# A STUDY ON SOCIAL CONSUMPTION BEHAVIOUR IN THE STATE OF MIZORAM

**A THESIS SUBMITTED FOR THE AWARD OF THE DEGREE OF DOCTOR OF PHILOSOPHY IN ECONOMICS**

**BY**

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**TO**


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## CERTIFICATE

This is to certify that the thesis entitled "**A STUDY ON SOCIAL CONSUMPTION BEHAVIOUR IN THE STATE OF MIZORAM**" by Shri. James L.T. Thanga has been written under my supervision and guidance.

He has fulfilled all the requirements laid down in the Ph.D regulations of the Mizoram University. The thesis is the result of his own investigation into the subject. Neither the thesis as a whole nor any part of it was ever submitted to any other University for any research degree.

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## DECLARATION

I, James L.T. Thanga, do hereby declare that the thesis entitled 'A STUDY ON SOCIAL CONSUMPTION BEHAVIOUR IN THE STATE OF MIZORAM' being submitted to the Mizoram University for the degree of Doctor of Philosophy in Economics, is a record of research work carried out by me, and that the contents of this thesis do not form basis of the award of any previous degree to me or to the best of my knowledge, to anybody else, and that the thesis has not been submitted by me for any research degree in any other University or Institute.

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*CHAPTER - 1*

# INTRODUCTION

## 1.1: INTRODUCTION

A study of consumer theory is in general applied to a household or family unit that makes decision on what to buy and in what quantity. The dependence of consumption on income was, as we mention in the latter chapters, a fundamental proposition of the General Theory by *J.M.Keynes (1936)*. After writing of the General Theory, the consumer theory has become one of the most exhaustive research topics in economics. In this study, we deal with the consumption function conceived as the relationship between personal consumption and personal disposable income taken from the sampled households and National Sample Survey (Ministry of Statistics and Programme Implementation, Government of India) data.

The study of consumer theory has been evolving from two lines of economic theory; microeconomic theory of consumer behaviour and macroeconomic theory related consumption behaviour.

Microeconomic approach consists of two well-known studies-family budget data analysis and market demand

analysis. Family budget analysis deals with the cross-section relationship between income levels and the pattern of consumption as across categories of goods and services holding other variables constant. The first well-known family budget analysis was done by *Ernst Engel* in 1857. The market demand analysis, on the other hand, uses time-series data to analyze the price-demand relationship. Alfred Marshall, towards the end of the 19th century, synthesized it in economic theory.

The microeconomic theory of demand has been, systematically, analyzed by economists such as *Allen* (1935), *Hicks* (1939) and *Samuelson* (1947). Empirical investigation has been undertaken to test the theories by several economists such as *Schultz* (1938), *Wold* (1943-44&1953), *Stone* (1954), *Prais and Houthakker* (1955), *Houthakker* (1957) and others.

The macroeconomic approach, on the other hand, concentrates on the income-consumption relationship in aggregative form. Aggregate consumption has featured in macro-models since *Keynes* (1936). Keynes postulated the consumption function as the relationship between consumption and disposable income. The theoretical work of Keynes on the

consumption function led to the statistical estimation of the propensity to consume by *Kuznet* (1946) and *Goldsmith* (1955). Inspired by the findings of *Kuznet* and *Goldsmith*, several economists tried to refine aggregate consumption theory. The most influential attempt on the refinement of Keynesian consumption function had been made by *Duessenberry* (1949), *Friedman* (1957), *Brumberg, Modigliani & Ando* (1954, 1963).

The term ‘social consumption behaviour’ may be defined as the way in which the people decide to allocate their disposable income on consumption as well as the way in which they distribute their disposable income spent among various groups of commodities. Similarly, the magnitude of the propensities to consume on each of the commodity group determines the behaviour of the people to consume each of the commodity group.

The major problems of most of the empirical research on consumption behaviour are the estimation and analysis of Engel’s Curves and expenditure elasticities for various groups of commodities and aggregate consumption function. In India, most of the studies on consumption behaviour have been

concentrated on estimation of expenditure elasticities for different groups of items using cross-sectional data (*Upender, 1998*). Estimation and analysis of expenditure elasticities in India have been done by several Indian economists like *Iyengar, et al* (1960 & 1968), *Sinha* (1966), *Gupta* (1968), *Coondoo* (1969 & 1975), *Singh and Singh* (1971), *Upender* (1998), *Prasad* (2001). Similarly, consumption function of India have been estimated and analyzed by several Indian economists like *Narasimham* (1956), *Iyengar and Moorthy* (1959), *Roy Choudhury* (1968), *Gupta* (1970), *Mammon* (1982).

While a number of works (*Narasimham, 1956; Iyengar, et al, 1960; Roy Choudhury, 1968*) on the analysis of consumption behaviour have been done for the whole economy of India using cross-section and time series data; some studies (*Sinha, 1966; Gupta, 1968; Iyengar et al, 1968; Singh & Singh, 1971; Coondoo, 1972*) made a comparative analysis of various classes, cities and regions of the country. In view of the differing characteristics of consumption behaviour across nation and communities it has been attempted here to undertake **a study on social consumption behaviour in the state of Mizoram.**

The main purpose of the present investigation is to estimate and analyze the social consumption behaviour in the state of Mizoram. An attempt is made to analyze the behaviour of the people in the consumption of various commodity groups and the behaviour of aggregate consumption. In addition to the estimates and analysis for the whole state, the variability of consumption behaviour among various classes of the society and rural-urban difference in consumption behaviour has been analyzed.

## 1.2: SITUATIONAL PROFILE

### 1.2.1: Per Capita Consumer Expenditure in India:

According to the Report of the 59$^{th}$ Round of National Sample Survey (NSS) on Household Consumer Expenditure in India for the period of January-December 2003, the average per capita monthly consumer expenditure (PMCE) in India was Rs 788, Rs.554 for rural areas and Rs1022 for urban areas. Thus, the average urban PMCE exceeded average rural PMCE by 84 percent. However, urban price level being higher than rural price level, the differentials would be lower in real terms.

The average PMCE of Rs.788 comprises Rs.364 for food and Rs.424 for non-food items. According to this break-up, food accounted for 46.2 percent of the total consumer expenditure in India. In rural areas, average PMCE of Rs.544 was spent on food and Rs.255 for non-food; while in urban areas, the average PMCE of Rs.429 was spent on food items and Rs.593 for non-food items. Thus, food accounted for 53.9 percent and 42 percent in rural and urban areas respectively.

The consumption patterns of India have undergone a significant change during the last 30 years. The share of food items continuously decreased for both rural and urban areas. The share of food, for India, was 67.8 percent in 1973, 61.8 percent in 1983, 60.7 percent in 1993 and 46 percent in 2003. In rural areas, it was 72.9 percent in 1973, 65.6 percent in 1983, 63.2 percent in 1993 and 53.9 percent in 2003. Similarly, for urban areas, it decreased continuously from 64.5 percent in 1973, 59.1 percent in 1983, 54.7 percent in 1993 and 42 percent in 2003.

1.2.2: Per Capita Consumer Expenditure in North-Eastern India:

According to the 59th Round of NSS during 2003, the average PMCE of the entire North-Eastern Region was Rs.835.5. Out of the average PMCE of Rs.835.5; Rs.408.6 was spent on food indicating that the share of food items was 48.9 percent. Further, the consumption pattern of NER has undergone a significant change during the last 9 years in the same pattern as we observed for the national level with a declining trend. It decreased from 59.9 percent in 1994 to 56.4 percent in 1998, 50.1 percent in 2002 and 48.9 percent in 2003.

1.2.3. Per Capita Consumer Expenditure in Mizoram:

The details of group-wise average PMCE in all areas (rural and urban) of Mizoram has been found in the 55th NSS Round on Household Consumer Expenditure in India for the period of July 1999 to June 2000. According to the report of the 55th NSS Round, the average PMCE of Mizoram was Rs.889.24, Rs.721.8 in rural and Rs.1056.6 in urban areas. The figures of Mizoram in all cases were higher than all India average. It was found that the national average PMCE was Rs.670.52, Rs.486.1 in rural and Rs.854.96 in urban areas.

Out of the average PMCE of Rs.889.24, Rs.489.2 was spent on food item. On the basis of this break-up of share, 55 percent of the total consumer expenditure of Mizoram was spent on food item. The share of food was higher in rural areas than in urban areas. It was 59.4 percent for rural and 52 percent for urban areas. Within food items, the group of cereals, salt, sugar and edible oils accounted for the largest share for both areas, i.e. 24.9 percent in rural areas and 18.3 percent in urban areas. At the same time, miscellaneous non-food item accounted for the largest share among non-food items, i.e. 22 percent in rural areas and 25.2 percent in urban areas.

According to the sample survey conducted by the author during the period of July-August, 2007 covering 372 households in Mizoram, the average PMCE was Rs.1971.3. Significant difference is also observed in this survey between rural and urban areas of Mizoram. The average PMCE of rural Mizoram was Rs.1151.26 while the average PMCE of urban areas was Rs.2731.82. Further, the average per capita monthly income (PMI) of Mizoram was Rs.2414.8; Rs.1237.8 in rural areas and Rs.3506.7 in urban areas. The average PMCE based on our sample survey is significantly higher than that of the

NSS 55th Round's data. However, if an allowance were given to the increase in prices, the difference would not be very large. It was further observed that the average household size for all Mizoram was 6 (six).

The share of food items for all the study areas was 29.33 percent. Another important finding of the survey is that there is wide difference in the consumption pattern between rural and urban areas of Mizoram. Food accounted for 36.08 percent of rural consumption while it accounted for 26.69 percent of urban consumption.

1.2.4. Geographical Profile of Mizoram:

Mizoram is a small state lying approximately between 21°.58' N to 24°.35'N latitude and 92°.15'E to 93°.29'E longitude. The total geographical area of the state is 21,081sq.km that is about 0.64 percent of the total area of India. It has a strategic location having international boundaries with Myanmar in the east and south, Bangladesh and of Tripura in the west. Further, the Cachar district of Assam and Manipur bound the state in the north. Mizoram has about 404 km length

of international boundary with Myanmar and 316 km with Bangladesh.

The topography of Mizoram consists predominantly of mountainous terrain of tertiary rocks. The mountain ranges run north to south direction in parallel series. These ranges are separated from one another by narrow and deep river valley with only a few and small patches of flat lands lying in between them. The terrain of Mizoram is young and so the geomorphic features do not show much diversity in the formation of the landforms. Most of the landforms observed are of erosive in nature.

The drainage system of the state consists of a number of small rivers and streams. Most of them are of ephemeral nature, depending on monsoon rains. Their volume and level fluctuate greatly in dry and rainy seasons. Most of the drainage lines originated in the central part of the state and flow towards either north or south influenced by the north-south trending ridge. The main rivers of the state are Tlawng, Tuirial, Tuivawl, all flowing north-wards and Tiau, Chhimtuipui, Khawtlangtuipui all flowing south-wards.

Mizoram enjoys a pleasant climate, which is neither too hot nor too cold throughout the year. The summer temperature ranges from 15$^{o}$C to 29$^{o}$C, whereas it is 18$^{o}$C to 27$^{o}$C in autumn and 11$^{o}$C to 25$^{o}$C in winter. The average rainfall is almost 200cm per year, though it may come to 350cm in the northwest part of the state. Generally, it rains during May to September; July and August being the rainiest month. November to January is a dry period with minimum rainfall.

1.2.5: Population of Mizoram:

The majority of the populations in Mizoram are Mizos and they belong to the Mongoloid stock. From the record of the Population Census 2001, the state's population stood at 8,91,058 with a density of 42 persons per sq. km. The sex ratio is 938 females per 1000 males. There are 8 adminitrative districts in the state namely Aizawl, Lunglei, Saiha, Lawngtlai, Champhai, Serchhip, Kolosib and Mamit Districts. Aizawl District has the largest population (36.6 percent of the total population) and Saiha District has the lowest (6.8 percent). Further, the majority of the populations in the state are

Christians. Christian's population accounted for 86.73 percent of the total population.

Mizoram has achieved 88.49 percent literacy in 2001 census, the second highest in India only next to Kerala. The male literacy (90.69 percent) is found to be higher than the female literacy (86.13 percent) in the state. Further, of the 8 districts, Aizawl District has the highest literacy of 96.64 percent of the population; while Lawngtlai District has the lowest (56.46 percent) which is below the national average of 64.8 percent.

1.2.6: Economy of Mizoram:

The economy of the state is mainly of agricultural, with minimal industrial activities and a highly inflated and expanding tertiary sector. Public expenditure is the driving force of the state economy. However, the state is highly dependent on resource transfer from the central government and it generates a small amount of internal resources. With non-plan revenue expenditure increasing year by year, the state government is facing acute financial mismatches between receipt and expenditure. Hence, the state government is

resorting to heavy public borrowing to finance not only capital expenditure but also its revenue expenditure.

The per capita income of Mizoram stood at Rs.21,327 at current price during 2003-04. The share of agriculture and allied activities in the Net State Domestic Product (NSDP) is 21.12 percent at current price during 2003-04. Meanwhile, the majority of the populations i.e. 54.9 percent are cultivators who are engaged in agricultural activities mostly by practising Jhum cultivation.

## 1.3: RELEVANCE OF THE STUDY

The present work analyses the consumption function as applied to the estimation of various expenditure elasticities from the cross-section data of Mizoram state. The estimates of expenditure elasticities are relevant for the producers of various goods and services in the economy. The producers can increase or reduce the quantity of their production according to the projection of demand for the commodities by the estimated consumption function (or Engel's function) or expenditure elasticities. Hence, the estimates can be a basis for the production decision in the economy.

For the government, especially in a developing country, which is trying to secure self-sufficiency in food production, the estimate of consumption function or expenditure elasticity for food items is quite relevant. Projection of future food demand would enable the government to allocate resources to meet the future requirement of its food demand in the economy. Estimates of expenditure elasticities would enable us to identify various commodities into necessity, semi-luxury and luxury items in the state. This would help the government to achieve its policy of reducing inequality through taxation. Thus, the government can formulate more efficient and effective tax policy to reduce tax burden of the poor.

In addition, the estimate of aggregate consumption function is helpful to predict the saving potential of the economy with the changing level of income. Knowledge of future levels of savings will enable the government to decide on the precise investment policies to increase the rate of growth of the economy.

## 1.4: OBJECTIVES OF THE STUDY

The main objectives of the present study are as follows:

i) To review the general pattern vis-à-vis the changes in the pattern of consumer expenditure in Mizoram.

ii) To classify the various consumption items of the people in Mizoram into necessities, luxuries and semi-luxuries by estimating their respective expenditure elasticities.

iii) To examine the existence of class difference in the consumption for various commodities in the society.

iv) To examine the rural-urban difference in the consumption behaviour on various goods and services.

## 1.5: HYPOTHESES

Proposed hypotheses to be tested in this study are the following:

i) Consumption expenditure increases with an increase in income, but less than proportionately.

ii) The proportion of expenditure spent on food decreases as the consumer's expenditure increases.

iii) There is a significant difference in the consumption behaviour between rural and urban areas.

iv) Saving is the rising function of income. In other words, as income increases saving also increases.

## 1.6: METHODOLOGY

### 1.6.1: Collection of Empirical Data:

Data used in the present study is primarily based on the sample survey conducted in Mizoram by the author during July – August 2007. In the process of generating empirical data on this survey, the method of multi-stage sampling was adopted for both rural and urban areas. Multi-stage sampling consists of the selection of sample from each stage on a simple random basis.

In rural areas, a randomly selected 4 Rural Development (RD) Blocks constitutes the first-stage units. From these 4 Blocks, 11 villages were selected to constitute the second-stage sampling units. From these selected villages, 179 households were selected as the ultimate-sampling units. The required information was obtained from each of this household through

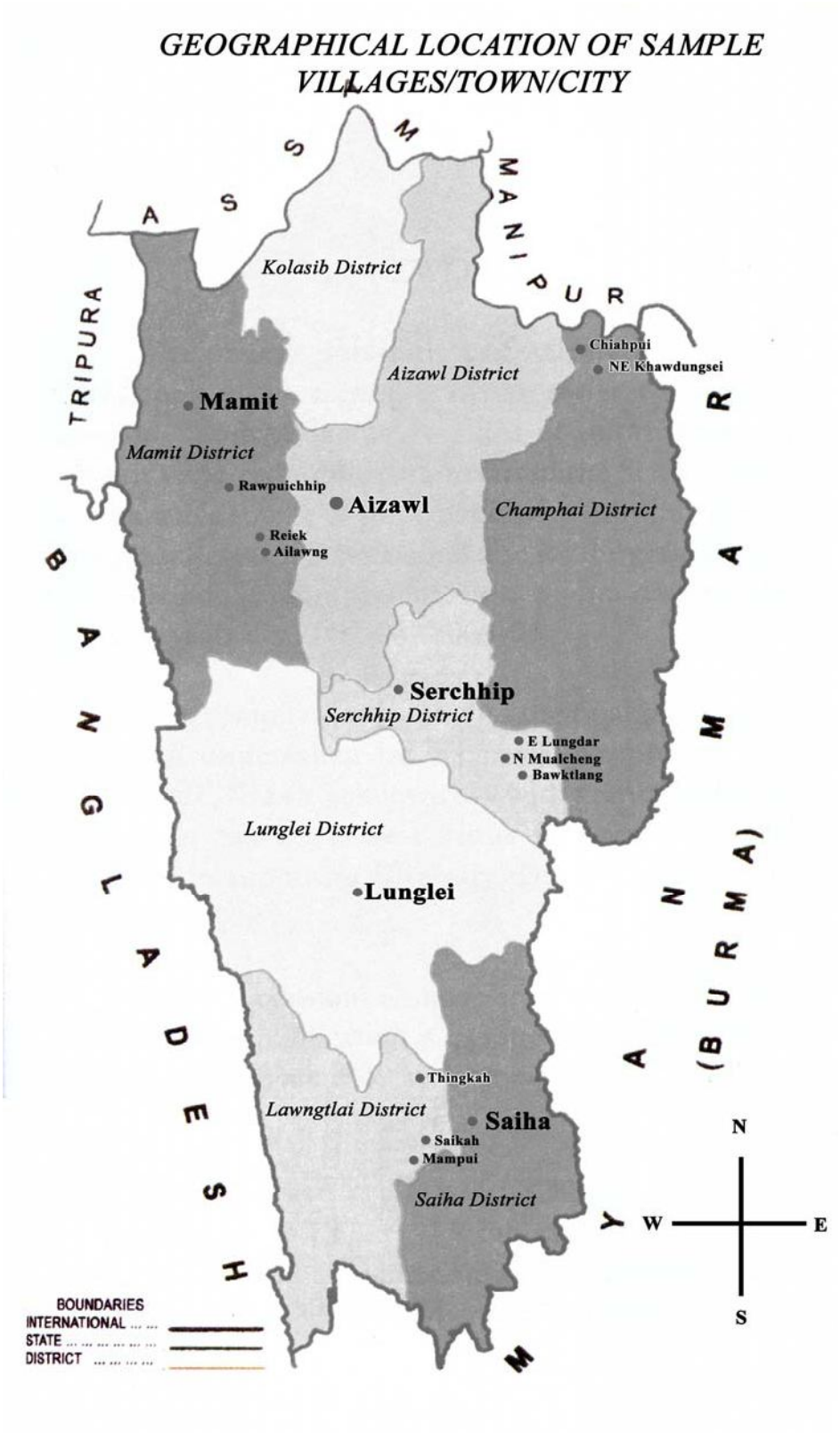
questionnaires and direct interview with the respondent. The survey covered 1093 person from 179 households.

