result show that youth purchase soda, candy and chips items 2.5 times per week on average older age spent most of their money on food as usual.

Estevez *et al.* (2000) examined the differences in the consumption of vegetables and fruits among different groups based on socioeconomic status in the adult population of European countries.Survey data for food habits conducted for the year 1985 to 99 in 15 European countries has been used for the analysis. Result show that higher socioeconomic status is associated with greater consumption of both fruits and vegetables while unhealthier nutrition pattern may exist among adults belonging to lower socioeconomic level.

Hiu-Liau and Wen S-Chern (2007) estimate dynamic analysis of food demand patterns in urban china.Dynamic and ideal demand system has been employed in the study. The results show that the habits and demographic factors effects food demand pattern in urban China.

Knostantines et al. (2009) studies the effect of socioeconomic status (SES) effects on food consumption patterns and human health. Result showssignificant relationships among socioeconomic status, dietary habits and health.

Holcomb et al. (1995) did a study for United States to assess the household expenditure pattern of total food consumption at home and total food away from home. They incorporated four estimation techniques: Working-Leser Model, Semi-Logarithmic Model, Double-Logarithmic Model and Quadratic Expenditure Model. They found from the results of Working-Leser model that total food consumption, food consumption at home and food taken away from home were statistically negative and significant, whereas, the entire three consumption patterns were statistically significant and positive for semi logarithmic, double

logarithmic and quadratic techniques. They also found that income elasticity for consumption less than one confirms the accuracy of Engel's law. They also found that taken away food from home is affected by income.

Jain and Subramanian (1999) analysed the shifts in consumption pattern over time for major food grains and attempted to measure the level of inequality in consumption on rural and urban areas of the India Punjab. The study used National Sample Survey data for 1972-73, 1982-83, 1987-88 and 1993-94. The study indicated a decreasing inequality in urban areas and increasing inequality in rural areas, both for major food and non-food items.

Leenese*t al.* (2010) examine the patterns of food consumption for 57 countries for the 2001. They argue that when GDP increase the consumption pattern changes which result in gap between supply of food items and actual consumption. Consumption of fats in low income countries was small while in high income countries people consume nutritious food gaining energy from fats, dairy products and meat. They observe that food consumption pattern changes similar in that direction as economic growth.

Meenakshi et al. (1999) analysed India's food expenditures in consumer preferences and consumer price. They analysed state level data, which was estimated separately for rural and urban areas. Using a complete demand systems framework, they used demographic information on the number of adults and children in the household, along with economic variables, namely price and aggregate expenditure, to explain the observed differences in household's expenditure on principle food items. Household composition was found to be an

important determinant of consumption, although the nature of demographic impact varied across regions.

In order to investigate the impact of socioeconomic and demographic factors effect on 10 food items consumption for United States Nayga (1994). He employed Ordinary Least Square (OLS) and Weighted Least Square (WLS) techniques for his study. OLS was used to estimate the consumption analysis of vitamin A, whereas, WLS techniques was used to assess the demand pattern for the rest of the nutrients. He found that the socioeconomic variable impact on household demand pattern is significant. From the results he also deduced that households located in the Western part of US is consuming less food energy, iron, protein, thiamin and niacin, however this part of US was consuming greater amount of calcium and vitamin A as compared to the Southern households. According to his findings vitamin A and C and calcium consumption is very much affected by income. He said that income elasticities was relatively little for poor as compared to rich household.

Salama (1995) reported that the consumption patterns of food groups in Egypt were formulated and expenditure patterns in the context of Egypt economic policy were examined. Results indicates that food budget share, propensities to consume and expenditure elasticities were higher in rural than in urban areas. The expenditure elasticities of demand for all food groups apart from fruit and milk were less than one and statistically significant. Demand for food in Egypt was still not being met by supply. The rate of increase in food consumption was dependent

on household size and population growth. Socioeconomic and national population programs should be implemented simultaneously.

Tozanli (1995) reported that Turkey, one of the agriculturally self-sufficient countries of the world, exhibits important social and regional disparities concerning the distribution of this agriculture wealth. Despite the fact that a socio-cultural transformation was taking place especially in the urban areas, the low-purchasing power of the majority of the population created an important obstacle to the positive evolution of food consumption patterns. Low-income urban household as well as the rural population continue to have a traditional Mediterranean consumption pattern while wealthy urban dwellers tend toward a western pattern. Economic growth negatively affects the development of Turkish food industries.