In urban areas, on the other hand, 5 urban towns out of 23 towns (including Aizawl city) were selected to constitute the first-stage units. From these towns, 193 households were selected as the final sampling units. The required information was obtained from each of the selected household. The survey covered 4 urban towns and 1193 person from 193 households. Details of the villages, towns and number of households covered in the study are given in Table 1.1.

Secondary data on household consumption expenditure are obtained from various rounds of National Sample Survey (NSS), Ministry of Statistic and Programme Implementation, Government of India. Unfortunately, except in the 55$^{th}$ Round of NSS, the details of consumer expenditure for Mizoram are not available in most of the NSS rounds.

**Table 1.1:** *Number of households and persons covered in the sample survey of July-August, 2007.*

| **Urban Areas** | | | **Rural Areas** | | | |
|---|---|---|---|---|---|---|
| *Name of City/Town* | *No. of sampled* | *No. of persons covered* | *Villages* | *RD Block* | *No. of sampled Households* | *No. of persons covered* |
| Aizawl | 86 | 496 | Reiek | **Reiek** | 19 | 101 |
| Lunglei | 46 | 251 | Rawpuichhip | -do- | 19 | 104 |
| **Serchhip** | 29 | 184 | Ailawng | -do- | 13 | 58 |
| Mamit | 20 | 122 | East Lungdar | **E. Lungdar** | 20 | 124 |
| Saiha | 12 | 66 | N.Mualcheng | -do- | 22 | 135 |
| **Urban Total** | **193** | **1119** | Bawktlang | -do- | 24 | 144 |
| 1. Number of households covered in the survey: 372.<br>2. Number of persons covered in the survey: 2212. | | | Saikah | **Lawngtlai** | 20 | 124 |
| | | | Mampui | -do- | 7 | 38 |
| | | | Thingkah | -do- | 15 | 111 |
| | | | N.E.Khawdungsei | **Ngopa** | 11 | 83 |
| | | | Chiahpui | -do- | 9 | 71 |
| | | | **Rural Total** | | **179** | **1093** |


GEOGRAPHICAL LOCATION OF SAMPLE VILLAGES/TOWN/CITY
ASSAM
MANIPUR
TRIPURA
Kolasib District
Aizawl District
Chiahpui
NE Khawdungsei
Mamit
Mamit District
Rawpuichhip
Aizawl
Champhai District
Reiek
Ailawng
Serchhip
Serchhip District
E Lungdar
N Mualcheng
Bawktlang
Lunglei District
Lunglei
BANGLADESH
MYANMAR (BURMA)
Thingkah
Lawngtlai District
Saiha
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Mampui
Saiha District
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BOUNDARIES
INTERNATIONAL
STATE
DISTRICT

As far as the per capita income of the state is concerned, the required information are obtained from Economic Survey published by Ministry of Statistics and Programme Implementation, Government of India and Statistical Handbook of Mizoram published by the directorate of Economics and Statistics, Government of Mizoram. In addition to these, the required data are generated from various sources like Reports of Population Census, Published and unpublished articles, etc.

1.6.2: Classification of Household Consumer Expenditure Data:

In the sample survey conducted during July-August, 2007, household expenditures are obtained from two broad household items of consumption, namely, expenditure on food items and non-food items. Food item includes (a) beverages, (b) meat, (c) vegetables, (d) cereals, salt, sugar and edible oils. Similarly, non-food item includes (a) pan, tobacco and intoxicant, (b) health care, (c) entertainments and telecommunication, (d) clothing and housing, (e) education, (f) transportation, and (g) miscellaneous. The total monetary value of the household monthly consumption on each of the item divided by household size gives the total monthly per capita expenditure.

The expenditure on each of the item is estimated on the basis of its consumption during the reference period. The reference periods used in the sample survey for different groups of items are given in Table 1.2.

**Table 1.2:** *Reference periods used in the sample survey during July-August, 2007.*

| **Sl. No** | **Items** | **Reference Period** |
|---|---|---|
| 1. | Beverages; and pan, tobacco & intoxicant. | Last 1 day. |
| 2. | Meat and vegetables. | Last 7 days. |
| 3. | Cereals, sugar, salt and edible oil; entertainments and telecommunications; health care; and miscellaneous. | Last 30 days. |
| 4. | Clothing and housing; education; and transportations. | Last 365 days. |

1.6.3: Methods of Analysis:

The data so collected in the survey are analyzed and compared using regression technique, Analysis of Variance (ANOVA) technique, Analysis of Covariance (ANOCOV) technique and the Chow Test.

The present study considered per capita monthly consumer expenditure and its disaggregation into broad

expenditure groups. The Ordinary Least Squares (OLS) method is used for estimation of regression equations. Parameters are estimated by using linear and log-linear Engel's functions. Using the estimated parameters of Engel's functions, we finally calculate the expenditure elasticities for each group.

The sample households are divided into six PMCE classes. Separate regressions for all commodities are estimated in each of the PMCE class. Estimates of regression line represent the consumption behaviour of their respective class. The significance of the difference in consumption behaviour among six classes is tested using the ANOVA technique under the null hypothesis of equal slope (marginal propensity) coefficients for all classes.

Comparative analysis of consumption behaviour between rural and urban areas of Mizoram has been done on the basis of the estimated regressions for both areas. The expenditure elasticities so calculated are used to explain the rural-urban differentials in consumption behaviour. To test the significance of the difference between rural and urban areas, the technique of ANOCOV has been adopted for all commodities. The null

hypothesis underlying ANOCOV are equal intercept, slope and overall regressions for both areas. Further, the Chow test has been used to test the equality of marginal propensity to consume for aggregate consumption functions between rural and urban areas of Mizoram.

## 1.7: SCHEME OF CHAPTERIZATION

The present study is divided into six chapters. They are

*Chapter 1:* Introduction:

It describes the relevance, objectives, hypotheses and methodology of the study.

*Chapter 2:* Review of Literature:

It presents a brief review of related theories and empirical research.

*Chapter 3:* General Pattern of Consumer Expenditure in Mizoram:

It discusses the change as well as the general pattern of consumer expenditure and the examination of concentration present in the consumptions.

*Chapter 4:* Estimates and Analysis of Consumption Behaviour:

It presents the estimates and analysis of Engel's functions and expenditure elasticities for various groups of commodities. It also examines the inter-class difference in consumption behaviour.

*Chapter 5:* Rural - Urban Differentials in Consumption Behaviour:

It presents the analysis of consumption behaviour for rural and urban areas of Mizoram. It gives a test of the significance of difference in consumption behaviour between rural and urban areas. It also estimates and analyses the aggregate consumption function in the state.

*Chapter 6:* Major Findings and Conclusion.

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REFERENCE:

1. Keynes, J.M: *The General Theory of Employment, Interest and Money*. Macmillan, New York, 1936.
2. Stigler, George J: *The Early History of Empirical Studies of Consumer Behaviour.* The Journal of Political Economy, Vol. LXII, April 1954, pp95-113.
3. Kuznet, Simon: *Uses of National Income in Peace and War*. Occasional Paper 6, National Bureau of Economic Research, New York, 1942.

4. Stone, R: *Linear Expenditure Systems and Demand Analysis: An Application to the Pattern of British Demand.* Economic Journal, Vol. 54, 1954, pp511-527.
5. Duessenberry, James (1949): *Income, Saving and the Theory of Consumer Behaviour*. Harvard University Press, Cambridge, Massachussets, 1967.
6. Friedman, Milton (1957): *A Theory of Consumption Function.* Oxford & BH Publishing Co. New Delhi, 1970.
7. Modigliani, Franco and Richard Brumberg: *Utility Analysis and Consumption Function: An Interpretation of Cross-section data*. Post Keynesian Economics, Rutgers Univ. Press. pp 388-436 ; and Modigliani, F and A. Ando: *The Life Cycle Hypothesis of Saving: Aggregate Implications and Tests.* American Economic Review, Vol. 53, (1963) pp 56-83
8. Wold, H: *Demand Analysis.* Stockholm and New York, 1953.
9. Prais, J and H.S. Houthakker: *The Analysis of Family Budgets.* Cambridge University Press, 1955.
10. Modigliani, F and A. Ando: *The Life-Cycle Hypothesis of Saving: Aggregate Implications and Tests.* American Economic Review, Vol. 53, 1963, pp56-83.
11. Upender, M: *Estimates of Expenditure Elasticities of Demand.* Finance India, Vol. XII, No.3, September 1998.
12. Iyengar, N.S., L.R. Jain & T.N. Srinivasan: *Economies of Scale in Household Consumption: A Case Study*. Indian Economic Journal, 15, 1968. Econometric Annual, pp 465-477
13. Sinha, R.P: *An Analysis of Food Expenditure in India*. Journal of Farm Economics, Vol. 48, No.1 (Feb., 1966), pp 113-123.
14. Gupta, D.B: *A Comparison of Consumption Patterns in Uttar Pradesh and Madras - A study of inter-regional variations with reference to India*. Indian Economic Review, New Series, 3, (1968) pp 129-144
15. Coondoo, Dipankor: *A comparison of consumer expenditure pattern of Indian middle class and working class families.* Sankhya : The Indian Journal of Statistics. 1975, vol.37, Series C, Pt. 2, pp 81-101
16. Singh, Amarjit & Haramol Singh: *Changing Consumption Pattern In Punjab: Projections of Consumer Demand for 1973-74.* Economic and Political Weekly, Vol. VI, No. 50, 1971
17. Mammon, Thampy: *Consumption Function: Some Further Tests.* The Indian Economic Journal, Vol. 30, No. 1 (July-Sept., 1982) pp 15-22
18. Prasad, A.R: *Consumption Behaviour in India: Theory and Evidence*. Reliance Publishing House, New Delhi, 2001, pp 342-343.
19. Narasimham, N.V.A: *A Short-Term Planning Model for India.* North Holland Publishing Co., Amsterdam, 1956.
20. Iyengar, N.S. and S. Krishna Moorty: *On Some Econometric Models of India.* Arthaniti, Vol. 2, 1959.
21. Roy Choudhury, Uma Datta: Income, *Consumption and Saving in Urban and Rural India*. The Review of Income and Wealth, Series 14, No. 1 (March, 1968) pp 37-56.

*CHAPTER – 2*

# REVIEW OF LITERATURE

## 2.1: INTRODUCTION

The study of consumption behaviour occupied one of the most important fields of research in economics since 1857 when Engel published his law of consumption called ‘Engel’s Law’. Since then, studies on consumption behaviour increased enormously in volume and improved substantially in quality. However, systematic analysis of consumption behaviour started to take place only after 1930’s (*Stigler, 1954*). Along with the development of studies based on Engel’s law, studies on aggregate consumption behaviour started to take place after the Absolute Income Hypothesis (AIH) proposed by *J.M. Keynes* in 1936 to become the basis for the development of modern macro-economic models as well as theories of growth and developments.

An attempt is made in the present chapter to review some of the literatures related to family budget data analysis (based on Engel’s law) and aggregate consumption function. Accordingly, present chapter is divided into three sections:

1) Introduction
2) Studies Based on the Family Budget Data
3) Studies on Aggregate Consumption function.

## 2.2: STUDIES BASED ON THE FAMILY BUDGET DATA

The budget studies made by *Ducpetiaux (1855)* in the economy of Saxony and Prussia for the year of 1848 and 1855 respectively were perhaps the first empirical analysis of family budgets collection and classification of expenditure data among various commodities. *Ducpetiaux* presented the distribution of expenditure among various commodity groups in his book. This was followed with the popularization of statistical analysis of social and economic data.

*Engel (1857)* made statistical analysis of the budget data collected by *Ducpetiaux (1848).* In his analysis of the budget data, Engel proposed a law of consumption, which was then known to be the famous 'Engel's Law'. Engel's Law states the proportion of income spent on food declines as income increases. 'The poorer a family, the greater the proportion of its total expenditure, that must be devoted to the provision of food' (*Engel, 1857*). He also made further analysis of

Ducpetiaux's data in 1895 by income class rather than by socio-economic classes and proved the validity of his law.

*Schwabe* (1868) proposed that the poorer anyone is, the greater the amount relative to his income that he must spend for housing. *Wright* (1875) in his study confirmed Engel's law and Schwabe's law and reiterated the law of consumer behaviour. His law stated that the higher the income, the greater the saving actually and proportionately. *Del Vecchio (1912)* also calculated income elasticity of demand using semi-logarithmic and he found that the Engel's law was true.

*Leser (1941)* calculated the income elasticity of demand for various commodity groups using linear Engel function based on the cost of living studies for 12,096 white families in 92 cities in USA for the period of 1918-'19. In his study he assumed that total expenditure equals income and accordingly he used total expenditure instead of total income as an independent variable in the Engel Function. He found that four commodity groups: (1) food; (2) Housing; (3) fuel, light and refrigeration; and (4) tobacco have an inelastic demand with regard to income (i.e. expenditure elasticities are less than

one). Other five groups: (1) transportation; (2) other household operations; (3) recreation; (4) clothing; and (5) miscellaneous, which have the highest income elasticities, have at the same time a price elastic demand.

*Burk (1951)* based on the data of US Department of Commerce analyzed the changing pattern of food consumption in between 1941 and 1950. He made comparison of the actual expenditure pattern during the period of 1941 to 1950 with the estimated expenditure pattern on the basis of the Engel's function calculated by him using the data covering 1929 to 1941. He observed that (1) on the basis of changes in average income and in the distribution of income, but there is no change in income-elasticity of demand (i.e. 0.8), food expenditures was expected to take 24 percent of income in 1948, and about the same proportion in the following two years; and (2) use of postwar average incomes per capita with the pattern of relationships of food expenditures to disposable income in prewar years 1929-41 indicates that food expenditures in 1947 were roughly 25 percent higher than expected: 20 percent in 1948, 15 percent in 1949; but it was only about 10 percent in 1950.

His observations of gradual reduction in the gap between actual and estimated food expenditures led him to make the hypothesis that the relatively high levels of food expenditures in 1946-48 may have been temporary. He pointed out two obvious factors: (1) the natural lag in adjustment of food consumption pattern to rapid postwar changes in income and to the relative scarcity of supplies and price rise of food and nonfood commodities; and (2) the availability of unusual sources of purchasing power over and above the current income during the postwar period.

*Houthakker (1957)* commemorating the centenary of Engel's law made an international comparison of household expenditures. Elasticities for food, clothing, housing and miscellaneous items with respect to total expenditures and family size were being compared based on regression analysis of 40 surveys from 35 countries. Interestingly, the elasticities are found to be more or less similar in these countries. He used the model of the form

$$\log Y_i = \alpha_i + \beta_i \log X_1 + \gamma_i \log X_2 + e_i \qquad (2.1)$$

where $Y_i$ is expenditure on the $i^{th}$ group of items, $X_1$ is total expenditure, $X_2$ is family size, $e_i$ is a disturbance term, and $\alpha,\beta$ and $\gamma$ are constant to be estimated.

His main findings are: (1) the elasticities of expenditure for food are all significantly less than one and therefore confirm Engel's law. The highest figure being 0.731 for Poland and the lowest 0.344 for the middle class survey of United Kingdoms; (2) the elasticities for clothing with respect to total expenditure are all greater than unity. As such, clothing can be considered as luxury items; (3) the elasticities for housing are mostly below one. Hence housing can be considered as necessity. It was found that these elasticities are smallest among the larger cities especially in UK and USA; (4) the elasticities for miscellaneous expenditures are well above one; and (5) elasticities for food with respect to family size are all significantly positive, and mostly between 0.2 and 0.35. Interestingly, he found that in most of these countries where $\beta$'s are large, $\gamma$'s tend to be smaller.

*Leser (1963)* tried the various forms of Engel functions and made critical examinations of their appropriateness to be a generally accepted form. He selected five functional forms, which were used by economists for examination. The functional forms selected by Leser are

$$w_i = \alpha_i + \beta_i M + \varepsilon_i \tag{2.2}$$

$$\nu_i = \alpha_i + \beta_i M + \varepsilon_i \tag{2.3}$$

$$w_i = \alpha_i + \beta_i / M + \varepsilon_i \tag{2.4}$$

$$\log w_i = \alpha_i + \beta_i \log M + \varepsilon_i \tag{2.5}$$

$$w_i = \alpha_i + \beta_i \log M + \varepsilon_i \tag{2.6}$$

where M is income, $\nu_i$ is total expenditure on commodity group i and $w_i = \nu_i/M$. He tested the relative usefulness of each functional form on the data of family expenditure and income of Ireland during 1950-51. Ten commodity groups were selected for examination. It was found that $R^2$ differ from one another for each of the commodity group. Accordingly, the estimated income elasticity differs for each of the functional form. Thus, any single functional forms did not satisfy all the requirements – both a priori and statistical criteria – for all commodities.

This necessitates the proper choice of the functional form for different items.

*Nisbet and Vakil (1972)* made an estimate of price elasticity of demand for marijuana among the students of University of California and Los Angeles' (UCLA). The study was based on the data collected through anonymous mail questionnaire covering 926 respondents. They used double-log and linear function to estimate elasticities in which prices of marijuana and total monthly expenditures are used as independent variables. For both functional forms only price was statistically significant explanatory variables for the consumption of marijuana. The estimates of price elasticities of demand around the market prices ranged from –0.40 to –0.51 depending on the type of data used and on the functional forms. On the other hand, the estimated expenditure elasticities are not significantly different from zero. This study suggests that an individual's consumption of marijuana depends on factors other than total expenditures.

An *Economic Research Service (1997),* US Department of Agriculture, in its analysis of 51 countries observed that on

average, high-income countries spend 16 percent of their expenditures on food, while low-income countries spend 55 percent. It was further observed in the study that rising income levels generally result in a more diverse diet and, hence the composition of food demand will undergo a greater change in developing countries compared with developed countries.

*Regmi, et al (2001)* used the data of International Comparison Project (IPC) for the year of 1995 to analyze the food consumption pattern of 99 countries ranging from low-income to high-income countries. They found that low-income countries spend a greater portion of their budget on food and are more responsive to income and food price than middle and high-income countries. Further, they observed that higher value food products undergo greater budget adjustments to price and income shocks, while budgets for staple food products like cereals change the least.

*Chern, et al (2002)*, based on the Annual Report on the Family Income and Expenditure Survey in 1997, analyzed the food consumption patterns and made an econometric analysis of food demand structure in Japan. The study covered 11 major

food items. Various single equation models: Working-Leser model, Tobit Model, Linearly Approximated Almost Ideal Demand System and non-linear Almost Ideal Demand System were applied in this study. The results of an analysis indicate that Japanese rice is not an inferior good, and demographic variables are important indicators of the future trend of Japanese rice consumption. Fresh meats and rice are mild complements in all models; however, fresh fish and rice show mixed results with respect to their substitution pattern. Results from meat items show that the expenditure elasticity of beef is greater than unity, while other meat products are inelastic. Further, according to their meat demand analysis it was concluded that Japanese dietary patterns have become more and more westernized.

*Iyengar (1960)* calculated Engel elasticities for some commodity groups using the Consumer Expenditure Data of India for 1955-56. He calculated Engel's elasticities from the concentration curves. It is observed in his study that the commodities, which have higher concentration ratios, have high expenditure elasticities. He observed that health care, which has the highest concentration ratio (0.64), has the highest

expenditure elasticity. It is also found in his study that commodity group of food has less than unity elasticity (i.e. food is necessity) while clothing, milk and milk products, and health has more than unity elasticities (i.e. these commodity groups are luxury)

*Sinha* (1966) estimated the elasticities of expenditures on various items of food in India based on the cross-sectional data of various rounds of National Sample Surveys in 1950's. He elaborated the regional variations of food consumption behaviour among various regions of the country. For India as a whole, expenditure elasticities for food-grains, milk and milk products, edible oil, sugar, and salt are higher in rural areas than in urban areas. As against this, the elasticities for meat, fish, and eggs, for the miscellaneous food groups, and for total food are higher for the urban areas. He pointed out two main reasons for these differences: (a) average income per person is higher in urban areas, and (b) with growing urbanization, there is a normal tendency towards diversification of food and towards an increase in expenditure on food taken outside one's home.

He further, elaborated the differences in the consumptions of some commodity groups among the regions of the country. Based on the rural samples (1) the highest expenditure elasticities for food grains occurred in the South and the lowest in the Western part of the country, (2) milk products have elasticities of more than unity in all the region – Eastern region being the highest and Western region the lowest, and (3) expenditure elasticities of sugar are more than unity in all the regions except for Northern region. In case of urban samples, on the other hand, (1) elasticity of total food expenditure is the lowest in the South and the highest in the West, (2) East has the highest elasticity for milk products, (3) edible oil has the lowest elasticity in the North West and the West has the highest, and (4) for sugar, the elasticity is slightly more than one only for the North and East and is very close to unity for the Central area.

*Iyengar, et al (1968),* examining the effect of household size on consumption pattern, fitted Engel's function of the form

$$\log y = \alpha + \beta \log x + \gamma \log n \qquad (2.7)$$

where $\beta$ and $\gamma$ are the elasticities of consumption with respect to total consumer expenditure and household size and $\beta+\gamma$ measures the degree of economies of scale in consumption. They used ungrouped NSS 17$^{th}$ round budget data for two states, Madras and Uttar Pradesh, and selected the following items for analysis: total cereals, milk and milk products, fuel and light, and clothing. The analysis was carried out separately for rural and urban sectors of the states. It was found that economies of scale were clear in case of cereals and fuel and light in UP as well as in Madras, but not so clear for milk and milk products or clothing, which are usually considered to be luxuries in India. The estimate of $\gamma$ was significantly positive for cereals, and fuel and light, but negative for the remaining items.

*Gupta (1968)* also compared the consumption pattern of UP and Madras, separately for rural and urban sectors, using NSS 17$^{th}$ round ungrouped data on some broad item-groups as well as some detailed items of consumption. Regression equation of the form

$$\log y = \alpha + \beta \log x + \gamma \log n \qquad (2.8)$$

were fitted by weighted least squares. Here n denotes household size and y and x, household expenditure on the particular item and total expenditure respectively. He tested the equality of state-wise regression for each sector. The between states variation was significant for many items in either sector. He also observed the significant difference within each state.

*Coondoo (1969)* examined how far inter-temporal movements of Engel elasticity for cereal consumption in India depend upon the price of cereals relative to the general price level as also on the relative prices of the items constituting the cereals group. The time series of value elasticity is compiled by fitting double-logarithmic Engel curve by weighted least squares method from the information about consumer expenditure available for NSS rounds from the $4^{th}$ to $18^{th}$ for both rural and urban India. It was found in this study that the effect of relative price of cereals as a group (i.e. the ratio of retail price to wholesale price index), on the Engel elasticity is significant for rural India. However, the effect is not significant in urban areas.

*Singh & Singh (1971)* examined expenditure patterns in Punjab utilizing the data of various rounds of National Sample Survey covering the period of 1961-62, 1964-65 and 1967-68. They examined the estimates of elasticities of expenditure for 15 commodity groups. Linear, semi-logarithmic and double-log Engel functions were being used in the study. In this study the expenditure elasticity of demand for food items was found to be low both for rural and urban areas; while the expenditure elasticity for non-food item was found to be quite high for both rural and urban areas. Within the food group, the elasticities for cereals, pulses, milk and milk products, and salt and spices were found to be low - the magnitudes were found to be slightly higher in rural areas than in urban areas. The elasticities for meat, egg and fish, and sugar were found to be high in both rural and urban areas. Further, the expenditure elasticities for pan, tobacco and intoxicants, fuel and lighting, clothing, and durable goods have been found to be quite high both in the urban and rural areas.

*Coondoo (1975)* further compared the consumption patterns of middle class and working class households, residing at each of four selected urban centers, viz., Admednabad,

Kanpur, Calcutta and Madras, using data from the Family Living Surveys carried out during 1958-59. Analysis of covariance tests was applied to test the homogeneity of Engel's functions for the two social classes at each centre. It was observed that the inter-class differences were significant for many items. It was observed that working class households spent higher proportions of their budget on food items compared with middle class households at the same level of per capita consumer expenditure.

*Coondoo, et al (1981)* attempted to focus attention on the role of non-monetized consumption in the empirical analysis of consumer behaviour based on the data of 18$^{th}$ NSS Round. They argued that the usual Engel curve analysis might not be adequate in a predominantly rural agricultural economy like India where the extent of non-monetized consumption is considerably high. In such a situation the theoretical model of consumer behaviour needs to be spelt out and proper treatment of non-monetized consumption should also be made in empirical analysis. Separate regressions for the usual Engel curve, cash consumption and kind (quantity) consumption were estimated using Double-Log function. It is observed from their

result that consumption of a particular item groups are less responsive to variation in total cash consumption than total kind (quantity) consumption. So, their result suggested proper break-up of the total consumer expenditure into cash and kind should be made to estimate the Engel's curve for the economy, which is dominated by agricultural rural economy.

*Upender (1998)* estimated the expenditure elasticities in India for 17 commodity groups based on the consumption expenditures data of the National Account Statistics for the years 1950-51 to 1993-94. In order to estimate the expenditure elasticities for different item groups, he used the constant elasticity form equation,

$$\text{Log } (c/p) = a + b \log (e/p) \qquad (2.9)$$

where c/p is per capita real consumption expenditure on $i^{th}$ item group, e/p is the per capita real total expenditure and b is the expenditure elasticity. The expenditure elasticity for food items was less than unity; and, on the other hand, it was more than unity for the group of clothing. These two findings conform to Engel's law. In case of hotels and restaurants, furniture,

medical and health care, transport, education; the elasticities were all found to be higher than unity. Thus, these groups for the prevailing income level can be considered as luxury items. Interestingly, aversion behaviour has been observed towards consumption expenditures on beverages, pan, intoxicants and tobacco and its products for these groups have negative expenditure elasticities of demand.

*Upender (1999)* made further analysis of expenditure elasticity for clothing in India using time series data from 1950-51 to 1993-94. Engel's curves had been estimated by OLS for seven functional forms namely, linear, quadratic, semi-log, double-log, inverse, log-inverse and log-log inverse functions. It is observed from his result that the numerical values of expenditure elasticities are greater than two for all equations. This functional fit established that the proportion of total expenditure incurred on clothing increases with the increase in total expenditure. He argued that clothing has become more and more expensive among the households whose per capita incomes are very low. He pointed out three possible reasons for these phenomena that (1) rising prices of clothing, (2) falling

real incomes of low-income households due to rising prices and limited incomes, and (3) demonstration effects.

*Prasad (2001)* using the time series data of India from 1950-51 to 1996-97 observed that the percentage share of food expenditure in total per capita private final consumption expenditure shows a declining trend over the entire period of his study. His finding of the elasticity of food items which was as low as 0.49 proved that food is a consumption item belonging to a class of necessity. So far as the non-food expenditure is concerned, the overall expenditure elasticity turned out to be greater than one and hence the proportion of expenditure incurred on non-food items increased with an increase in total consumer expenditure.

Various literature discussed so far do not give attention to the effect of reference period on Engel elasticities of demand and studies on such effect is not very common in economic literature. *Ghose and Bhattacharya (1995)* conducted a study on the effect of reference period on Engel elasticities of clothing and other items based on various rounds of NSS household budget data. It was observed that Engel expenditure elasticity

changes dramatically for clothing with a switch in the reference period. Both in the urban and rural sectors the elasticity ranges from 2.0 to 2.2 when 'last month' data is used for clothing; but it drops to about 1.0 to 1.1 when 'annual' data is used. For durable goods, the elasticity is around 2.75 for rural India but ranges from 2.6 to 3.2 for urban areas with data relate to the 'last month'; but it drops to about 2.1 to 2.2 for both the sectors when 'annual data' is used. Thus, it may be concluded that the Engel elasticities depend critically on the reference period, which, at the same time, suggested the temporal character of household consumption behaviour.

## 2.3: STUDIES ON AGGREGATE CONSUMPTION FUNCTION

There is a long tradition of theoretical and empirical work on consumption function. Aggregate consumption has featured in macro-models since *Keynes* in 1936 and is especially important for growth in a transitional economy. *Keynes (1936)* postulated the consumption function as the relationship between consumption and disposable income. The Keynesian model of consumption takes consumption as a fixed proportion of current income. This is known in consumption literature, as the Absolute Income Hypothesis (AIH). Keynes proposed two

hypotheses postulating that the (a) real consumption expenditure is a stable function of real income, and (b) marginal propensity to consume is positive but less than one. Marginal propensity to consume is the ratio of an absolute change in consumption to an absolute change in income.

However, theoretical and empirical limitations of AIH led to the development of the Relative Income Hypothesis (RIH) by *Duessenberry (1949)*, Permanent Income Hypothesis (PIH) by *Friedman (1957)* and Life-Cycle Hypothesis (LCH) by *Brumberg, Modigliani and Ando (1954, 1963).*

*Duessenberry (1949)* argued that current consumption depends not only on the current level of income, but also on the level of consumption attained in previous periods because it is more difficult to reduce a previously attained level of consumption than to reduce saving. More specifically he related average propensity to consume to the ratio of current income to the past peak income.

*Friedman (1957)* introduces wealth as a major constraint of the consumption function. The permanent income is the

income derived from consumer's total wealth. And consumer's current wealth is the present value of the future stream of income from human capital (labor) and other assets. In order to make the theory operational, permanent income must relate to measurable variables. Friedman, therefore, presents a weighted average of current and past values of measured income as a proxy for permanent income. In his permanent income hypothesis, income and consumption are divided into two components each – permanent and transitory. Friedman further assumes that there is no correlation between transitory income and transitory consumption, transitory income and permanent income, and transitory consumption and permanent consumption.

*Brumberg & Modigliani, and Modigliani & Ando (1954, 1963),* in their life cycle hypothesis, postulated that an individual consumer attempts to maximize utility expressed as a function of lifetime consumption subject to the constraint of the present value of the future stream of income. In order to express the future stream of income in terms of measurable quantities, the expected income stream is divided into expected labour income and income from assets or property. Choosing

the right assumptions about expected values and making the right linkage to measurable variables, the consumption function is derived with current labour income and assets as arguments.

Among the three well-known hypotheses after Keynes, permanent income hypothesis of Friedman appears to be one of the best-known relationships and arouses immense research interest in the theory of consumption function. It may be said that the PIH is the best-known relationship that have been postulated between income and consumption (*Laumas & Mohabbat, 1972*). Hence, recent literature on the consumption functions has been much dominated by permanent income hypothesis.

*Klein and Liviatan (1957)* computed regression of the savings-income ratio against several explanatory variables using the 1953 and 1954 Saving Survey data for Great Britain. They chose the proportion of total income received in the form of windfall income (w/y) as one of the explanatory variables. Interestingly, the results of the analysis showed that marginal propensity to consume out of windfall income are significant in all cases that are assumed to be zero in PIH. The marginal

propensity to consume out of windfall income was found to be 0.92 for retired persons, 0.65 for employees and 0.74 for upper-income employees. *Houthakker (1958)*, based on the data of family budget survey carried out by the U.S. Bureau of Labor Statistics in 1950, also found that marginal propensity to consume out of transitory income is actually greater than marginal propensity to consume out of permanent income. The same evidence has also been found in the works of *Bodkin (1950)* and *Jones (1960)*.

*Kreinin (1961)* presented slightly different evidence on expenditure and saving out of windfall gains using data of a 1957-58 survey of Israeli families. He examined the data in various ways including the method used by *Bodkin* (1959). It was observed in his study that the marginal propensity to consume out of windfall gains to be very low. When durable goods are excluded from consumption, the marginal propensity to consume of non-durables out of windfall income is 0.156. He argued that windfall gain to income might have stimulated the purchase of consumer durables or payment of debts or building up for reserves rather than consumption.

*Yang (1964)*, investigating the consumption behaviour of different countries, made an international comparison of consumption utilizing the data in the Yearbook of National Account Statistics published by United Nations for the Years covering 1957-1960. Eighteen countries, all are market driven economies, were selected for investigation. In this study, he observed that for most of the 18 countries, the level of consumption is highly correlated with the level of current income. When the preceding year's income was introduced as additional variable, an improvement in the goodness of fit in the income-consumption relation was achieved for 8 countries, of which only 4 cases were significant. His investigation also revealed that the degree of instability in the rates of growth in income significantly determines the degree of correlation between income and consumption. The study suggested that the more stable the rate of growth, the higher is the degree of correlation between income and consumption, and vice versa. Further, an examination of the factors determining the consumption-income ratios revealed that only the rate of growth is statistically significant among other factors for which statistical tests were conducted.

*Singh and Kumari (1971)* examined the applicability of relative income hypothesis in terms of its various specifications proposed by *Duessenberry (1949), Duessenberry, Eckstein and Fromm (DEF, 1960)* and *Davis (1953)*. Using the time series data of 10 countries for 1951 through 1968 the analysis was carried out. It was found that relative income hypothesis provides a fairly good representation of the consumption behaviour of all the countries included in the study. All specifications, however, do not perform equally well. The original Deussenberry specification perform very poorly and led them to conclude that the process of habit formation is continuous contrary to what is implied by *Duessenberry's* original specification and that consumption is a better indicator of the standard of living than income.

*Hall (1978)* took the Life cycle-permanent income approach and applied Rational Expectations Hypothesis (REH). Specifically, the REH implies that people behave as though they have knowledge of the process of generating income. On the basis of this reasoning, the theory assumes that people will not change their level of consumption unless new information causes them to revise their future expectation of income. He

argued that the underlying behaviour of consumers makes both consumption and wealth evolve as a random walk since marginal utility evolves as a random walk with trend. According to Hall, for permanent income hypothesis or life cycle hypothesis (under REH) to be consistent with data, all coefficients for lagged variables except for that of the first lag consumption must be statistically insignificant. Using quarterly US data, Hall shows that lags of consumption beyond the first lag were not significant. However, his results also show marginal evidence that recent lags of disposable income had predictive powers for consumption, and stronger evidence in favour of lagged measures of wealth such as price of shares.

*Davidson, Hendry, Srba and Yeo (1978)* made another influential approach called DHSY error correction model of consumption. They present a dynamic time series model of consumption based on the underlying long run equilibrium relationship between consumption and income. In this approach, it is assumed that the long run relationship during any point in time between income and consumption may be out of equilibrium. This suggests that consumers take time to adjust to changes in income. On the contrary, if such time allowances did

not take place, the adjustment would take palce instantaneously.

*Davis (1984)*, having to test a number of alternative consumption models, proved the empirical evidence of the DHSY model and concluded that the DHSY model is the best specification for United Kingdom. *Molana (1990)* also applied the error correction model (ECM) approach and concluded that the ECM would be appropriate in specifying the relationship between consumption and wealth. In another study, *Chambers (1991)* applies the same approach and finds the ECM to produce good forecasts for the UK economy.

*Flavin (1981)* revisits *Hall's* hypothesis using a structural econometric model of consumption based on the innovation process in income driving changes in consumption. She finds that consumption is more sensitive to changes in income than proposed by the permanent income hypothesis or life cycle hypothesis.

*Campbell and Mankiw (1990)* also find little support for permanent income hypothesis. They, further, found that about

50 percent of the consumers in United States based their consumption decisions on current income and this findings appears to offer an alternative theory to and wrench out of context in the permanent income hypothesis.

Besides the determinants of consumption discussed so far, it was also found in several studies, *Muellbauer and Lattimore (1995), Zeldes (1989)* and *Blinder and Deaton (1985)* that in the advanced industrialized countries consumption are also determined by additional variables such as demographic factors, liquidity constraints and uncertainty.

*Sameroynina (2005)* attempted to study the consumption and saving behaviour in Russia using the data of Russian Longitudinal Monitoring Survey for the years between 1994 and 2002. He found that (1) the saving rate had been steadily decreasing since 1994 and significantly dropped in 1998. However, the saving rate as measured by the standard definition has increased a little in 2002, (2) no significant correlation between changes in consumption and past changes in income. However, changes in consumption are significantly related to lag changes in savings and expenditures on durables; and (3)

changes in income are negatively correlated with lagged changes in saving. Therefore, saving is an important predictor of future income alterations as the permanent income hypothesis predicts.

*Narasimham (1956)*, using linear regression, estimated the marginal propensity to consume in India for different categories of income. His estimates were: 0.96 for farm income and 0.86 for non-corporate business income. *Iyengar and Moorthy (1959)* also made three estimates for the marginal propensity to consume, from the models that they fitted to time series data relating to national accounts, namely, 0.606, 0.718 and 0.717.

*Roy Choudhury (1968)* made a thorough examination of consumption and saving functions for India utilizing the data of the Reserve Bank of India series of savings and consumption series and the data of National Sample Survey Organization. She tried out several alternative functional forms with and without lagged explanatory variables, and some of the important findings are as follows: (1) aggregate income seems to be a better explanatory variable than per capita income, and

among the functional forms a simple straight line with no other explanatory variables seems to give the best result; (2) the propensities seem to differ widely between urban and rural areas; (3) from the results of fits to lagged variables, it was observed that factors other than current year's income have hardly any influence in determining the current level of consumption; and (4) the fits are generally less good for the urban sector than for the rural sector.

*Gupta (1970)*, criticizing the work of *Roy Choudhury* (1968), made certain alternative exercises and arrived at much more acceptable results. It was found in his study that: (1) there is significant effect of price changes and wealth on total and urban per capita consumption; (2) contrary to the findings of *Roy Choudhury's* negative propensity to consume out of permanent income for the urban sector, it was observed that there is positive marginal propensity to consume equal to about 0.62; and (3) there is much stronger support for the permanent income hypothesis.