Thang and Popkin (2004) examine food consumption pattern in Vietnam for the year 1990 for vulnerable groups in rural areas i.e.ethnic minority, poor and non-poor groups in urban areas. Vietnam living standards surveys (VLSS) data is used for the analysis. The results show that the vulnerable population group improve in diet taking but still there is inequality remains between these two groups. Specifically the vulnerable group consume less protein food like dairy product, fats and cereals.

Ozer (2003) observe consumption patterns of major food items in Turkey. The result show that larger portion of budget is spend on fruits and vegetables while household spend less proportion of their budget on poultry, meat and fish and different processed food products.

Pradumanet.al (1996) examined changes in the food consumption pattern in India and decompose the change into price, income and non-price (structural shift) effects. The analysis used National Sample Survey date in 1997 and 1998, disaggregated by income group and rural and urban areas. The study indicated that the structural change in food demand overtime within rural and urban areas were substantial. In addition, to structural change, price effect on food demand was substantially higher than the income effect. Structure shifts accounts for most of the decrease in food grains consumption over time.

Popkin (1997) study the nutrition transition and its effect on health in lower income countries. The data has been collected from different sources for different countries. He argue that rapid Urbanization and changes in occupation is the basic reason behind changes in the structure diet and its directly affect the health of adult and cause of obesity in Asia and Latin America.

Regmi et al. (2004) analys the cross country consumption patterns. The result show that people of high income countries people spend 16% of their income on food while people of low income countries 55%spend of their income on food.Because low income countries people are more responsive to change in income and food price.

Riedigeret *al.* (2007) conducted a study for Canada.To know the impact of socio-demographic variables that as household income and education level, standard of living and age on the consumption of food and vegetable pattern. Result show that household income, education level; standard of living and age have a

significant positive impact on fruit and vegetable consumption in Canadian community.

Salvanes and Devoretz (1997) carried out a study to determine the demand pattern of fish and meat for household sector of Canada. They also employed demographic characteristics of household in their study. They developed three different scenarios. In scenario-I they used four commodities, in scenario-II they used six commodities whereas, in scenario-III they used eight different commodities. For their analysis they used Linear Approximation of An Almost Ideal Demand System (LA/AIDS). On the basis of the results they concluded that won price elasticity's were negative whereas the cross price elasticity's were positive. According to the results they also found that expenditure and cross price elasticity's were significant at one per cent of significance.

Salathe and Buse (1980) examine the food consumption pattern in the United States (US). The result shows that socio factor and demographic factor having a significant impact on consumption pattern of food because the people of North East household consume more food as compare to the people of South East. Female children consume less food, vegetable, fruits and beef as compare to the middle aged women consume more dairy products and grains.

Smith (2000) analyzed the relationship between male and female education level on food consumption patterns in Chinese household for the year 1991. The objective of study is to observe that either an increase in the level of education has any impact on the consumption of different foods or not. Study observe that female education has a positive impact on nutritious and preferred foods. Result

further reveal that level of education has a direct relationship with food consumption pattern and it also effect the demand for different foods.

Atnan*et al.* (2014) study the impact of socioeconomic and cultural factors on vegetable consumption behaviours. A survey of 200 respondents has been conducted. The result show that an increase in the budget allocated for vegetable have also increased the purchase of vegetables.

Wandel*et al.* (2007) investigated the changes in food habits of South Asians migrants settled in Oslo. Using multivariate regression model for the statistical analysis of the data. The result reveal that age factor is negatively related to the consumption of butter and margarine. Level of education has negative relationship with the consumption of oil and butter. They also find that demographic and sociocultural factors have an impact on consumption of migrant's food habits but some of these changes in food consumption may have real health implications.

Worako (2009) investigates the changes in consumption expenditure in urban Ethiopia. Household survey data two rounds 1994 and 2004 from the Ethiopian urban household survey for ten food categories have been used. The Working-Leser Expenditure Share model was used to estimate income elasticity of demand and determinants of urban household consumption for Adisbaba and six major towns. The result show that decomposition of per capita consumption into different demographic and economic factors confirm that urban household

consumption pattern shift from staple food grains to non-staple high value food products.