*Mammon (1982)* attempted to estimate the consumption function for India for a much longer period using the data of

National Account Statistics for the period of 1950-51 to 1978-79. His study presents an evidence of lagged response of consumption to disposable income in case of India. Further, it lends some support to a general consensus view that the household's net saving rate is around 15 percent of disposable income.

*Upender (1996),* using the data of various issues of Economic Survey and National Accounts Statistics covering the period of 1950-51 to 1990-91, made an exercise to estimate the short-run and long-run consumption function for India. It can be observed from his exercise that the autonomous consumption expenditure is greater than zero showing the presence of dissavings of Indian households at lower income levels. The marginal propensity to consume was positive and less than unity evincing that the consumption expenditure was increasing with an increase in income but not by as much as income. The MPC was less than the average propensity to consume showing that the short-run elasticity of consumption expenditure was less than unity. The long-run elasticity of consumption expenditure was found to be substantially greater than the short-run elasticity of consumption expenditure corroborating

the economic assumption that the long-run MPC is bound to be higher than the short-run MPC due to discrepancy between actual change and desired change in consumption expenditure.

*Prasad (2001)* calculated the value of average propensity to consume and marginal propensity to consume in India for the period of 1950-51 to 1996-97. It was observed in his study that there is a general tendency of average propensity to consume to fall, i.e. it has declined from 0.94 in 1950-51 to 0.75 in 1996-97, while the marginal propensity to consume does not show any tendency to change either way.

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REFERENCES


1. Stigler, George J: *The Early History of Empirical Studies of Consumer Behavior*. The Journal of Political Economy, Vol. LXII, April 1954, pp 95-113.
2. Leser, C.E.V: *Family Budget Data and Price-Elasticities of Demand*. The Review of Economic Studies, Vol.9, No.1 (Nov., 1941) pp 40-57.
3. Burk, Marguerite C: *Changes in the Demand for Food from 1941 to 1950*. Journal of Farm Economics.Vol.33, No.3 (Aug., 1951), pp 281-298
4. Houthakker, H.S: *An International Comparison of Household Expenditure Patterns, Commemorating the Centenary of Engel's Law*. Econometrica, Vol.25, No.4 (Oct., 1957), pp 532-551
5. Leser, C.E.V: *Forms of Engel Functions*. Econometrica, Vol.31, No.4 (October, 1963), pp 694-703
6. Nisbet, Charles T & Firouz Vakil: *Some Estimates of Prices and Expenditure Elasticities of Demand for Marijuana Among UCLA Students*. The Review of Economics and Statistics, Vol.54, No.4 (Nov., 1972), pp 473-475
7. Economic Research Service: *Changing Structure of Global Food Consumption and Trade.* Working Paper No.01-1, 1997.

8. Regmi, Anita; M.S. Deepak; James L. Seale Jr. and Jason Bernstein: *Cross-Country Analysis of Food Consumption Patterns.* Diane Publishing Co., Darby, 2001.
9. Chern, Wen S., Kimiko Ishibashi, Kiyoshi Taniguchi & Yuki Tokoyama: *Analysis of Food Consumption Behaviour By Japanese Households.* Agriculture and Development Economic Division of the Food and Agriculture Organization, 2002. Working Paper No. 206. www.fao.org/es/esa
10. Iyengar, Sreenivasa N: *On a Method of Computing Engel Elasticities from Concentration Curves.* Econometrica, Vol. 28, No. 4, (Oct., 1960), pp 882-891.
11. Sinha, R.P: *An Analysis of Food Expenditure in India*. Journal of Farm Economics, Vol. 48, No.1 (Feb., 1966), pp 113-123.
12. Iyengar, N.S., L.R. Jain & T.N. Srinivasan: *Economies of Scale in Household Consumption: A Case Study*. Indian Economic Journal, 15, 1968. Econometric Annual, pp 465-477
13. Gupta, D.B: *A Comparison of Consumption Patterns in Uttar Pradesh and Madras - A study of inter-regional variations with reference to India.* Indian Economic Review, New Series, 3, (1968) pp 129-144
14. Coondoo, Dipankor: *The Effect of Relative Prices on Engel Elasticity of Cereals in India.* Arthaniti, Vol.12, 1969.
15. Coondoo, Dipankor: *A comparison of consumer expenditure pattern of Indian middle class and working class families.* Sankhya : The Indian Journal of Statistics. 1975, vol.37, Series C, Pt. 2, pp 81-101.
16. Singh, Amarjit & Haramol Singh: *Changing Consumption Pattern In Punjab: Projections of Consumer Demand for 1973-74.* Economic and Political Weekly, Vol. VI, No. 50, 1971
17. Coondoo, Dipankor; Robin Mukherjee and D.S. Prasada Rao: *Engel Curve Analysis with Non-Monetized Consumpton.* The Journal of Income and Wealth, Vol. 5, No. 2, July 1981.
18. Upender, M: *Estimates of Expenditure Elasticities of Demand.* Finance India, Vol. XII, No.3, Sept. 1998.
19. Upender, M: *Expenditure Elasticity for Clothing*. Anvesak, Vol.29, No.2, December 1999.
20. Prasad, A.R: *Consumption Behaviour in India: Theory and Evidence*. Reliance Publishing House, New Delhi, 2001, pp 342-343.
21. Ghose, Suchismita & Nikhilesh Bhattacharya: *Effect of Reference Period on Engel Elasticities of Clothing and Other Items: Further Results*. Sankhya: The Indian Journal of Statistics, 1995, Vol.57, Series B, Pt.3, pp 433-449
22. Keynes, J.M.: *The General Theory of Employment, Interest and Money*. Macmillan, New York, 1936
23. Duessenberry, James (1949): *Income, Saving and the Theory of Consumer Behaviour*. Harvard University Press, Cambridge, Massachussets, 1967.

24. Friedman, Milton (1957): *A Theory of Consumption Function*. Oxford & BH Publishing Co. New Delhi, 1970.
25. Modigliani, Franco and Richard Brumberg: *Utility Analysis and Consumption Function: An Interpretation of Cross section data.* Post Keynesian Economics, Rutgers Univ. Press. pp 388-436 ; and Modigliani, F and A. Ando: *The Life Cycle Hypothesis of Saving: Aggregate Implications and Tests.* American Economic Review, Vol. 53, (1963) pp 56-83
26. Laumas, Prem S and Khan A. Mohabbat: *The Permanent Income Hypothesis: Evidence from Time Series Data.* The American Economic Review, Vol. 62, No.4 (Sept., 1972) pp 730.
27. Kreinin, M.E: *Windfall Income and Consumption -Additional Evidence*. American Economic Review, Vol. 51 (June, 1961), pp 388-90
28. Bodkin, Ronald: *Windfall Income and Consumption*. American Economic Review. Vol. 49 (Sept., 1959) pp 602-14.
29. Yang, Charles Yneu: *An International Comparison of Consumption Functions*. The Review of Economics and Statistics, Vol. 46, No.3 (Aug., 1964) pp 279-286.
30. Singh, Balbir and Ramesh C. Kumari: *The Relative Income Hypothesis -A Cross Country Analysis.* The Review of Income and Wealth, Series 17, 1971. Pp 341-348
31. Jones, R.C: *Transitory Income and Expenditures on Consumption Categories.* American Economic Review, Vol. 50 (May, 1960) pp 584-92
32. Hall, R.E: *Stochastic Implications of the Life Cycle Hypothesis: Theory and Evidence.* Journal of Political Economy, Vol. 86, 1978, pp 971-987.
33. Davidson, J.E.H., D.F.Hendry., F.Srba and S. Yeo: *Econometric Modelling of Aggregate Time Series Relationship between Consumers, Expenditure and Income in United Kingdom.* The Economic Journal, Vol. 88, 1978, pp 661-692
34. Davis, M.A: *The Consumption Function in Macroeconomic Models: A comparative study*. Applied Economics, Vol.16., 1984, pp 799-838
35. Molana, H: *The Time Series Consumption Function: Error Correction, Random Walk and Steady State.* The Economic Journal, Vol. 101 (1990) pp 383-402.
36. Chambers, M.J: *An Alternative Time Series Model of Consumption: Some empirical Evidence.* Applied Economics, Vol, 23 (1991), pp 1361-1366.
37. Flavin, M: *The Adjustment of Consumption to Changing Expectations about future income.* Journal of Political Economy, Vol. 89, No. 5, 1981, pp 974-1009
38. Campbell, J and N. Mankiw: *Permanent Income, Current Income and Consumption.* Journal of Business and Economic Statistics, Vol.8 (1990) pp 265-279.

39. Muellbauer, J. and R. Lattimore: *The Consumption Function: A Theroretical and Empirical Overview.* Handbook of Applied Econometrics, Vol. 1: Macroeconomics edited by M.H. Wickens, Oxford, 1995.
40. Zeldes, S.P: *Consumption and Liquidity Constraints:An Empirical Investigation.* Journal of Political economy, Vol. 97, 1989, pp 305-345.
41. Blinder, A.R. and A. Deaton: *Time Series Consumption Function Revisited.* Brookings paper on Economic Activity, Vol.2, 1985, pp 465-521.
42. Sameroyanina, Yuliana: *Consumption and Saving Behaviour in Russia.* Working Paper, Columbia University, March 2005.
43. Duessenberry, J., O. Eckstein and G. Fromm: *A Simulation of the United States Economy in Recession.* Econometrica, vol. 28, 1960.
44. Davis, Tom E: *The Consumption Function As a Tool for Prediction.* Review of Economics and Statistics, Vol. 35, 1953.
45. Klein, L.R and N. Liviatan: *The Significance of Income Variability on Saving Behaviour*. Oxford University Institutes of Statistics, Bullettin. Vol. 19 (May, 1957), pp 151-60.
46. Narasimham, N.V.A: *A Short-Term Planning Model for India.* North Holland Publishing Co., Amsterdam, 1956.
47. Iyengar, N.S. and S. Krishna Moorty: *On Some Econometric Models of India.* Arthaniti, Vol. 2, 1959.
48. Roy Choudhury, Uma Datta: Income, *Consumption and Saving in Urban and Rural India.* The Review of Income and Wealth, Series 14, No. 1 (March, 1968) pp 37-56.
49. Gupta, K.L: *Income, Consumption and Saving in Urban and Rural India: A Note.* The Review of Income and Wealth, Series 16, No. 4 (Dec., 1970) pp 377-388.
50. Mammon, Thampy: *Consumption Function: Some Further Tests*. The Indian Economic Journal, Vol. 30, No. 1 (July-Sept., 1982) pp 15-22.
51. Upender, M: *The Short and Long Run Aggregate Consumption Functions.* Indian Journal of Applied Economics, Vol. 5, No. 2, Jan-March, 1996.

*CHAPTER – 3*

# GENERAL PATTERN OF CONSUMER EXPENDITURE IN MIZORAM

## 3.1: INTRODUCTION

Private final consumption expenditure in a readily quantifiable form is a direct measure of the standard of living of the people. As a criterion for evaluating the index of human well being, it is much more meaningful than domestic product or per capita income when the purpose is to understand the effect of domestic product on the condition of living of the population (*Prasad, 2001*). With the development of the economy, the pattern of consumer expenditure changes in which the share of food items decreases. At the same time, the share of non-food items – including consumption goods and services – increases with the increase in the level of income. The changing share of food items is described by Engel's Law which states 'the poorer a family, the greater the proportion of its total expenditure that must be devoted to the provision of food' (*Stigler, 1954*).

Since food is vital to life, the ratio of food consumption to total income or expenditure provides a basis for comparing the economic conditions of the country with that of other countries. Several studies (*Theil, et al, 1989; Cranfield, et al,*

*1998 and Regmi, et al, 2001*) confirmed that low-income countries spend a greater proportion (50 percent or more) of their total expenditure on food compared with richer countries, which spend less than 20 percent of their total expenditure on food. In general, it has been observed that lower income countries spend a greater proportion of their budget on necessities such as food, while richer countries spend a greater proportion on luxuries.

In line with the plan of our study, this chapter deals with the pattern of consumer expenditure in Mizoram vis-à-vis the expenditure pattern of India. The subsequent sections give an analysis of the pattern of consumer expenditure based on NSS data and the data of sample survey conducted by the researcher himself for the same purpose.

## 3.2: CHANGING PATTERNS OF CONSUMER EXPENDITURE IN INDIA AND NORTH-EASTERN REGION

An analysis of the changing pattern of consumer expenditure in the economy for a long period of time would enable us to know the impact of the process of economic development on the people. As the process of development has

gone through experience of rising income level, the pattern of consumer expenditure also changes leading to the decline in the share of food items on the total consumer expenditure. The present exercise attempts to study the changing pattern of consumer expenditure in India and North-Eastern India (or Region). The period covered for India is 30 years (i.e.1970-2003); however, due to lack of time series data, the period covered for North Eastern Region is 9 years (i.e.1994-2003). With the exception of the 55$^{th}$ Round (i.e.1990-2003) of National Sample Survey on Household Consumer Expenditure, there is no separate estimate for Mizoram in other Rounds of NSS. Hence, the estimate of consumer expenditures for the whole North-Eastern Region may be used as proxy variables for Mizoram.

Table 3.1 presents a change in the consumer expenditure on broad groups of items - beverages; meat; cereals, salt, sugar and edible oils; miscellaneous food items; pan tobacco and intoxicants; clothing and housing and miscellaneous non-food items - for the whole India based on various NSS Rounds. The total per capita monthly consumer expenditure at current prices increased from Rs.53.8 in 1973 to Rs.789.1in 2003. Similarly,

consumer expenditure on food items at current prices increased from Rs.36.5 in 1973 to Rs.364.5 in 2003; while non-food items increased from Rs.17.2 in 1993 to Rs 424.6 in 2003.

Table 3.2 presents the changing pattern of consumer expenditure in India for the period under consideration. The share of food items decreased from 67.8 percent in 1973 to 61.8 percent in 1983 and 46.2 percent in 2003. Side by side with the decreases in the share of food items, the share of non-food items increased from 32 percents in 1973 to 38.3 percent in 1983 and 53.8 percent in 2003. Thus, the consumption pattern of India reveals that the share of food items decreases with an increase in the total consumer expenditure. The results of this study proved that the change of consumption pattern in India is in conformity with Engel’s law.

Table 3.1: CHANGE IN THE AVERAGE PER CAPITA MONTHLY CONSUMER EXPENDITURE ON BROAD-GROUPS OF ITEMS IN INDIA BETWEEN 1973-2003

| | Average Expenditure (Rs) | | | |
|---|---|---|---|---|
| Items | 1973 | 1983 | 1993 | 2003 |
| Beverages | 3 | 7.5 | 22.4 | 43.2 |
| Meat | 1.6 | 4.6 | 12.4 | 22.56 |
| Vegetables | 2.2 | 12.6 | 17 | 40.6 |
| Cereals, salt, sugar and edible oils | 22 | 48.6 | 100.6 | 157.95 |
| Miscellaneous food items | 7.8 | 12.1 | 37.6 | 100.24 |
| **Food Item** | **36.5** | **85.4** | **190** | **364.5** |
| Pan, tobacco & intoxicants | 1.6 | 3.7 | 9.8 | 15.2 |
| Clothing and housing | 5.8 | 14.9 | 33.1 | 89.6 |
| Miscellaneous non-food items | 9.9 | 34.3 | 80.1 | 319.8 |
| **Non-food Item** | **17.2** | **52.9** | **123** | **424.6** |
| **total consumer expenditure** | **53.8** | **138.25** | **313** | **789.1** |

Source: Reports of 27th, 38th, 50th and 59th Rounds of National Sample Survey On Households Consumer Expenditure

Table 3.2: PERCENTAGE CHANGE IN THE PATTERN OF CONSUMER EXPENDITURE IN INDIA BETWEEN 1973-2003

| | Percentage share | | | |
|---|---|---|---|---|
| Items | 1973 | 1983 | 1993 | 2003 |
| Beverages | 5.6 | 5.4 | 7.2 | 5.5 |
| Meat | 3 | 3.3 | 4 | 2.8 |
| Vegetables | 4.1 | 9.1 | 5.4 | 5.1 |
| Cereals, salt, sugar and edible oils | 40.9 | 35.2 | 32.1 | 20 |
| Miscellaneous food items | 14.5 | 8.8 | 12 | 12.7 |
| **Food Item** | **67.8** | **61.8** | **60.7** | **46.2** |
| Pan, tobacco & intoxicants | 3 | 2.7 | 3.1 | 1.9 |
| Clothing and housing | 10.8 | 10.8 | 10.6 | 11.4 |
| Miscellaneous non-food items | 18.4 | 24.8 | 25.6 | 40.5 |
| **Non-food Item** | **32** | **38.3** | **39.3** | **53.8** |
| **total consumer expenditure** | **100** | **100** | **100** | **100** |

Source: Reports of 27th, 38th, 50th and 59th Rounds of National Sample Survey On Households Consumer Expenditure

As it is depicted in the above table, the percentage share of the commodity group of cereal, salt, sugar and edible oils showed a declining trend from 1973. It decreased from 40.9 percent in 1973 to 35.2 percent in 1983 and 20 percent in 2003. They are considered to be the normal goods consumed by the households falling within the class of necessity with inelastic demand. On the other hand, miscellaneous food items and miscellaneous non-food items have shown an increasing share. The share of miscellaneous food items decreased from 14.5 percent in 1973 to 8.8 percent in 1983; but the trend was observed to reverse and increase from 8.8 percent in 1983 to 12 percent in 1993 and further to 12.7 percent in 2003. The share of miscellaneous non-food items also increased from 18.4 percent in 1973 to 24.8 percent in 1983 and 40.5 percent in 2003. In the case of miscellaneous food item, the fluctuation in trend is attributable to the diversification of production in consumer goods. As a result of the development, which has been moving at a rapid pace, the market is bombarded with numerous new kinds of goods such as processed foods and fancy dresses. When the consumers are confronted with these varied choices, they are strongly tempted to consume more and jump on the bandwagon of spending spree. This is the reason

why the consumption of miscellaneous food items has been rising in contrast to the trend observed for food at large.

The item groups of beverages, meat, vegetables and pan, tobacco and intoxicants do not show any clear pattern, while the group of clothing and housing showed a slightly increasing pattern affirming that its consumption is an increasing function of income at this range of income level. It increased from 10.8 percent in 1973 to 11.4 percent in 2003. It is, therefore, reasonable to conclude that, for the lower income group, clothing and housing are falling within the group of luxuries.

The changing patterns of consumer expenditure in the North-eastern India for the period of 1994-2003 have been shown in Table 3.3 and 3.4. The total consumer expenditure increased from Rs.435.5 in 1994 to Rs.835.5 in 2003. While the total expenditure on food items increased from Rs.260.7 in 1994 to Rs.408.6 in 2003, the non-food items increased from Rs.174.8 in 1994 to Rs.426.9 in 2003.