2.2 Studies With Reference to Pakistan:

Burki (1997) investigated the consumer preference for eight food items in Pakistan using household integrated economic surveys data from 1972-1992. He analyzed that structural change can be occur in consumer preference due to the changes in tastes. The results revealed that after the 1982 consumer demand changes from gram to chicken.

Burney and Khan (1991) analyzed the consumption patterns in the urban and the rural sectors of Pakistan using the household level data for the year 1984-85. The results indicate that as the level of income increases the share of food and drinks in total household expenditure decline in both urban and rural sectors, this support the validity of Engel law. Majority of the commodity groups both structural and behaviour differences in the consumption patterns were found to exit between the rural and the urban households.

Cheema and Malik (1985) examined the changes in the pattern of consumption and employment under alternative income distribution in Pakistan. Using the data for the year 1979 HIES. The results reveal that when income distribution will be are in the favour of lower income groups the demand for basic necessities increase. The result also shows that the consumption pattern of the poor household can be increase within the redistribution of income and it has no greater effect on rich household.

Eatzaz and Muhammad (2007) analyze household budget for Pakistan under carrying the parameter approach. They use micro level data for rural and urban areas. The results show that flexibility produce various patterns of changes and categorize the good into necessities and luxuries through ranges.

Farooq*et al.* (1999) investigate the household's response in terms of their consumption for six food items to changes in prices of food, income and the age composition of the household in Punjab Pakistan. Linear Expenditure System, An Almost Ideal Demand System (AIDS) and Complete Demand System are used for the estimation purpose. It is observed that paddy and wheat are gross complements; pulses and meat are gross substitutes, dairy products and meat are luxuries and all own price elasticity's of all food item is negative and significant.

Habib*et al.* (2013) observe nutritional pattern and its impact on the health. A case study of Tehsil KotAddu Punjab has been carries out and study base on primary data. The results of the study show that balance diet is the cause of high rate of life expectancy and fast food also have a directly impacts on health.

Haq*et al.* (2011) estimate food demand pattern for Punjab in Pakistan using household integrated economic survey data. The result show that rural and urban household headed by literate person consume more food products except wheatand vegetables, and those household which are head by a person involved in agricultural as a profession consume more food products except wheat.

Hina and Kanwal (2012) observe consumption pattern of different commodities in Pakistan and analyze the impact of percapita income consumption of different

income group in Pakistan on consumption pattern. Poor household consume more on necessities and rich people consume more on luxuries as income increases.

Mudassar*et al.* (2012), estimated the consumer demandof major food items in Pakistan for the year of (2007-08). Consumer demand has been estimated using (LAAIDS). Result of the study reveal that price elasticities are negative for all included food stuffs and their absolute values are lower than unity except for mutton and fish in rural areas. The expenditure elasticities indicate that fish isa luxury good for rural areas and mutton both for urban and rural areas.

Malik (1987) analyzedthe entire data generated through HIES from 1963-64 to 1984-85. Almost ideal demand is used to determine the possibility of pooling rural and urban data to get overall estimates for different commodity groups in different areas. The results verified Engel's Law which indicate that a decline in marginal food expendituresoccure as income rises and consistency in marginal expenditures on clothing, footwear, fuel and lighting has been observed.

Nadeem *et al.*(1991) analyse the household consumption pattern and make a comparison for the rural and urban areas of Pakistan for the period of 1984-1985. The study find that is the level of income increase the share of food and drinks in total household expenditures declines in both the urban and rural household. Study findings are complete in line with the Engle's law. Result show that the differences in the consumption patterns of the urban and the rural household represent the structural as well as behavioural differences.

Noreen (2002) conducted a study related to determine the food consumption pattern in Peshawar valley. Area of the study comprises two settlement of district Peshawar. Fifty respondent households are selected randomly from each research area. Statistical analysis show that the price of food commodities is negatively correlated with the consumption whereas household income and size are positively correlated with the consumption of various food commodities. The result also reveal that with the increase in household income, superior food commodities (meat, food and milk) replaced the inferior food commodities (vegetable and pulses).

Rashida and Nabeela (2009) investigate the welfare by food expenditure component using the data of HIES for 2005-2006. Results show that aggregate welfare depend on price changes they also observed that food items except dairy products are most progressive expenditures and people spend greater portion of their income on food.

Rubina (1999) reported the differences in frequency of food consumption and nutrient intake of urban and rural Pakistani children belonging to the province of Punjab. A number of 180 school children aged 10 to 12 years were being kept under record. It was concluded that although the macro-nutrient consumption pattern of rural children appeared to be heart healthy but lower consumption of protective macro-nutrients by them might put them at risk. In view of rapid urbanization and its multidimensional impacts on health of the population living in the urban areas of the developing world, these dietary trends provided baseline information for health professionals.

Salma *et al.* (2012) analyz the behavior consumption function of household for the area of WahCantt using primary level data. The results show that consumer prefer both quantity and quality in their consumption decision.

Shahnawaz and Aziz (2010) investigated consumer demand for meat group using time series data for Pakistan from 195-51 to 2003-2004. Result show that consumer demand for meat can be affected by prices and income level of household.

Sofia *et al.* (2010) investigate the socio economic factors affecting food consumption pattern in rural area of district Nowshera. Results show that majority of food commodities being consumed show a positive response toward house hold size and total monthly income. Therefore, it is imperative for policy makers to plan to improve food availability and to increase family income to enhance quality of rural life.

Siddique (1982) explore the level of consumption in Pakistan. Data being taken from the HIES (1968-69) is used for the analysis. Aim of the study is to test the validity of Engel's law in case of Pakistan. Results show that Engel's law is contrary in case of Pakistan's for clothing housing and lightening and fuel. Urban household's consumption patterns change from staple food to non-staple food and the demand for high value food product increase while on other side demand for cereals and pulses decreases. Food consumption pattern will effect the domestic food market because it can't meet increasing demand for high value food items.

2.3 Conclusion

In this section we have cited studies with reference to Pakistan. All these studies have been conducted for different areas and for different periods. The objectives of the studies are different from one another. The gap we found in the literature is that the researchers have ignored the impact of socioeconomic factor on the food expenditures pattern. So focus of our study will be to investigate the effect of socioeconomic factors of food expenditure patterns among the provinces in Pakistan.

Chapter 3

Theoretical background

In order to observe food consumption pattern and its factors, it is beneficial to initiate with analysis of economic theory of household. In a standard theory of consumers, consumers use their resources (e.g. skills, labor, equipment's and land) to get the highest level of utility. The choice of decision could be determined through the income level, market prices and preferences (Smith, Minot 2005).

Priorities and Preferences are also effected by the structure and compositions of household its members, education level, cultural habit, knowledge, personal experience, culture norms and also biological factors which affect hunger.

Consumer's preferences depict the choice of consumer of what to consume or not to consume. Poor household's first priority is to get rid of hunger. The only choice they have is to access cheap energy sources e.g. staples and grains. After the satisfaction of basic needs, poor household will diversify their diet including dairy products, fruits and vegetables etc.

3.2 Engel Law

Ernst Engel introduces economic theory which describe that when income of household increases the ratio of food consumption expenditure does not increase at the same proportion. In fact food consumption expenditure decreases. The Budget share of Ernst Engel curve show that share of household expenditure on food item changes with the variations in income occur.

Engel curve of a commodity show its income elasticity and depict that whether a particular good is a normal, good, inferior good or luxury good (Chai 2010).

The Houthakker (1957) describes that variation in household size has comparatively greater effects on the consumption of several commodities. The coefficient of size of household indicates the effect of economic of scale in food consumption larger household. Houthakkar explain the Household coefficient size depicts specific effect and the other is income effects. The specific effect Increase in household size leads to an increase in the choice of commodities to consume but the proportionate increase of household size is greater than proportionate increase in need. The income effects denote those effects which s caused by increase in the income of household.An overview in decrease income items of Per capita income. When the specific effect dominates over the income effects the coefficient of household size is positive and otherwise negative.

Our study includes sociodemographic factors or characteristics of Households for the analysis of demand which depend on the same Household economic theory. This study analyses the variation of food consumption expenditures among the rural and urban residents having different age, size and consumption of household and evaluates the relationship of food expenditure on general educational level and nutritional knowledge.