It would be observed from Table 3.4 that there is a declining trend in the share of food items with the increase in the level of total consumer expenditure. The share of food items decreased from 59.9 percents in 1994 to 56.4 percent in 1998 and, further, to 48.9 percent in 2003. In contrast to the falling share of food items, the share of non-food items shows an increasing trend with the level of total consumer expenditure. Thus, the consumption pattern of North-Eastern India is also found to fall in line with the Engel's law as stated above.

The item groups of cereals, salt, sugar and edible oils also shows a decreasing trend. It decreased from 25.8 percent in 1994 to 21.9 percent in 2003. At the same time, the share of miscellaneous non-food items increased from 19.6 percent in 1994 to 27.01 percent in 2003. The commodity groups of beverages; meat; vegetables; miscellaneous food items; pan, tobacco & intoxicants and clothing and housing do not show any clear pattern. Hence, it may be concluded that even though there is slight difference, yet there is no significant difference in the pattern of consumer expenditure between North-Eastern Region and India as a whole.

Table 3.3: THE CHANGING PATTERN OF AVERAGE CONSUMER EXPENDITURE IN NORTH-EASTERN REGION

| | Average Expenditure (in Rs) | | | |
|---|---|---|---|---|
| Items | 1994 | 1998 | 2002 | 2003 |
| Beverages | 17.2 | 20.6 | 39.3 | 37.2 |
| Meat | 47.6 | 57.1 | 82.4 | 80.4 |
| Vegetables | 29.4 | 40.6 | 59.1 | 58.6 |
| Cereals, salt, sugar and edible oils | 112.12 | 160.4 | 216.7 | 177.7 |
| Miscellaneous food items | 54.44 | 52.6 | 125.8 | 64.9 |
| **Food Item** | **260.7** | **331.3** | **424.7** | **408.6** |
| Pan, tobacco & its products | 28.26 | 24.2 | 37.6 | 32.1 |
| Health care | 11.97 | 23.7 | 31.6 | 31.6 |
| Clothing and housing | 31.655 | 42 | 105.9 | 77.8 |
| Education | 17.705 | 53.4 | 43.8 | 49.5 |
| Miscellaneous non-food items | 85.15 | 112.9 | 204.6 | 225.7 |
| **Non-food Item** | **174.8** | **256.2** | **423.6** | **426.9** |
| **total consumer exp.** | **435.5** | **587.5** | **848.1** | **835.5** |

Source: Reports of 51st, 54th, 58th and 59th Rounds of National Sample Survey on Households Consumer Expenditure

Table 3.4: THE PERCENTAGE CHANGE IN THE PATTERN OF CONSUMER EXPENDITURE IN NORTH-EASTERN REGION

| | Percent on total expenditure | | | |
|---|---|---|---|---|
| Items | 1994 | 1998 | 2002 | 2003 |
| Beverages | 4 | 3.5 | 4.6 | 4.4 |
| Meat | 11 | 9.7 | 9.7 | 9.6 |
| Vegetables | 6.8 | 6.9 | 7 | 7 |
| Cereals, salt, sugar and edible oils | 25.8 | 27.3 | 25.6 | 21.3 |
| Miscellaneous food items | 12.5 | 9 | 14.8 | 7.8 |
| **Food total** | **59.9** | **56.4** | **50.1** | **48.9** |
| Pan and tobacco & its products | 6.5 | 4.1 | 4.4 | 3.8 |
| Health care | 2.7 | 4 | 3.7 | 3.8 |
| Clothing and housing | 7.3 | 7.1 | 12.5 | 9.3 |
| Education | 4.1 | 9.1 | 5.2 | 5.9 |
| Miscellaneous non-food items | 19.6 | 19.2 | 24.1 | 27.01 |
| **Non-food total** | **40.1** | **43.6** | **50** | **51.1** |
| **total consumer exp.** | 100 | 100 | 100 | 100 |

Source: Reports of 51st, 54th, 58th and 59th Rounds of National Sample Survey on Households Consumer Expenditure

## 3.3: PATTERN OF CONSUMPTION EXPENDITURE IN MIZORAM BASED ON THE 55TH NSS ROUND

The analysis of group-wise consumption expenditure reflects the preference ordering of consumers as well as the level of standard of living attained by the society. An attempt is made in the present exercise to analyze the consumer expenditure on groups of items. The present analysis is based on the data of 55th NSS Round (1999-2000). Further, the advantage of the current analysis is that it is based on the cross-sectional data, which take one time period. Moreover, cross-section data relate to a fixed point of time, they are not affected by the changes in the prices of the commodities.

The details of group-wise per capita monthly consumption in all areas (rural and urban) of Mizoram were given by the 55th NSS Round covering the period of July 1999 to June 2000. Table 3.5 presents the average per capita expenditure on groups of items; Table 3.6 and figure 3.1 present the percentage break-up of consumer expenditure in Mizoram and all India.

Table 3.5 reveals that, except in miscellaneous food items, in each of the commodity group, the average expenditure

in Mizoram is higher than the national average. Similarly, the total per capita consumer expenditure of Mizoram (Rs.889.235) is much higher than the national average of Rs.670.52. This report on the estimate of consumption expenditure is not in real terms but in terms of money value which would not reflect the actual difference unless due allowance for price difference is given. On the other hand, the number of families reduced to indigence is much less in the state of Mizoram though the per capita income is lower. This evidence points to the fact that there is more equitable distribution of income. *K.K. Uppadhaya* (1995), in his study of 'price structure in Mizoram' found that, on the average, the prices in Mizoram are 50 percent higher than that of Kolkata. If an allowance for 50 percent price difference is given, there is practically no difference in the per capita expenditure or in the quantity consumed. This difference is therefore purely due to the effect of price differentials. Further, it is observed from Table 3.5 that the urban spending is higher than that of rural in each of the commodity group. It is also found that the average spending on food items is higher than the average spending on non-food items.

An amount of Rs.489.18 had been spent on food items in Mizoram. The average expenditure on cereals, salt, sugar and edible oils was the largest among the food items; whereas beverages amounted to the smallest. Within non-food items, the miscellaneous non-food items accounted for the largest amount followed by clothing and housing. At the same time, expenditure on health care (Rs.16.68) is the smallest amount in non-food items in Mizoram while the average expenditure on pan, tobacco & intoxicants is the smallest among the non-food items in India.

Table 3.5: PER CAPITA AVERAGE MONTHLY CONSUMPTION ON GROUPS OF ITEMS IN MIZORAM AND INDIA

| | Mizoram | | | India | | |
|---|---|---|---|---|---|---|
| Items | Rural | Urban | All Mizoram | Rural | Urban | All India |
| Beverages | 31.02 | 44.33 | 37.675 | 20.38 | 17.73 | 19.055 |
| Meat | 71.4 | 110.67 | 91.035 | 16.14 | 26.77 | 21.455 |
| Vegetables | 87.11 | 110.82 | 98.965 | 29.98 | 43.9 | 36.94 |
| Cereals, salt, sugar and edible oils | 179.6 | 193.1 | 186.3 | 138.6 | 147.76 | 143.2 |
| Miscellaneous food items | 59.4 | 91.03 | 75.21 | 83.73 | 174.7 | 129.2 |
| **Food Item** | **428.5** | **549.9** | **489.18** | **288.8** | **410.86** | **349.83** |
| Pan, tobacco & intoxicants | 39.7 | 59.7 | 49.7 | 13.97 | 16.23 | 15.1 |
| Health care | 11.57 | 20.79 | 16.18 | 29.59 | 43.29 | 36.44 |
| Clothing and housing | 65 | 128.12 | 96.56 | 40.5 | 61.81 | 51.16 |
| Education | 18.72 | 32.32 | 25.52 | 9.37 | 37.06 | 23.215 |
| Miscellaneous non-food items | 158.4 | 265.81 | 212.095 | 103.9 | 285.71 | 194.78 |
| **Non-food Item** | **293.4** | **506.74** | **400.055** | **197.3** | **444.1** | **320.69** |
| **total consumer exp.** | **721.8** | **1056.6** | **889.235** | **486.1** | **854.96** | **670.52** |

Source: NSS 55th Round (July 1999 - June 2000)

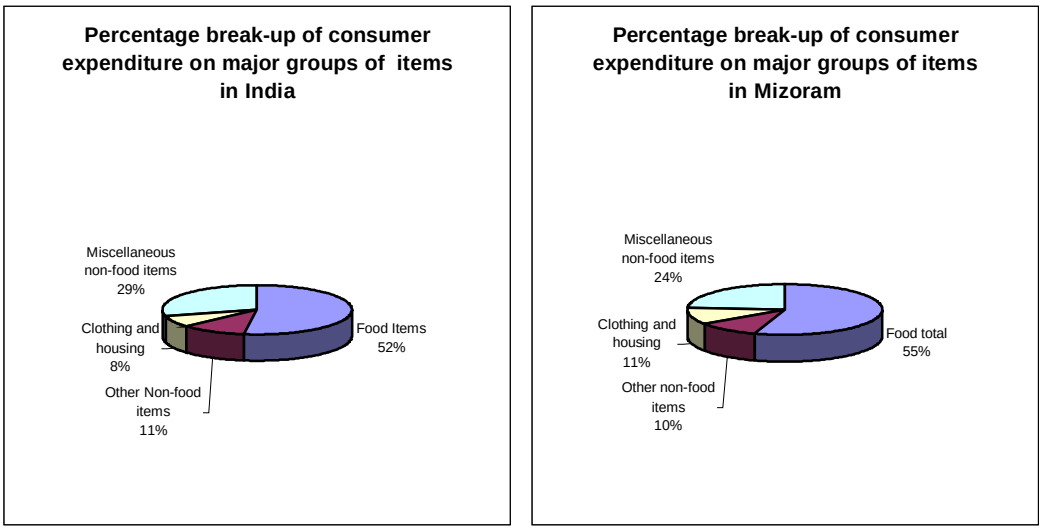
Table 3.6: PERCENTAGE BREAK UP OF PER CAPITA MONTHLY CONSUMER EXPENDITURE ON GROUPS OF ITEMS

| | Mizoram | | | India | | |
|---|---|---|---|---|---|---|
| Items | Rural | Urban | All Mizoram | Rural | Urban | All India |
| Beverages | 4.3 | 4.2 | 4.2 | 4.2 | 2.1 | 2.8 |
| Meat | 9.9 | 10.5 | 10.2 | 3.3 | 3.1 | 3.2 |
| Vegetables | 12.1 | 10.5 | 11.1 | 6.2 | 5.1 | 5.5 |
| Rice, salt, sugar and edible oils | 24.9 | 18.3 | 21 | 28.5 | 17.3 | 21.4 |
| Miscellaneous food items | 8.2 | 8.6 | 8.4 | 17.2 | 20.4 | 19.3 |
| **Food Item** | **59.4** | **52** | **55** | **59.4** | **48.1** | **52.2** |
| Pan, tobacco & intoxicants | 5.5 | 5.6 | 5.6 | 2.9 | 1.9 | 2.2 |
| Health care | 1.6 | 2 | 1.8 | 6.1 | 5.1 | 5.4 |
| Clothing and housing | 9 | 12.1 | 10.8 | 8.33 | 7.2 | 7.6 |
| Education | 2.6 | 3.1 | 2.9 | 1.9 | 4.3 | 3.5 |
| Miscellaneous non-food items | 22 | 25.2 | 23.8 | 21.4 | 33.4 | 29 |
| **Non-food Item** | **40.6** | **48** | **45** | **40.6** | **51.9** | **47.8** |
| total consumer exp. | 100 | 100 | 100 | 100 | 100 | 100 |

Source: NSS 55th Round (July 1999 - June 2000)

The percentage break-up of major items of consumption is presented in figure 3.1. It would be observed from the figure that food items accounted for more than half of the total consumer expenditure (i.e. 55 percent for Mizoram and 52 percent for India). Since the share of food items is about 50 percent or more in a developing economy (*ERS, 1997*), India may be included among the developing countries.

**Figure 3.1**




Among the food items, cereals, salt, sugar and edible oils took the largest share. It was 21 percent in Mizoram and 21.4 percent at the national level. As the share of miscellaneous items in Mizoram (8.4 percent) is much lower than the national average (19.3), there is less diversity of food consumption in Mizoram than in other parts of the country. With the exception of cereals, salt, sugar and edible oils, and education, which showed more or less the same percent, the distribution of expenditure in Mizoram in each of the commodity group is deviating from the national average.

## 3.4: PATTERN OF CONSUMER EXPENDITURE IN MIZORAM BASED ON THE SAMPLE SURVEY

In addition to the above analysis of the pattern of consumer expenditure based on the 55$^{th}$ NSS Rounds, the researcher carried out a study on the pattern of consumer expenditure based on the sample survey conducted by himself during July-August, 2007. This survey covered 372 households, 193 urban household and 179 rural households, in Mizoram. The finding are tabulated and presented in Table 3.7 and Table 3.8.

Table 3.7 presents the expenditure pattern of Mizoram based on the sample survey conducted by the researcher himself during July-August, 2007. Broadly the per capita consumer expenditure on all groups of items is higher in urban areas than in rural areas. Per capita monthly consumer expenditure (PMCE) in urban areas is Rs. 2731.82, which is more than two times the per capita monthly consumer expenditure in rural areas, which is Rs. 1151.26. The PMCE of Mizoram is Rs.1971.28 against the per capita monthly income (PMI) of Rs.2414.76 indicating the average propensity to consume is 0.82. The PMCE of Mizoram in this survey is found to be

higher than the figure in the 55th NSS Round. This is largely due to an increase in price levels. If an allowance were given to the price increase, the difference would not be significantly large. In line with the differences in PMCE between rural and urban areas, per capita monthly income of urban areas is Rs.3506.66 against Rs.1237.46 in rural areas. The PMI of urban areas is almost three times the PMI of rural areas. On the basis of this estimate, the average propensity to consume works out to be 0.93 in rural areas and 0.78 in urban areas, which indicates that as income increases average propensity to consume (ratio of consumption to income) decreases as stated in the Keynesian Absolute Income Hypothesis.

The main factor causing the differences in consumption expenditure between rural and urban areas may be attributable to the following: first, the cost of living is much higher in urban areas than in rural areas; second, the consumption of non-food items including luxury items increases at an accelerated rate as income increases. The ratio of food to non-food item is 0.57 in rural areas and 0.37 in urban areas indicating that there is a tendency to consume luxury items as income level increases. Finally, under-valuation of own-produced

consumption leads to understatement of per capita consumption in rural areas. In rural areas, the majority of food items consumed are own-produced. In the process of valuation of such items the possibility of under-valuation is very high.

The per capita monthly consumer expenditure of Mizoram on food items is Rs.578.15. Within the food items considered in the field survey, the amounts spent on the item group of cereals, salt, sugar & edible oils was found to be the highest followed by beverages. It was Rs.177.96 for cereals, salt, sugar and edible oils and Rs.141.24 beverages respectively. The per capita expenditure was found to be the lowest in case of meat item that is Rs. 122.84.

Significant difference on the amount of spending on food items is observed between rural and urban areas. For all the food groups under considerations, urban average spending range between Rs.150 and Rs.205; while in the rural areas, it is within Rs.70 and Rs.160. In case of the items of beverages and meat, urban spending are more than two times the rural spending. Average spending on beverages is Rs.74.78 in rural

areas against Rs.202.88 in urban areas. Similarly, the consumption spending on meat in urban areas averaged to

Table 3.7: AVERAGE EXPENDITURE(Rs) PER PERSON PER MONTH ON SELECTED GROUPS OF ITEMS OF CONSUMPTION

| Sl No | Items | Average expenditure(in Rs) | | |
|---|---|---|---|---|
| | | Rural | Urban | Mizoram |
| 1 | Beverages | 74.78 | 202.88 | 141.24 |
| 2 | Meat | 74.59 | 167.59 | 122.84 |
| 3 | Vegetables | 108.39 | 161.84 | 136.12 |
| 4 | Cereals, salt, sugar and edible oils | 157.62 | 196.82 | 177.96 |
| **5** | **Food Item** | **415.38** | **729.11** | **578.15** |
| 6 | Pan, tobacco & intoxicants | 101.12 | 142.31 | 122.49 |
| 7 | Entertainment and telecommunications | 93.49 | 248.84 | 174.09 |
| 8 | Health Care | 57.44 | 89.5 | 74.07 |
| 9 | Clothing and housing | 231.25 | 583.39 | 413.94 |
| 10 | Education | 98.57 | 300.53 | 203.35 |
| 11 | Transportations | 38.03 | 96.76 | 68.5 |
| 12 | Miscellaneous | 115.98 | 541.39 | 336.69 |
| **13** | **Non Food Item** | **735.88** | **2002.71** | **1393.13** |
| **14** | **Per capita monthly consumer expenditure** | **1151.26** | **2731.82** | **1971.28** |
| 15 | Per capita monthly income | 1237.46 | 3506.66 | 2414.76 |

Source: Sample Survey: July-August, 2007.

Rs.167.54 as against Rs.74.59 in rural areas. In case of cereals, salt, sugar and edible oils, the average spending is Rs.157.62 in rural areas as against Rs.196.82 in urban areas. The average expenditure on vegetables is Rs.108.39 in rural areas while it is Rs.196.82 in urban areas. It is observed in all food items that

average expenditure in rural areas is below the State's averages and that of the urban areas is above it.

Per capita consumption expenditure on non-foods items in Mizoram is Rs.1393.13. Among the non-food items under study, the amount spent on clothing and housing is the highest followed by miscellaneous items, education and entertainments & telecommunications. This is found to be Rs.413.94 for clothing and housing, Rs.336.69 for miscellaneous items, Rs.203.35 for education and Rs.174.09 for entertainment and telecommunications. The lowest figure is observed in transportations (Rs.68.5) followed by health care (Rs.74.07).

The lowest rural-urban difference in the amount of per capita expenditure was found in case of health care followed by pan, tobacco & intoxicants. In case of health care, it is Rs.57.44 and Rs.89.5 for rural and urban areas respectively. Similarly for the items group of pan, tobacco & intoxicants, the variations in the rates of per capita expenditure are Rs.101.12 and Rs.142.31 for rural and urban areas respectively. On the other hand, the highest difference of per capita expenditure between rural and urban areas is on miscellaneous items followed by education.

Per capita expenditure on miscellaneous items in urban areas is Rs.541.39 that is almost as high as five times the average expenditure on miscellaneous items in rural areas (Rs.115.980). For education, the average expenditure, which is found to be Rs.300.53 in urban areas, is more than three times the average rural expenditure, which stands at Rs.98.57. The overall difference in the amount of per capita expenditure between rural and urban areas is higher in non-food items than in food items. This is due to the fact that food is necessity whose consumption hardly increase with the increase in income; whereas, the consumption of non-food items increases with the levels of income.

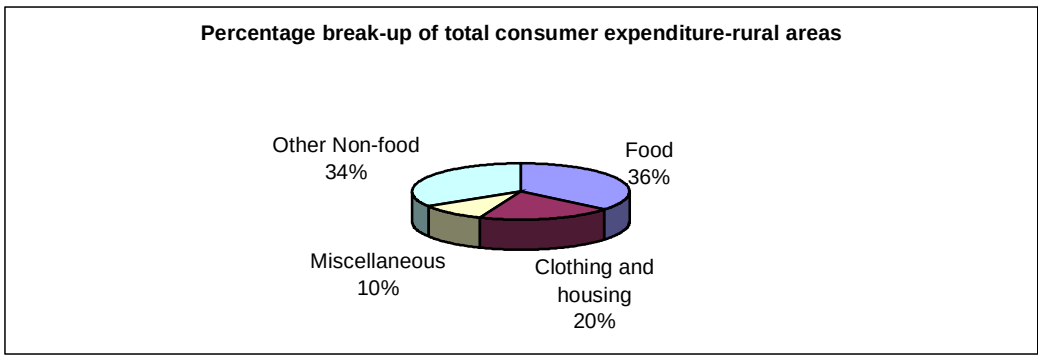
The detail of percentage break-up of various commodity groups is presented in Table 3.8 and Figure 3.2 below. Food expenditure accounts for 29.3 percent, while non-food accounts for 70.67 percent. The share of cereals, salt, sugar and edible oils is the largest among the food items and the share of meat is found to be the smallest. Clothing and housing took the largest share (21 percent) for all items followed by miscellaneous items (17.08 percent). The share of transportation at 3.47 percent is the smallest followed by health care (3.76 percent).

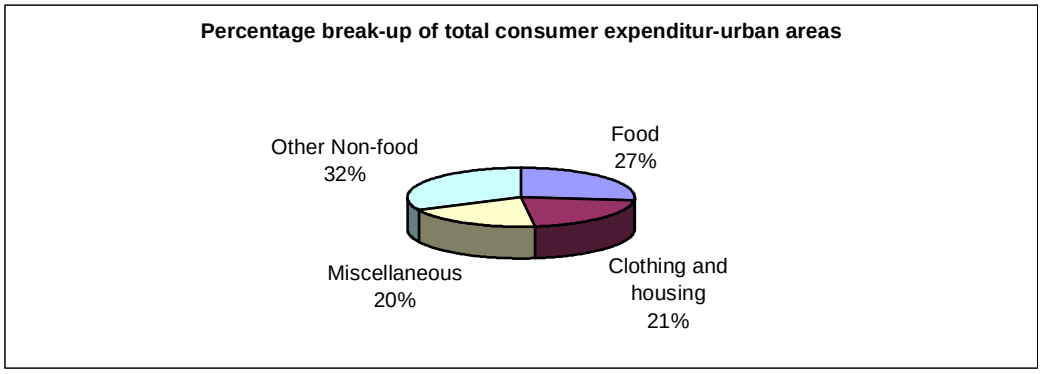
Table 3.8: PERCENTAGE DISTRIBUTION OF TOTAL CONSUMER EXPENDITURE PER PERSON PER MONTH OVER SELECTED GROUPS OF ITEMS

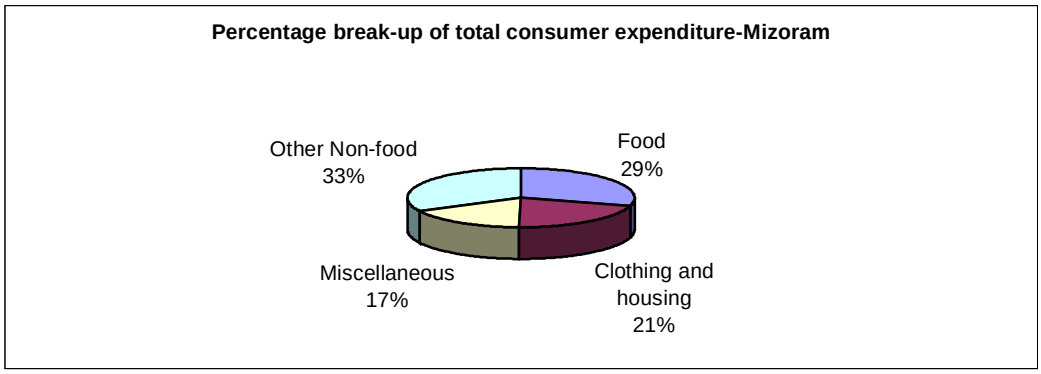
| Sl No | Items | Percentage share | | |
|---|---|---|---|---|
| | | Rural | Urban | Both Areas |
| 1 | Beverages | 6.5 | 7.43 | 7.16 |
| 2 | Meat | 6.48 | 6.13 | 6.23 |
| 3 | Vegetables | 9.41 | 5.92 | 6.91 |
| 4 | Cereals, salt, sugar and edible oils | 13.69 | 7.2 | 9.03 |
| **5** | **Food Item** | **36.08** | **26.69** | **29.33** |
| 6 | Pan and tobacco & its products | 8.78 | 5.21 | 6.21 |
| 7 | Etertainment and telecommunications | 8.12 | 9.11 | 8.83 |
| 8 | Health Care | 4.99 | 3.28 | 3.76 |
| 9 | Clothing and housing | 20.08 | 21.36 | 21 |
| 10 | Education | 8.56 | 11 | 10.32 |
| 11 | Transportations | 3.3 | 3.54 | 3.47 |
| 12 | Miscellaneous | 10.07 | 19.82 | 17.08 |
| **13** | **Non Food Item** | **63.92** | **73.31** | **70.67** |
| **14** | **Total per capita monthly consumer expenditure** | 100 | 100 | 100 |

Source: Sample Survey: July-August, 2007.

Figure 3.2: Percentage break-up of total consumer expenditure in Mizoram






Thus the analysis of the data reveals that there is a wide disparity of consumption patterns between rural and urban areas. In rural areas, the percent of food expenditure is 36.08 against 26.69 percent in urban areas. Since the per capita monthly consumer expenditure in urban areas is higher than in rural areas, the given data supports the proposition of the theory of decreasing proportion of food consumption with the increase in consumption expenditure. Among the food items, the share of cereals, salt, sugar and edible oils accounts for the largest (13.69 percent) in rural areas whereas beverages (7.43

percent) accounts for the largest in urban areas. There is only marginal difference between rural and urban areas in the share of meat consumption. It is 6.48 percent in rural areas and 6.13 percent in urban areas. The share of vegetables in rural areas is 9.41 percent, which is significantly higher than 5.92 percent in urban areas.

Except for miscellaneous items, rural and urban areas show more or less the same pattern of consumption in non-food items. Clothing and housing account for the largest share both in rural and urban areas. They are 20.08 percent and 21.36 percent for rural and urban areas respectively. Miscellaneous items take 10.07 percent in rural areas against 19.82 percent in urban areas. It may be argued that the greater diversity of consumption items in urban areas than in rural areas leads to wide disparity in the consumption of miscellaneous items. In rural areas, pan, tobacco & intoxicants accounts for 8.78 percent while in urban areas it is 5.21 percent. Since these items are addictive in nature, the amount spent on these items is normally the same irrespective of whether the consumer’s income is low or high. This led to the high share in rural areas even though the absolute amount of expenditure is low. For the

commodity groups of entertainment and telecommunications, health care, education and transportations the percentage share are almost same for rural and urban areas.

## 3.5: PATTERN OF EXPENDITURE AMONG VARIOUS PMCE CLASSES

Since private final consumption expenditure is a direct measure of the living standard of the people, an analysis of the pattern of consumption expenditure on groups of items for different PMCE classes would highlight the living standard of the people in each class and; at the same time it represented the inequality of consumption among the people. In table 3.9 is presented the average per person expenditure on group of items for various PMCE classes. The average PMCE is Rs.534.94 in the lowest group (Rs.0-840) and it is Rs.5639.77 in the highest group (Rs.4200-+). This implies that the average consumption of the highest PMCE group is more than 10 times the total average consumption of the lowest PMCE group. Therefore, this is a clear indication that there is wide disparity in terms of consumption among the people in the state as the range of PMCE is Rs.5104.83. It is also observed that with the increase

in PMCE there is a tendency for the average family size to decrease.

Table 3.9: AVERAGE PER PERSON CONSUMPTION EXPENDITURE ON GROUP OF ITEMS FOR DIFFERENT PMCE CLASSES

| | PMCE (Rs) Classes | | | | | | |
|---|---|---|---|---|---|---|---|
| Items | 0-840 | 840-1680 | 840-2520 | 2520-3360 | 3360-4200 | 4200-+ | All classes |
| Beverages | 29.49 | 101.35 | 189.57 | 223.67 | 279.1 | 270.89 | 141.24 |
| Meat | 43.65 | 107.96 | 161.61 | 174.64 | 199.73 | 192.17 | 122.84 |
| Vegetables | 76.2 | 105.71 | 158.71 | 194.96 | 224.18 | 205.89 | 136.12 |
| Cereals, salt, sugar and edible oils | 146.49 | 170.88 | 202.75 | 204.34 | 219.75 | 171.23 | 177.96 |
| **Food Item** | **295.83** | **485.89** | **712.65** | **797.62** | **922.77** | **840.18** | **578.15** |
| Pan, tobacco & intoxicants | 63.25 | 106.14 | 145.74 | 154.28 | 180.25 | 214.5 | 122.49 |
| Entertainment and telecommunications | 19.96 | 114.63 | 198.92 | 274.15 | 367.13 | 459.02 | 174.09 |
| Health care | 14.96 | 53.98 | 101.28 | 111.18 | 110.88 | 179.44 | 74.07 |
| Clothing and housing | 38.29 | 139.61 | 394.33 | 750.49 | 973.74 | 1454.9 | 413.94 |
| Education | 33.01 | 88.1 | 195.5 | 291.56 | 406.68 | 757.05 | 203.35 |
| Transportations | 12.19 | 34.95 | 53.07 | 82.46 | 106.92 | 317.46 | 68.5 |
| Miscelleneous Items | 57.45 | 167.94 | 267.17 | 429.88 | 651.62 | 1417.3 | 336.69 |
| **Non-food Item** | **239.11** | **705.35** | **1356** | **2094** | **2797.2** | **4799.6** | **1393.13** |
| **PMCE** | **534.94** | **1191.3** | **2068.7** | **2891.62** | **3719.98** | **5639.8** | **1971.28** |
| PMI | 563.97 | 1321.6 | 2499.5 | 3310.91 | 3377.78 | 8980.9 | 2414.76 |
| No. of families | 100 | 100 | 64 | 45 | 29 | 33 | 372 |
| average family size | 6.1 | 6.4 | 6.1 | 5.2 | 5.4 | 5.2 | 5.9 |

Source: Sample Survey, July-August, 2007.

The amount spent on food items increase from Rs.295.83 in Rs. 0-840 PMCE class to Rs.840.18 in Rs.4200-+ PMCE class, which indicates the range of food consumption, is

Rs.544.35. At the same time, the amount spent on non-food items increase from Rs.239.11 in Rs.0-840 PMCE class to Rs.4799.59 in Rs.4200-+ class indicating that the range of non–food consumption is Rs.4560.48. Hence, the level of inequality in consumption is much higher in non-food items than in food items. Food consumption is more or less consistent in comparision with the consumption of non-food items.

Within the food items, the items group of cereals, salt, sugar and edible oils shows the lowest degree of consumption inequality as the value of its range is Rs.73.75; whereas beverages shows the highest consumption inequality as the value of its range is Rs.249.61. The item group of clothing and housing shows the highest consumption inequality among the non-food items. The range of per capita consumption on clothing and housing is Rs.1416.61. At the same time, the items group of pan, tobacco & intoxicants shows the lowest consumption inequality among the non–food items.

At a given level of per capita income/total expenditure the Engel ratios, i.e. proportions of total expenditure spent on various items to total expenditure, provide a broad picture of

consumption pattern *(Coondoo, 1975)*. To examine the consumption pattern of various classes, the researcher works out the movement of Engel ratios for various commodity groups for each of the PMCE class. Table 3.10 presents the item-wise Engel ratios in percentage terms.

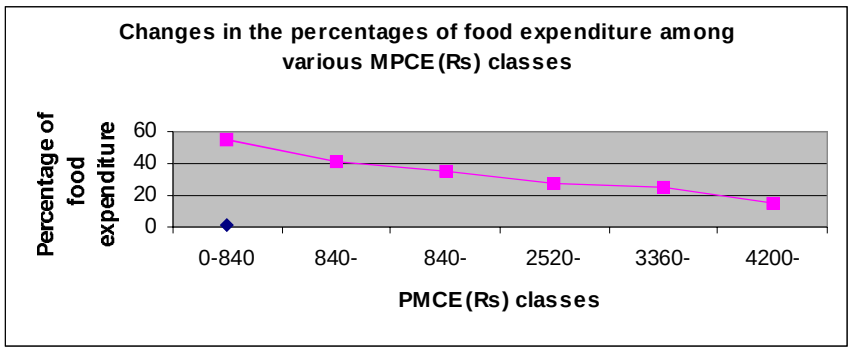
Table 3.10:PERCENTAGE BREAK UP OF PER PERSON CONSUMPTION EXPENDITURE ON GROUP OF ITEMS FOR DIFFERENT PMCE CLASSES

| | PMCE (Rs) Classes | | | | | | |
|---|---|---|---|---|---|---|---|
| Items | 0-840 | 840-1680 | 840-2520 | 2520-3360 | 3360-4200 | 4200-+ | All classes |
| Beverages | 5.51 | 8.51 | 9.16 | 7.74 | 7.5 | 4.8 | 7.16 |
| Meat | 8.16 | 9.06 | 7.81 | 6.04 | 5.37 | 3.41 | 6.23 |
| Vegetables | 14.24 | 8.87 | 7.67 | 6.74 | 6.03 | 3.65 | 6.91 |
| Cereals, salt, sugar and edible oils | 27.38 | 14.34 | 9.8 | 7.07 | 5.91 | 3.04 | 9.03 |
| **Food Items** | **55.3** | **40.79** | **34.45** | **27.58** | **24.81** | **14.9** | **29.33** |
| Pan, tobacco & intoxicants | 11.82 | 8.91 | 7.04 | 5.34 | 4.84 | 3.8 | 6.21 |
| Entertainment and telecommunications | 3.73 | 9.62 | 9.62 | 9.48 | 9.87 | 8.14 | 8.83 |
| Health care | 2.8 | 4.53 | 4.89 | 3.84 | 2.98 | 3.18 | 3.76 |
| **Clothing and housing** | **7.16** | **11.72** | **19.06** | **25.95** | **26.18** | **25.8** | **21** |
| Education | 6.17 | 7.39 | 9.45 | 10.08 | 10.93 | 13.42 | 10.32 |
| Transportations | 2.28 | 2.93 | 2.56 | 2.85 | 2.87 | 5.63 | 3.47 |
| Miscellaneous Items | 10.74 | 14.1 | 12.92 | 14.87 | 17.52 | 25.13 | 17.08 |
| **Non-food** | **44.7** | **59.21** | **65.55** | **72.42** | **75.19** | **85.1** | **70.67** |
| PMCE | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| APC | 0.95 | 0.9 | 0.83 | 0.87 | 1.1 | 0.63 | 0.82 |
| No. of families | 100 | 100 | 64 | 45 | 29 | 33 | 372 |
| average family size | 6.1 | 6.4 | 6.1 | 5.2 | 5.4 | 5.2 | 5.9 |

Source: Sample Survey, July-August, 2007.

As it is depicted in the above table, the percentage share of food decreased with the increase in total expenditure. It decreases from 55.3 percent in Rs.0-840 class to 40.79 percent in Rs.840-1680 class to 14.9 percent in Rs, 4200-+ classes. For the broad groups of our survey data, there is a tendency for Engel's ratio to decrease as total expenditures increase, which is in conformity with Engel's Law. The decline in the share of food items is presented in Figure 3.3. Among the food items, there is a sharp decrease in the percentage share of cereals, salt, sugar and edible oils which decrease from 27.38 percent in the lowest PMCE class to 3.04 percent in the highest PMCE class; whereas the share of beverages has an increasing tendency up to Rs.3360-4200 PMCE class. It may be reasonable to infer that the item group of cereals, salt, sugar and edible oils is the most inelastic and at the same time beverage is the most elastic items among the foods items considered in the study.

Figure 3.3:



The percentage share of non-food items increases with the increase in the level of total expenditure. It increase from 44.7 percent in Rs.0-840 class to 85.1 percent in Rs.4200-+ class implying that as total income/expenditure increases, the percentage share of non-food increases. As a result of which non-food items can be considered as elastic goods. With the exception of pan, tobacco & intoxicants, whose percentage share decrease from 11.82 percent in the lowest PMCE class to 3.8 percent in the highest PMCE class, the share of non-foods items like entertainment and telecommunication, health care, clothing and housing, education, transportation, and miscellaneous items increase with the increase in the total expenditure.

## 3.6: CONCENTRATION IN CONSUMER EXPENDITURE

Concentration curves of expenditure can be used to study the degree of concentration in consumer expenditure. The concentration curve gives the percentage 100q of the total consumption expenditure by the poorest 100p percent of the population (*Singh & Singh, 1971*). So the curve is absolutely independent of units of money and can readily be used to

compare the concentration in consumer expenditure of the rural with the urban areas and also between different groups of commodities.

Table 3.11 shows that more than half (57.2 percent) of the total population who are in the lower expenditure group account for less than one-fourth (23.8 percent) of the total consumer expenditure. At the same time, the upper 14.6 percent of the population account for more than one–third (40.2 percent) of the total consumer expenditure. In the consumption of food items, 57.2 percent of the population accounts for 36.6 percent of the total consumer expenditure while the top 14.6 percent of the population accounts for 25.4 percent of the total expenditure on food items. In regards to the consumption of non-food items, 57.2 percent of the population in the lower consumption bracket accounts for 18.46 percent; whereas the 14.6 percent of the population in the upper PMCE bracket accounts for 46.36 percent of the total consumer expenditure on non-food items. Figure 3.4 (a) shows the expenditure concentration curves for food and non-food items in Mizoram. It is observed that there is a greater concentration in the consumption of non-food items than in food items.