Chapter 4

Data and methodology

4.1)Material and Methods

This chapter consists of the research tool which is use to analyse and study the relationship between income and portion of income been spent on food consumption. This chapter deals with the methods and materials use for the analysis of data andbecause it is the requirement for the fulfilment and facilitating the set of objective of our study.

4.2) Study Area

Pakistan and its four provinces constitute the areas of this study. Since this study analyse the consumption expenditures patterns of urban and rural areas of four provinces. Therefore Pakistan and its four provinces is purposively selected where the first is urban and the second is rural area.

4.3) Sources and Nature of data

The data for our study have taken from the PSLM and HIES survey 2011-12 which is conducted by the FBS, Govt. of Pakistan Islamabad. This survey is based on a national sample which covers all urban and rural areas of four provinces of Pakistan and a part from restricted military and forces areas of these provinces. This study uses urban area household sample is 6690 while sample of rural area contain 9840 HIES 2011-12 due to missing and unreported values for 22 Household.

4.4 Methodology and Variables

We are using double logarithmic function also known as log-log function. Some of the reasons of using this methodology are as follows:

1. It superior to widely used classical forms.
2. This function is simple in use and a good alternative of Box-Cox model.
3. This function is very useful in estimation of elasticity's at sample means (Blaylock and Green, 1980).
4. The results provided by double logarithmic function are easy to understand and interpret.
5. The double logarithmic function gives more plausible classification of expenditure associations between the household types (Hassan and Johnson, 1976).

4.5 General form

General form of log-log (double-log) model is as follows:

$$Y_i = f(X_{1,i}, X_{2,i}, X_{3,i}, X_{4,i}, X_{5,i}, X_{6,i}) \quad (1)$$

Specific Form of the Model

In case of overall Pakistan and its urban-rural regions, we have estimated the following model

$$Y_i = \alpha_0 + \beta_1 X_{1,i} + \beta_2 X_{2,i} + \beta_3 X_{3,i} + \beta_4 X_{4,i} + \beta_5 X_{5,i} + \varepsilon_i \quad (2)$$

$$Y_i = \alpha_0 + \beta_1 X_{1,i} + \beta_2 X_{2,i} + \beta_3 X_{3,i} + \beta_4 X_{4,i} + \beta_5 X_{5,i} + \beta_6 X_{6,i} + \varepsilon_i \quad (3)$$

Where in equation (2) and (3) the variables are

Y_i = Log monthly food expenditure of a family (Rs.)

$X_{1,i}$= Log of monthly household income (Rs.)

$X_{2,i}$= Household size (family members)

$X_{3,i}$= Hours of work of a household.

$X_{4,i}$=No. of employee of a household.

$X_{5,i}$= dummy variable, its value equals to 1 when family head is educated and 0 otherwise.

$X_{6,i}$=Dummy variable for Urban/ Rural, its value equal to 1 when Urban and 0 otherwise.

ε_i=Error term

We use the method of Ordinary Least Square (OLS). For estimation SPSS software is use for estimation purpose.

Chapter 5

Results and Analysis

We have hypothesized that the socio-economic determinants have significant effect on household food expenditure in case of disaggregate level in Pakistan. The estimated results of equation (1) for Pakistan are given in table. We estimate the equation (1), but the coefficient of dummy variable of education of head of family was statistically insignificant at conventional level of significance so we drop this variable from equation.

Table:1 Estimated results for Pakistan

Variable	Coefficient	S. E	P-Value
Constant	2.0289	0.0164	0.0000
$X_{1,i}$	0.4433	0.0045	0.0000
$X_{2,i}$	0.0259	0.0005	0.0000
$X_{4,i}$	0.0002	0.0000	0.0000
$X_{5,i}$	0.0018	0.0008	0.0264
F-Stat	5738.108		0.000
R-Square	59%		
Dependent variable Y_i= log food expenditure			

We exclude the dummy of education from our final mode. From the results of table (1), all the variables have significant effect on the consumption of a family/household. Log family income is the main source of family food expenditure. The sign of estimated coefficients are according to the theory. If there is 100 % change in an income of a family then on average the food expenditure will increase by 44%. Similarly, if the family size gets doubled, the food expenditure will rise only by 2.5%. Hours of work and number of employees have significant impact on food consumption of a family but their estimated coefficients are very small. The value of R-square is about 59% means that these variable only 59% contribute to the variation in dependent variable.