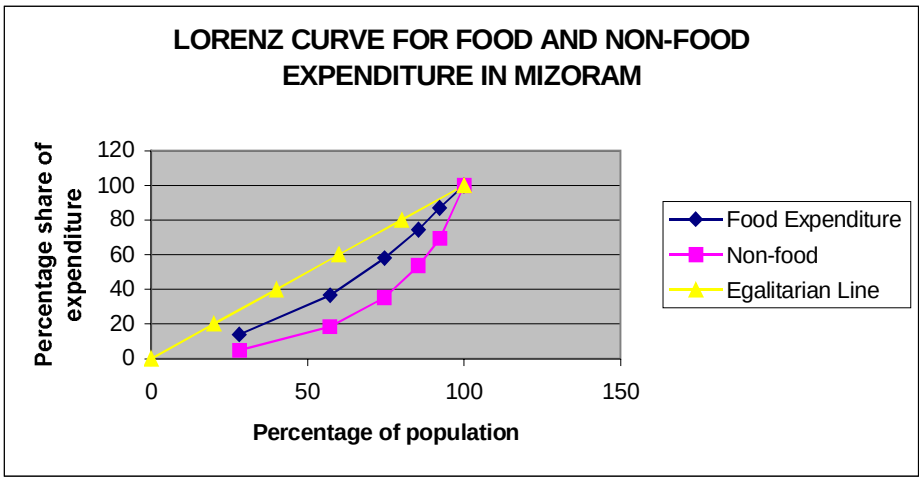
Table 3.11: CONCENTRATION IN FOOD, NON-FOOD AND TOTAL CONSUMER EXPENDITURE

| MPCE (Rs) Classes | Cumulative Percent Persons | | Cumulative Consumer Expenditure on Food | | Cumulative Consumer Expenditure on non-Food | | Cumulative Total Consumer Expenditure | | All Areas | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Rural | Urban | Rural | Urban | Rural | Urban | Rural | Urban | Cumulative Percent Persons | Cumulative % Expenditure on Food | Cumulative % Expenditure on Non-food | Cumulative % Total Consumer Expenditure |
| 0-840 | 53.1 | *4.2* | 36 | 2.3 | 16.4 | 0.73 | 23.4 | 1.1 | 28.2 | 13.9 | 4.7009 | 7.409 |
| 840-1680 | 81.5 | *33.9* | 66.4 | 20.81 | 43.6 | 9.88 | 51.84 | 12.8 | 57.2 | 36.6 | 18.458 | 23.77 |
| 1680-2520 | 90.6 | *59.3* | 81 | 45.74 | 61.9 | 26.2 | 68.81 | 31.43 | 74.5 | 57.9 | 35.294 | 41.94 |
| 2520-3360 | 96.6 | *75.1* | 93.3 | 64.75 | 82.1 | 43.9 | 86.15 | 49.49 | 85.4 | 74.6 | 53.641 | 59.79 |
| 3360-4200 | 98.5 | *86.6* | 97.1 | 81.84 | 90.9 | 62.1 | 93.16 | 67.38 | 92.2 | 87.1 | 69.438 | 74.62 |
| 4200-+ | 100 | *100* | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |

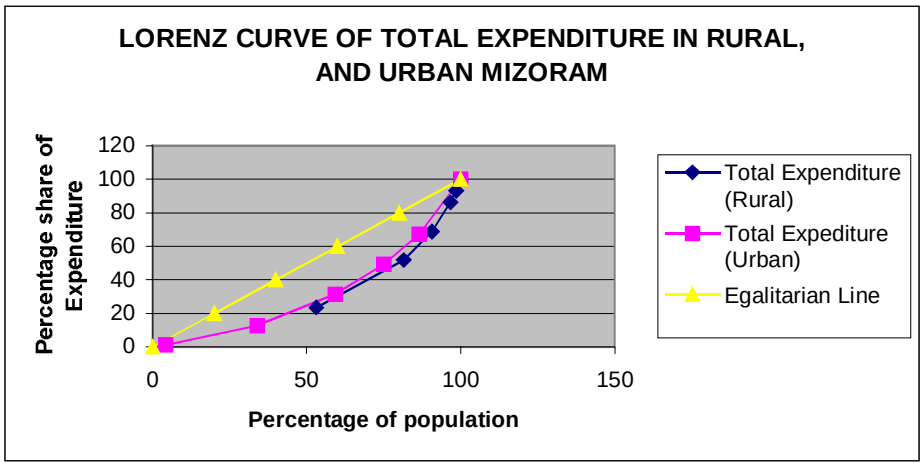
Source: Based on the Sample Survey 2007

It would be observed from the above table that more than half (53.1 percent) of the people of rural areas who are in the lowest consumption bracket accounts for 36 percent, 16.4 percent and 23.43 percent of the total rural consumer expenditure on food, non-food and total consumer expenditure respectively. At the same time, almost 10 percent of the rural

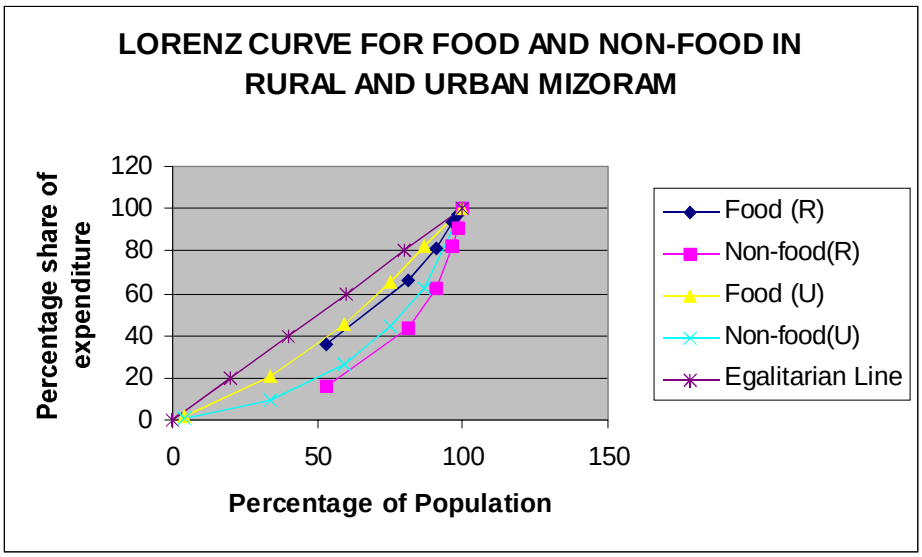
Figure 3.4: (a)




(b)




(c)



population who are in the top consumption bracket account for 19 percent, 38.1 percent and 31.19 percent of the total expenditure on food, non-food items and total rural consumer expenditure respectively.

Further, more than half (56.3 percent) of the urban population who are in the lower consumption bracket account for 47.74 percent of the total consumer expenditure on food and 26.22 percent on non-food items; and 31.43 percent of the total consumer expenditure. At the same time, the top 13.4 percent of the urban population account for 17.9 percent of total consumer expenditure on food and 36.06 percent of non-food items; and 50.51 percent of the total urban consumer expenditure.

It would be observed from figure 3.4(b) and (c) that there is more concentration in the consumption of non-food items than in food item for both rural and urban areas. The magnitudes of the concentration are more or less same in each of the food and non-food item for rural and urban areas.

In an attempt to quantify the degree of concentration of consumer expenditure on food and non-food items, the Gini concentration ratio has been calculated as follows:

Let the total frequency of the population be N and let I be the total income. Let

$$p_x = \frac{Number\ of\ persons\ with\ income \leq x}{N}$$

$$q_x = \frac{Total\ income\ of\ persons\ with\ income \leq x}{I}$$

If there is a functional relationship between $p_x$ and $q_x$ for all values of x, we can write

$$q_x = f(p_x) \qquad (3.1)$$

Gini suggested the functional form to be

$$q_x = 1-(1-p_x)^{1/d} \qquad (3.2)$$

Therefore, the concentration ratio ($\ell$) is defined as

$$\ell = 1 - 2\int_0^1 q_x(p_x)dp_x$$

$$\ell = \frac{d-1}{d+1} \qquad (3.3)$$

Table 3.12: LORENZ CONCENTRATION RATIOS FOR FOOD, NON-FOOD AND TOTAL CONSUMER EXPENDITURE IN MIZORAM

| | Lorenz Concentration Ratios | | |
|---|---|---|---|
| Items | Rural | Urban | All Areas |
| Food Items | 0.2 | 0.16 | 0.22 |
| Non-Food Items | 0.42 | 0.42 | 0.46 |
| Total Consumer Expenditure (PMCE) | 0.34 | 0.35 | 0.39 |

Source: Sample Survey, July-August, 2007.

In the Table 3.12 above is presented the concentration ratios for food, non-food and total consumer expenditure. The concentration ratios for food, non-food and total consumer expenditure are higher in all cases as we take the whole areas under study. It would be observed from the table that: (1) the concentration in case of food items is higher in rural areas than in urban areas; (2) the concentration ratios in case of non-food items are same for both rural and urban areas; (3) higher degree of concentration is observed in urban areas in case of total consumer expenditure than in rural areas; and (4) there is more concentration in case of non-food items than in food items.

The preceding analysis has revealed that all the measures that have been employed to ascertain the pattern of consumer behaviour in the study area do support our hypotheses. It has been found from the result of this statistical analysis that the household expenditure on food increased proportionately less than the increase in income. On examining the various income classes and the proportion of their expenditure on food, we have also shown the falling share of food in percentage terms as income rises. At the same time, it has also been indicated that the average propensity to consume is relatively higher with the lower income brackets. There is a tendency for the Engel's ratio to decrease with the increase in total expenditure in both rural and urban areas.

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REFERENCE:

1. Prasad, A.R: *Consumption Behaviour in India: Theory and Evidence*. Reliance Publishing House, New Delhi, 2001, pp 342-343.
2. Stigler, George J: *The Early History of Empirical Studies of Consumer Behavior*. The Journal of Political Economy, Vol. LXII, April 1954, pp 95-113.
3. Theil, Henri, et al.: *International Evidence on Consumption Patterns.* Greenwich, CT JAI Press Inc., 1989.
4. Cranfield, John A.L., et al.: *Changes in the Structure of Global Food Demand.* American Journal of Agricultural Economics, Vol.80, No.5, 1998, pp1042-1050.
5. Regmi, Anita., et al: *Cross-Country Analysis of Food Consumption Patterns.* In the Changing Structure of Global Food Consumption and Trade. Diane Publishing Co., Darby, 2001.
6. Uppadhaya, K.K: *Price Structure in Mizoram.* Unpublished Research Project, Aizawl, 1995.

7. Economic Research Service/USDA: *Cross-Country Analysis of Food Consumption Pattern.* Working Paper No.01-1, 1997.
8. Coondoo, Dipankor: *A comparison of consumer expenditure pattern of Indian middle class and working class families.* Sankhya : The Indian Journal of Statistics. 1975, vol.37, Series C, Pt. 2, pp 81-101.
9. Singh, Amarjit & Haramol Singh: *Changing Consumption Pattern In Punjab: Projections of Consumer Demand for 1973-74.* Economic and Political Weekly, Vol. VI, No. 50, 1971.
10. Mukhopadhyay, Parimal: *Applied Statistics.* Books and Allied (P) Ltd. Kolkata, 1999.
11. National Sample Survey Organization, Government of India: $27^{th}$, $38^{th}$, $50^{th}$, $55^{th}$ and $59^{th}$ Rounds on Household Consumer Expenditure in India.

*CHAPTER – 4*

# ESTIMATES AND ANALYSIS OF CONSUMPTION BEHAVIOUR

## 4.1: INTRODUCTION

The study of social consumption behaviour is basically based on the estimation and analysis of Engel's functions and the corresponding expenditure elasticities for groups of items using cross-section or time series data. In India, most of the empirical studies (*Bhattacharya, 1973;Gupta, 1973; Iyengar, 1967; Iyenyan & Bhattacharya, 1978; Coondoo, et al, 1981; Mazumdar, 1983; Ghosh & Bhattacharya, 1995*) relating to consumption behaviour have concentrated on the estimation of expenditure elasticities for different item groups using cross-sectional data; though some studies (*Prasad, 2001; Upender, 1998*) used time series data. The results of these studies enable us to examine the responsiveness of consumption expenditure on particular item group to the changes in the household's total expenditures.

The expenditure elasticities for different items of consumption are very significant in economic analysis. These elasticities may be used for classifying consumer goods as 'inferior', 'necessary' and 'luxury' goods; for projecting future demand of different commodities; and for studying the impact

of changes in the structure of the economy on the level of living of the people. It is, therefore, essential to obtain a precise estimate of expenditure elasticities.

The purpose of the present chapter is to estimate and analyze the Engel's function and expenditure elasticities for different commodity groups in Mizoram. An attempt is also made to analyze the changes in expenditure elasticities for various per capita monthly consumer expenditure (PMCE) classes. The whole analysis is based on the data of the sample survey conducted by the researcher during July-August, 2007. The survey covered 372 households, 179 rural households and 193 urban households, in Mizoram.

## 4.2: FORMS OF ENGEL FUNCTION

The problem of finding the most appropriate form of Engel function is an old one in econometrics, but as yet no solution appears to have found general acceptance (*Leser, 1963*). Since the calculated expenditure elasticities depend on the type of function that has been fitted (*Prais, 1953*), the choice of a mathematical form for the relation between

expenditure on particular commodity groups and total consumer expenditure is a matter of great concern. Several studies in the past in this area suggested applying personal consideration for selecting the suitable form of the Engel function but on some grounds like the test of goodness of fit, computational simplicity etc.

In the present study, the expenditure elasticities for different commodity groups are estimated by fitting Linear and Double-Log Engel function using the method of Ordinary Least Squares (OLS). Per capita expenditure on individual groups are used as dependent variable (y) and the per capita total consumer expenditure on all the commodities as an independent variable (x). Usually per capita total consumer expenditure is used as the regressor in Engel Curve analysis. Even on the theoretical level there are strong arguments for using this variable rather than current income (*Prais & Houthakher, 1955*).

The following functional forms are used in the present exercise:

(a) Linear function: $Y = b_0 + b_1X$ (4.1)

The OLS estimators are

$$b_1 = \frac{n\sum XY - \sum X \sum Y}{n\sum X^2 - \left(\sum X\right)^2} \text{ and } \quad b_0 = \overline{Y} - b_1 \overline{X}$$

and the expenditure elasticity ($\eta$) is $b_1 \frac{\overline{X}}{\overline{Y}}$

(The elasticities are worked out at the mean values of the variables)

(b) Double-Log function: $Y = \alpha X^{\beta}$

or $\log Y = \log \alpha + \beta \log X$

or $\log Y = b_0 + b_1 \log X$ (4.2)

Where $b_0 = \log \alpha$ and $b_1 = \beta$

The OLS estimators are

$$b_1 = \frac{n\sum (\log X)(\log Y) - \sum \log X \sum \log Y}{n\sum (\log X)^2 - \left(\sum \log X\right)^2} \text{ and } \quad b_0 = \overline{\log Y} - b_1 \overline{\log X}$$

and the expenditure elasticity ($\eta$) is $b_1$

Linear function (eq (4.1)) is a simple version of Engel curve as regards to computation and interpretation of the parameters. It fulfills the condition of adding-up and homogeneity. It has its past uses in the studies by *Allen &*

*Bowley* (1935), *Allen* (1942), *Stone* (1954), *Leser* (1941), *Bhattacharya* (173), *Prasad* (2001).

Double-log function (eq (4.2)) assumes the constancy of the expenditure elasticity ($b_1$). It is independent of measurement unit, hence, can easily be applied to such Engel function as having exogenous and endogenous variables in heterogeneous units of measurement. It finds its place in the studies of *Stuvel & James* (1950), *Houthakker* (1957), *Iyengar* (1960), *Liviatan* (1964), *Theil* (1965).

## 4.3: EMPIRICAL RESULTS

The estimated regression coefficients (ie $b_0$ or $\alpha$ and $b_1$ or $\beta$) and the estimated expenditure elasticities in each of the Linear and Double-log Engel function for all commodity groups under the study have been presented in Table 4.1. Except in case of clothing and housing, in which the fit of Linear function is better than Double-log function, Double-log Engel function gives a better fit than Linear Engel function in all other commodity groups. As per the statistical criteria, the functional form that has better fit would be chosen as the basis for the analysis.

The expenditure elasticity for food items is 0.44 with the coefficient of determination ($R^2$) of 0.72. Less than unity expenditure elasticity for food items indicates that the proportion spent on food items is found to decline as expenditure increases. Thus, the magnitude of expenditure elasticity on food items indicates that food can be categorized as ‘necessity’ in economic sense. Further, it is in conformity with the well-known Engel’s Law which states that the proportion spent on food decline as income increases. Besides this, the autonomous consumption (intercept) is found to be positive. This indicates the dis-savings of the people who are in the lower income groups.

Within the food items, the group of cereals, salt, sugar and edible oils showed the lowest expenditure elasticity followed by vegetables. It is 0.14 with $R^2$ of 0.20 for cereals, salt, sugar and edible oils and 0.46 with $R^2$ of 0.40 for vegetables. These groups can be considered as the most inelastic with respect to total expenditure and income. Hence,

Table 4.1**:** ESTIMATED REGRESSION LINES AND EXPENDITURE ELASTICITIES ($\eta$) AND ASSOCIATED COEFFICIENT OF DETERMINATION ($R^2$) BY LINEAR AND DOUBLE-LOG ENGEL CURVES

| | Linear Engel Function $Y = b_0 + b_1X$ | | | | Double-Log Engel Function $Y=\alpha X^{\beta}$ | | | |
|---|---|---|---|---|---|---|---|---|
| Items | Intercept | Slope | $\eta$ | $R^2$ | Intercept | Slope | $\eta$ | $R^2$ |
| Beverages | 35.85 (6.6) | .053 (.003) | 0.74 | 0.53 | .82 (.24) | .69 (.037) | 0.69 | 0.57 |
| Meat | 57.61 (5.44 | .033 (.002) | 0.53 | 0.39 | 2.57 (.69) | .52 (.034) | 0.52 | 0.46 |
| Vegetables | 74.44 (5.67) | .031 (.002) | 0.45 | 0.34 | 4.5 (1.16) | 0.46 | 0.46 | 0.40 |
| Cereals, salt, sugar & edible oils | 159.33 (3.7) | .009 (.001) | 0.1 | 0.10 | 64.12 (7.3) | 0.14 | 0.14 | 0.20 |
| **Food Item** | **327.22 (13.7)** | **.127 (.005)** | **0.43** | **0.60** | **21.78 (2.76)** | **0.44 (.02)** | **0.44** | **0.72** |
| Pan, tobacco & intoxicants | 64.33 (6.15) | .03 (.002) | 0.47 | 0.28 | 3.53 (1.14) | .48 (.04) | 0.48 | 0.30 |
| Entertainment and telecommunications | -2.2* (5.8) | .089 (.002) | 1.01 | 0.80 | .15 (.04) | .94 (.03) | 0.94 | 0.81 |
| Health care | 14.58 (6.99) | .03 (.003) | 0.8 | 0.24 | .27 (.17) | .75 (.08) | 0.75 | 0.25 |
| Clothing and Housing | -145.24 (18.2) | .284 (.007) | 1.4 | 0.81 | .04 (.01) | 1.2 (.04) | 1.2 | 0.79 |
| Education | - 65.09 (13.4) | .136 (.005) | 1.3 | 0.64 | .009 (.005) | 1.3 (.06) | 1.3 | 0.64 |
| Transportations | - 40.52 (6.4) | .055 (.003) | 1.6 | 0.56 | .000008 (.000006) | 2.02 (.09) | 2.02 | 0.66 |
| Miscelleneous items | -153.09 (21.99) | .248 (.009) | 1.4 | 0.68 | .001 (.0005) | 1.6 (.06) | 1.6 | 0.74 |
| **Non-food Item** | **- 327.22 (13.69)** | **.873 (.005)** | **1.2** | **0.99** | **.11 (.006)** | **1.2 (.007)** | **1.2** | **0.99** |

Source: Based on the Sample Survey, July-August, 2007

Figures in paretheses indicate standard error esitmates. *Insignificant at 5% level of significance

it can be concluded that the commodity groups of cereals, salt, sugar & edible oils forms the most important staple food items of the households in Mizoram. Further, the intercept term for this group is found to be positive indicating that even a slight increase in the prices of this group would result in the indebtedness of the people whose incomes are very low. The items of beverages and meat show relatively higher expenditure elasticities (more than 0.50) among the food items considered in the study. Though this group will be considered technically as necessities, yet these groups can be considered as relatively elastic among the food items. Therefore, the sample data reveals that poor families in the State are fewer consumers of meat items. Similarly, the quantities and qualities of drinking items are, to some extent, determined by the households' income. In other words, drinking habits in Mizoram depends on the level of income.