We also estimate the equation (1) at disaggregate level (province level). The results are presented in table 2, 3, 4 and 5. Again family income is a main determinant of family food expenditure. We almost observed same pattern in all the four provinces of Pakistan. People of Punjab spend more of their income on food, then Sindh, Khyber Pakhtunkhwa and Baluchistan respectively.

Table: 2 Estimated results for Punjab

Variable	Coefficient	S. E	P-Value
Constant	1.8212	0.0269	0.0000
$X_{1,i}$	0.5003	0.0075	0.0000
$X_{2,i}$	0.0219	0.0010	0.0000
$X_{4,i}$	0.0005	0.0001	0.0000
$X_{5,i}$	-0.0025	0.0014	0.0745
R-Square	56%		
Dependent variable Y_i= log food expenditure Province Punjab			

From table 2, we can see that all the variables are significant and the sign of coefficients of all the variables are according to the theory of food expenditure which we have observed for aggregate level except for the number of employees. If income increases 100% then on the average food expenditure increased by 50%. Similarly, if the household doubled then the food expenditure is increased by 2.1% for Punjab. Also, the impacts of number of hours working have a significant impact on food expenditure. The numbers of employees have insignificant impact on food expenditure for the province of Punjab. Food expenditure for the province of Punjab is explained by 56% by all the independent variables.

Table: 3 Estimated results for Sindh

Variable	Coefficient	S. E	P-Value
Constant	1.8761	0.0257	0.0000
$X_{1,i}$	0.4848	0.0070	0.0000
$X_{2,i}$	0.0222	0.0008	0.0000
$X_{4,i}$	0.0002	0.0001	0.0130
$X_{5,i}$	0.0068	0.0018	0.0002
R-Square	70%		
Dependent variable Y_i= log food expenditure Province Sindh			

Table 3 indicates the food expenditure results for Sindh Province, here we can observe that all the variables are significant and sign of all the coefficients of variables are according the theory of food expenditure. The results of table-3 are according to aggregate level of Pakistan which we have observed early in table-1. If income variable increased by 100% then food expenditure increased by 48%, moreover income variable has a highly significant impact on food expenditure. A 2.2% increased can be observed in food expenditure if a family size is doubled, also family size variable is highly significant. Both, the number of working hours and number of employees have a significant impact on food expenditure and have a very small coefficient for disaggregate level. For the province of Sindh a 70% of variation is explained by all independent variables in to the dependent variable (food expenditure).

Table: 4 Estimated results for KPK

Variable	Coefficient	S. E	P-Value
Constant	2.4650	0.0363	0.0000
$X_{1,i}$	0.3228	0.0100	0.0000
$X_{2,i}$	0.0311	0.0011	0.0000
$X_{4,i}$	0.0003	0.0001	0.0030
$X_{5,i}$	0.0032	0.0014	0.0178
R-Square	54%		
Dependent variable Y_i= log food expenditure Province Khyber Pakhtunkhwa			

Table 4 shows the disaggregate level results of food expenditure for the province of KPK. We get the same results that we have observed for the aggregate level. All the coefficients have a significant impact of food expenditure and the sign of their coefficients are according to the theory. First, if the income of a family is increased by 100% then the food expenditure is increased by 32% and this variable has a very significant impact. If the house hold size is doubled then food expenditure is raised by 3.1%. Household size has a highly significant impact on food expenditure. Similarly, the impact of number of working hours and number of employees are significant but have a very small impact on food expenditure of household. The results of table-4 are according to the aggregate level for the food expenditure. Here a 54% of variation is explained by all independent variables in to the food expenditure for the province of KPK.

Table:5 Estimated results for Baluchistan

Variable	Coefficient	S. E	P-Value
Constant	2.6597	0.0363	0.0000
$X_{1,i}$	0.2869	0.0100	0.0000
$X_{2,i}$	0.0274	0.0011	0.0000
$X_{4,i}$	0.0000	0.0001	0.0030
$X_{5,i}$	0.0073	0.0014	0.0178
R-Square	66%		
Dependent variable Y_i= log food expenditure Province Baluchistan			

The results of table 5 are also according to the theory of food expenditure and have same results as we have observed for the aggregate level. All the variables of table5 are significant. If income of a house hold is increased by 100% then their food expenditure is increased by 28% which has a very significant impact on food expenditure. If the household is doubled then food expenditure is increased by 2.7% for disaggregate level and its impact is very much significant. Lastly, the impacts of number of hours and number of employees have a significant impact on food expenditure but its significance is very small. A 66% of variation is explained by all independent variables in to the dependent variable for the province of Baluchistan.

Table: 6 Estimated results for Pakistan with Rural/Urban

Variable	Coefficient	S. E	P-Value
Constant	1.8330	0.0190	0.0000
$X_{1,i}$	0.4773	0.0048	0.0000
$X_{2,i}$	0.0247	0.0005	0.0000
$X_{4,i}$	0.0002	0.0000	0.0000
$X_{5,i}$	0.0011	0.0008	0.0441
$X_{6,i}$	0.0489	0.0025	0.0000
F-Stat	4780.578		0.000
R-Square	78%		
Dependent variable Y_i= log food expenditure			

Table-6 shows the results for the aggregate level with a dummy variable of rural/urban. It can be observed from the table that this dummy variable has a highly significant impact on food expenditure and its coefficient sign is according to the theory. Income, household size and number of working hours have a significant impact on food expenditure for aggregate level when we induce a rural/urban dummy variable. But the impact of number of working hours on food expenditure is significant for aggregate level with a rural/urban dummy variable. Rural/Urban variable indicate that the food expenditure of a family who live in urban area is 4.8% more as compare to the rural area. R square is 78% which has been increased by inducing rural/urban dummy variable as compare to the R square when there is no dummy of rural/urban.

Table: 7 Estimated results for Punjab with Rural/Urban

Variable	Coefficient	S. E	P-Value
Constant	1.5791	0.0321	0.0000
$X_{1,i}$	0.5435	0.0080	0.0000
$X_{2,i}$	0.0205	0.0010	0.0000
$X_{4,i}$	0.0004	0.0001	0.0000
$X_{5,i}$	-0.0030	0.0014	0.1309
$X_{6,i}$	0.0572	0.0042	0.0000
R-Square	58%		
Dependent variable Y_i= log food expenditure Province Punjab			

Table-7 shows the results of disaggregate level from the province of Punjab. All the variables are significant and the sign of their coefficients are according to the theory except for the number of employees which is insignificant. Again the impact of income, household size, number of working hours and dummy variable of rural/urban are significant as we have observed for the aggregate level. Dummy variable of rural/urban shows that a family who live in urban area spent 5.7% more on food expenditure as compare to a family who live in rural area for the province of Punjab. R square indicates that 58% of the variation has been explained in dependent variable by all the independent variables.

Table: 8 Estimated results for Sindh with Rural/Urban

Variable	Coefficient	S. E	P-Value
Constant	1.6486	0.0305	0.0000
$X_{1,i}$	0.5266	0.0076	0.0000
$X_{2,i}$	0.0213	0.0008	0.0000
$X_{4,i}$	0.0001	0.0001	0.1798
$X_{5,i}$	0.0067	0.0018	0.0002
$X_{6,i}$	0.0515	0.0039	0.0000
R-Square	70%		
Dependent variable Y_i= log food expenditure Province Sindh			

Table-8analyze the results of disaggregate level for the province of Sindh. Here we can observe that all the variables are significant and contributing well except for the number of working hours. All the variables have a significant impact on food expenditure of house hold. A family who live in urban area spent 5.1% more on food expenditure as compare to the rural area in the Sindh province. For the province of Sindh a 70% variation has been explained by independent variables to the dependent variable of food expenditure.

Table: 9 Estimated results for KPK with Rural/Urban

Variable	Coefficient	S. E	P-Value
Constant	2.3267	0.0305	0.0000
$X_{1,i}$	0.3430	0.0076	0.0000
$X_{2,i}$	0.0298	0.0008	0.0000
$X_{4,i}$	0.0003	0.0001	0.0098
$X_{5,i}$	0.0022	0.0018	0.0002
$X_{6,i}$	0.0432	0.0039	0.0000
R-Square	54%		
Dependent variable Y_i= log food expenditure Province Khyber Pakhtunkhwa			

Table-9 shows the results of disaggregate level for the province of KPK when a dummy variable of urban/rural is induced in the model. Again, all the variables have a significant impact on food expenditure for KPK province. A dummy variable of rural/urban for the province of KPK shows that a family who live in urban area spent 4.3% more on food expenditure as compare to the family who live in rural area. A 54% of variation has been explained in dependent variable by all independent variables for the the province of KPK.

Table: 10 Estimated results for Baluchistan with Rural/Urban

Variable	Coefficient	S. E	P-Value
Constant	2.5003	0.0501	0.0000
$X_{1,i}$	0.3105	0.0131	0.0000
$X_{2,i}$	0.0268	0.0012	0.0000
$X_{4,i}$	-0.0001	0.0001	0.4169
$X_{5,i}$	0.0076	0.0030	0.0115
$X_{6,i}$	0.0486	0.0058	0.0000
R-Square	68%		
Dependent variable Y_i= log food expenditure Province Balochistan			

Table-10 analyze the results of disaggregate level for the province of Baluchistan when a dummy variable of rural/urban is included in the food expenditure model. Again, all the variables are having significant impact on food expenditure except for the number of working hours for the province of Baluchistan. Their signs are according to the theory of food expenditure. A dummy variable of rural/urban indicates that a family who live in urban area spent 4.8% more as compare to the family who live in rural area for the province of Baluchistan. A 68% variation in dependent variable of food expenditure is explained by all independent variables for the province of Baluchistan.

Chapter 6

Conclusion & Recommendations

Purpose of this study is to check that the socio-economic determinants have significant effect on household food expenditure in case of aggregate and disaggregate level in Pakistan. Food expenditure is dependent variable while Income, Household size, education of family head, number of working hours and number of employees in a house hold are taken as determinants of food expenditure. At disaggregate level we estimate the model for each province. To investigate the difference of food expenditure between rural and urban we introduce a dummy variable which takes value "1" for the urban and "0" for the rural. We use OLS estimation technique to estimate the socio-economic model for both aggregate and disaggregate level.

The results shows that at aggregate level as well as on disaggregate level education of a head a family has an insignificant effect on family food expenditure. The education variable also remains insignificant when we induced rural/urban dummy in the model. Overall results show that family income is a major contributor in family food expenditure. The effect of family income remain almost same for rural as well as for urban area. The family incomes spent on food expenditure are 50%, 48%, 32% and 29% in Punjab, Sindh, KPK and Baluchistan, respectively. Province level analysis shows that the residents of Punjab spent half of their income on food expenditure, without considering the effect of rural/urban areas, as compare to the other provinces and results depict that people Baluchistan spent 28% of family income on food expenditure. The

proportion of income on food expenditure increased slightly for rural/urban socio-economic model.

The effect of house hold size remains same for aggregate level (with or without dummy of rural/urban) and for disaggregate level (with or without dummy of rural/urban).

The effect of number of working hours on food expenditure are significant for aggregate as well as for disaggregate level without considering rural/urban areas of Pakistan. The significance effect of number of working hours on food expenditure for aggregate level and Punjab (disaggregate level) can only be observed after considering the rural/urban areas, but this impact remain insignificant for all other provinces in disaggregate level.

The effect of number of employees per house hold on food expenditure is significant for Pakistan and for all other provinces of Pakistan except for Punjab with and without considering rural/urban areas.

We conclude that all the socio-economic factors that we used in this study have a significant impact on food expenditure for aggregate and disaggregate level and this impact become more significant if a dummy of rural/urban takes into account in the food expenditure model.

6.2 Recommendations

This study recommends the following

- The analysis shows that people of Baluchistan spent less on their food expenditure as compare to other provinces of Pakistan so government should take steps to give awareness to them about health by arranging workshops and seminars.

- Need to change the food consumption pattern in rural areas as compared to urban area by improving income levels of people living in rural areas through creation of jobs in rural areas which increase the income of rural masses resulting in improvement of their diet and health.
- Government authority should improve the food industry to cover the requirements of population.
- The concern authority need to give subsidies to low income groups and make plan for food stamp program.
- The government needs to design curriculum for school, colleges and universities in order to aware the student about nutritional education.More specifically there is a need to organized workshops in rural areas for awareness of the rural masses about balance diet and nutritional education.

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