The expenditure elasticity of non-food items is 1.2 with $R^2$ of 0.99. More than unity expenditure elasticity indicates that non-food items can be, technically, categorized as 'luxury' indicating that the proportion spent on non-food items increases with the increase in the level of total income or expenditure. It

would be argued that the tastes, habits and preferences of the households change towards non-food items with the increase in income of the consumer. With the exception of pan, tobacco & intoxicants and health care, all other non-food items have more than unity elasticities.

Within non-food group, the item groups of pan, tobacco & intoxicants has the lowest elasticity followed by health care. It is 0.48 with $R^2$ of 0.30 for pan, tobacco & intoxicants and 0.75 with $R^2$ of 0.25 for health care. As pan, tobacco and intoxicants, by nature, can be addicted; its consumption would be more or less the same at all levels of incomes once an individual is addicted to it. Further, as health care is the basic necessity of life, per capita expenditure on health care would not change with the levels of incomes. Therefore, these two commodity groups would be considered ‘necessity’ items in Mizoram.

In case of clothing and housing, the linear Engel function gives the best estimate since $R^2$ is 0.81. The expenditure elasticity for this group is 1.4 indicating that the proportion spent on it increases with the increase in total expenditure of

the consumer. More than unity elasticity implies that clothing and housing can be categorized as ‘luxury’ items. It implies that certain sections of the society do not afford to have such commodities. Since clothing and housing is considered as an essential commodity to man next to food, the expenditure elasticity is supposed to be less than unity. In other words, this commodity group should have been within the reach of every household. Most of the studies at a point of time, however, arrived at the conclusion that this item group fell in the class of luxury. It may be argued that the decision of incurring expenditure on this item might have been influenced by the consumption habit of neighbours reflecting demonstration effect[1].

The expenditure elasticity for education is 1.3 with $R^2$ of 0.64 and hence, the proportion spent on education increase as income increases. Technically, education can be considered as ‘luxury’ items. This item has become more expensive and is beyond the reach of majority of households whose per capita income has been very low. The education, which plays a key role in human resources development, is supposed to be within

[1] Household spending may not be based on their own taste but on the tastes and expenditure of their neighbours. This idea had been put forward by Duessenbury (1949).

the reach of the majority of population. But the numerical value of the present exercise shows that the parents who naturally look after the betterment of the children are not hesitating to incur huge amount of expenditure on education. One of the main reasons for the increasing proportion of total expenditure on education has been attributable to the emergence of private educational institutions (including professional institutions) in and outside the State.

The elasticity for transportations is 2.02 with $R^2$ of 0.66 indicating that the proportion spent on transportation increases with the increase in the level of income. Hence, transportation may be considered as 'luxury' (or ultra-luxury as its elasticity is quite high). Increased expenditure on transportations would have been the consequences of economic development along with globalization. So, it would be argued that the people with high income are more interested in travelling. Similarly, the expenditure elasticity for miscellaneous items is 1.6 with $R^2$ of 0.74. Miscellaneous items can be considered as luxury in economic sense. As a result of economic development, more items are produced in the economy and which are made available to the consumer. Hence it can be concluded that with

the increase in income, the number of items consumed also increases. Therefore, the share of miscellaneous items is likely to increase with economic development.

The magnitude of expenditure elasticity for entertainment and telecommunications is 1.01 and 0.94 respectively for linear and double-log Engel functions. It indicates that the expenditure elasticity is around one. The proportion spent on this item group will remain more or less constant at all levels of incomes. Thus, this group of items may be considered as ‘semi-luxury’ item. It is expected that expenditure on this item group would increase as income increases. More and more facilities for this commodity group have been available to the people in recent years, to become a mass consumption good within the reach of the average person. However, it may also be argued that these facilities may not be within the reach of many rural households, while it has become essential items of consumption for the majority of the urban households. Hence, we cannot say this item as luxury or necessity and thus we call it semi-luxury items.

## 4.4: ESTIMATES OF PROPENSITIES TO CONSUME AND EXPENDITURE ELASTICITIES FOR VARIOUS PMCE CLASSES

At a given point of time, an analysis of the expenditure elasticities and propensities to consume for all commodity groups in each of the PMCE class would give a broad picture of the consumption behaviour of various sections of the society. The estimated marginal propensities and expenditure elasticities for all commodity groups in each of the PMCE class have been computed and presented in Table 4.2. Unfortunately, the estimates for most of the commodity groups are not significant for the higher PMCE classes. The estimates are more or less same for Linear and Double-Log Engel function and hence, for the sake of simplicity, the estimates by Linear Engel function will be considered for the analysis.

It is observed that the food expenditure behaves as the declining function of total expenditure over all PMCE classes. The declining marginal propensities, from 0.476 in the bottom class to 0.07 in the top PMCE class, indicates a shift in expenditure from food to non-food items with the increase in

**Table 4.2:** Estimates of marginal propensity to consume ($b_1$) and Expenditure Elasticities ($\eta$) for all Per Capita Monthly Consumption Expenditure (PMCE) Classes by Linear Engel's Curve (Based on the Sample Survey, July-August, 2007)

| | | Per Capita Monthly Consumption Expenditure (Rs) Classes | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Items of consumption | | 0-840 | 840-1680 | 1680-2520 | 2520-3360 | 3360-4200 | 4200-+ | All Classes |
| Beverages | $b_1$ | 0.0497 | 0.138 | .07* | .045* | .169* | .014* | 0.053 |
| | $\eta$ | .90 | 1.6 | .72* | .58* | 2.2* | .23* | .74 |
| Meat | $b_1$ | 0.147 | 0.082 | 0.066 | .022* | -0.08* | 0.036 | 0.033 |
| | $\eta$ | 1.8 | .91 | .84* | .37* | -1.4* | 1.1* | .53 |
| Vegetables | $b_1$ | 0.188 | .038* | .034* | .018* | -0.07* | .017* | 0.031 |
| | $\eta$ | 1.3 | .43* | .44* | .28* | -1.2* | .49* | .45 |
| Cereals, salt, sugar and edible oils | $b_1$ | 0.0725 | 0.062 | .048* | -0.008 | -0.034* | .0005* | 0.009 |
| | $\eta$ | .26 | .43 | .48* | -.11* | -.58* | .02* | .10 |
| **Food Item** | $b_1$ | **0.46** | **0.32** | **0.213** | 0.08* | -0.01* | **0.068** | **0.127** |
| | $\eta$ | **.83** | **.78** | **.62** | .27* | -.04* | **.45** | **.43** |
| Pan, tobacco and intoxicants | $b_1$ | 0.04* | .014* | -0.03* | .03* | .05* | .03* | 0.03 |
| | $\eta$ | .32* | .16* | -.47* | .54* | 1.1* | .75* | .47 |
| Entertainment and telecommunications | $b_1$ | 0.099 | 0.125 | .013* | 0.149 | .124* | 0.069 | 0.089 |
| | $\eta$ | 2.7 | 1.3 | .13* | 1.5 | 1.2* | .85 | 1.01 |
| Health | $b_1$ | 0.056 | 0.073 | .03* | -0.06* | .04* | .0028* | 0.03 |
| | $\eta$ | 2 | 1.6 | .61* | -1.5* | 1.3* | .09* | .80 |
| Clothing and Housing | $b_1$ | 0.11 | 0.148 | 0.42 | 0.58 | .07* | .140* | 0.284 |
| | $\eta$ | 1.6 | 1.3 | 2.2 | 2.2 | .26* | .54* | 1.4 |
| Education | $b_1$ | 0.071 | 0.102 | 0.147 | 0.246 | .023* | .098* | 0.136 |
| | $\eta$ | 1.14 | 1.4 | 1.8 | 2.4 | .22* | .67* | 1.3 |
| Transportations | $b_1$ | 0.026 | 0.038 | .025* | 0.12 | 0.136 | 0.15 | 0.055 |
| | $\eta$ | 1.1 | 1.3 | 1.2* | 4.1 | 4.7 | 2.7 | 2.02 |
| Miscellaneous | $b_1$ | 0.142 | 0.179 | 0.186 | -0.14* | .568* | 0.44 | 0.248 |
| | $\eta$ | 1.3 | 1.3 | .97* | .91* | 3.2* | 1.8 | 1.4 |
| **Non-food Item** | $b_1$ | **0.543** | **0.68** | **0.787** | **0.923** | **1.01** | **0.932** | **0.873** |
| | $\eta$ | **1.2** | **1.2** | **1.2** | **1.3** | **1.3** | **1.1** | **1.2** |

*Insignificant at 5% level of significance.

the level of income or total expenditure. Further, the expenditure elasticity on food items is less than one in each of the PMCE class (0.83 in the bottom class to 0.45 in the top PMCE class). This is in conformity with the Engel's law, the proportion of expenditure on food item decreased with the increase in the level of total expenditure. This structural shift in the consumption pattern from food items to non-food items is positively correlated with the rise in the propensities for non-food items. The marginal propensities for non-food items increased from 0.54 in the bottom PMCE class to 0.93 in the top PMCE class. Besides this, as the expenditure elasticity is more than unity at all PMCE classes, non-food items can be considered as luxury items for all sections of the society.

It is also observed that the expenditure elasticity of meat is more than unity (1.8) in the bottom PMCE class against the overall elasticity of 0.53. While meat is considered to belong to the class of necessity for the whole community, it is a luxury item for the people in the bottom class. This reflects the weak purchasing power of a section of the populace, for otherwise, meat should have been within the reach of every household, is

outside the reach of a number of households who are in the lower consumption bar.

Similarly, in case of the item group of health care, the expenditure elasticities for the bottom two classes turn out to be greater than unity (i.e. 2 for 0-840 class and 1.6 for 840-1680 class) against the elasticity of 0.80 for the whole community. Thus, health care is technically a luxury item for the households who are in the bottom income bracket. Consequently, it may be concluded that many households in the community have been deprived of health care facility, which, being an essential service should have been made accessible to all.

## 4.5: TEST OF INTER - CLASS HOMOGENEITY OF CONSUMPTION BEHAVIOUR

As it has been observed in the previous section that different expenditure classes exhibit different consumption behaviour. For example, there is a declining tendency of the food propensities with the level of total expenditure. Similarly, while meat and health care are considered as necessities for the whole class, but they can be included among the luxury items in

some classes if the criterion of expenditure elasticities is applied. This calls for the use of analytical technique to test the homogeneity of consumption behaviour for various PMCE classes. Homogeneity of consumption behaviour does not necessarily indicate the magnitude of expenditure on a particular commodity group would be same for all classes. But, homogeneity of consumption behaviour would, rather, be indicated by the magnitude of the propensities to consume. To prove the fact of this conceptualization a mathematical formulation known as the Analysis of Variance (ANOVA) is used to test the homogeneity of the regression coefficients. The technique proceeds as follows:

Suppose we have p groups of observations on x and y. The observation in the $i^{th}$ group may be labeled ($x_{ij}$, $y_{ij}$), for j = 1,2...$n_i$ and i = 1,2,...,p. We can then have p regression equations as follows:

$$y_{ij} = \alpha_i + \beta_i(x_{ij} - x_{io}) \qquad (3)$$

Under the assumption that $y_{ij}$ are independently and normally distributed with Var($y_{ij}$) = $\sigma^2$ for all groups, the null hypothesis will be

$H_0 : \beta_1 = \beta_2 = ..... = \beta_p$ (i.e. p regression lines are parallel to one another)

The Least Square estimator for i$^{th}$ regression line will be

$$\widehat{\alpha_i} = y_{io} \text{ and } b_i = \frac{\sum_j (x_{ij} - x_{io})(y_{ij} - y_{io})}{\sum_j (x_{ij} - x_{io})^2} = \frac{B_i}{A_i}$$

The unrestricted residual sum of squares ($s_1^2$) is

$$s_1^2 = \sum_i \sum_j (y_{ij} - y_{jo})^2 - \sum_i b_i \sum (x_{ij} - x_{io})(y_{ij} - y_{io})$$

with degrees of freedom of $\sum_i (n_i - 2) = n - 2p$.

Similarly, the restricted residual sum of squares ($s_2^2$) is

$$s_2^2 = \sum_i \sum_j (y_{ij} - y_{io})^2 - b \sum_i \sum_j (x_{ij} - x_{io})(y_{ij} - y_{io})$$

with degrees of freedom of (n-p-1). Here 'b' is the estimated slope coefficients for all groups or combined regression coefficient.

The format of ANOVA Table will be

| **Source of Variation** | **d.f.** | **Sum of Squares** | **Mean Square Error** | **F-statistic** |
|---|---|---|---|---|
| Difference (Total-Within groups) | p-1 | $s_2^2 - s_1^2$ | MSR = $(s_2^2 - s_1^2)$/(p-1) | $F = \frac{MSR}{MSE}$ |
| Within groups | n-2p | $s_1^2$ | MSE = $s_1^2$/(n-2p) | $\sim F_{\alpha;(p-1),(n-2p)}$ |
| Total | n-p-1 | $s_2^2$ | | |

Table 4.3 presents the value of the calculated F-statistics based on the ANOVA under the null hypothesis of equal slope coefficients of the regression lines on each of the commodity groups for all PMCE classes. The basic criteria are as follows:

*If the calculated F > Theoretical F, Null Hypothesis is rejected indicating the difference of the consumption behaviour is significant, i.e. each of the PMCE class has different consumption behaviour (or significant difference in MPC).*

*If F < Theoretical F, Null Hypothesis is accepted indicating that the difference in the consumption behaviour is not significant, i.e. each of the PMCE class has the same consumption behaviour (significant difference in MPC).*

In the following table (Table 4.3) is depicted the calculated values of F-statistics whereas the theoretical F with which to compare at 5 percent level of significance is 2.21.

Table 4.3: VALUE OF F-STATISTIC ASSOCIATED WITH THE ANALYSIS OF VARIANCE APPLIED TO TEST THE HOMOGENEITY OF CONSUMPTION BEHAVIOUR BETWEEN VARIOUS PMCE CLASSES

| Sl No | Items | F -Statistic |
|---|---|---|
| 1 | Beverages | 5.1 |
| 2 | Meat | 4.2 |
| 3 | Vegetables | 4.4 |
| 4 | Rice, salt, sugar and edible oils | 5.2 |
| **5** | **Food Item** | **2.3** |
| 6 | Pan, tobacco & intoxicants | 0.54* |
| 7 | Entertainments and telecommunications | 2.3 |
| 8 | Health Care | 1.3* |
| 9 | Clothing and housing | 4.8 |
| 10 | Education | 0.62* |
| 11 | Transportations | 0.47 |
| 12 | Miscellaneous Items | 4.9 |
| **13** | **Non-Food Item** | **2*** |

(Based on the Sample Survey during July-August, 2007, data)

Theoretical F (5, 360) at 5% level of significance is 2.21. * Insignificant
Note: Details of analysis are given in Table 4.4 at the end of the chapter.

It is observed that F-statistic for food items is significant indicating that difference of consumption behaviour between each of the consumption class is significant. It confirms the result obtained in the previous section that for food the propensity to consume decreases with the increase in the level of total consumer expenditure. In case of non-food items, no significant difference of consumption behaviour is observed

among the various PMCE classes, as F-ratio is less than theoretical F. It would be concluded that the amount spent on non-food items may increase with the level of total expenditure; but the propensities to consume are more or less the same for all classes. Thus, it confirms the earlier result that non-food item is luxury good for all classes of the society.

Each of the PMCE class does not show different behaviour in the consumption of pan, tobacco & intoxicants; health care; education; and transportations as the calculated F's are not significant for these item groups. It may be concluded that the people in Mizoram, whether rich or poor, have the same behaviour in the consumption of these commodity groups. At the same time, significant difference in the consumption behaviour for all PMCE classes are observed in case of beverages; meat; vegetables; cereals, salt, sugar and edible oils; entertainment and telecommunications; clothing and housing; and miscellaneous items.

REFERENCE:


1. Bhattacharya, N: *The Average Elasticity of Variable Elasticity Engel Curve.* Technical Report No. Eco/2/73, Indian Statistical Institute, Calcutta, 1973.
2. Gupta, D.B: *Consumption Pattern in India.* Tata Mc Graw Hill Publishing Co. Ltd., 1973, New Delhi.
3. Dipankor Coondoo, Robin Mukherjee and Prasad Rao, D.S: *Engel Curve Analysis with Non-monetized Consumption.* Journal of Income and Wealth, Vol.5, No. 2, July 1981.
4. Iyengar, N.S: *Some Estimates of Engel Elasticities based on National Sample Survey Data.* Journal of the Royal Statistical Society, Part I, Series A, Vol. 130, 1967.
5. Iyengar, N.S and Bhattacharya N: *Studies on Consumer Behaviour in India.* Survey of Research in Economics, Econometrics, Vol. III. Allied Publishers, New Delhi, 1978, pp176-232.
6. Mazumdar, Amita: *Consumer Expenditure Pattern in India.* Technical Report No. ERU/17/83, Indian Statistical Institute, Calcutta, 1983.
7. Ghose, Suchismita & Nikhilesh Bhattacharya: *Effect of Reference Period on Engel Elasticities of Clothing and Other Items: Further Results.* Sankhya: The Indian Journal of Statistics, 1995, Vol.57, Series B, and Pt.3, pp 433-449.
8. Prasad, A.R: *Consumption Behaviour in India-theory and evidence.* Reliance Publishing House, New Delhi, 2001.
9. Upender, M: *Estimates of Expenditure Elasticities of Demand.* Finance India, Vol. XII, No.3, Sept. 1998.
10. Leser, C.E.V: *Forms of Engel Functions.* Econometrica, Vol.31, No.4 (October, 1963), pp 694-703.
11. Prais, S.J: *Non-Linear Estimates of the Engel Curves.* Review of Economic Studies, Vol. 20, 1953, pp87-103.
12. Prais, S.J and H.S. Houthakker: *The Analysis of Family Budgets.* Cambridge University Press, 1955.
13. Allen, R.G.D and A.L. Bowley: *Family Expenditure.* London Staples, 1935.
14. Allen, R.G.D: *Expenditure Patterns of Families of Different Types.* Studies in Mathematical Economics and Econometrics. Edited by O.Lange, F. Mc Inlyre and Th. Yutema. Chicago University Press, Chicago, Illinois, 1942.
15. Stone, R: *Linear Expenditure Systems and Demand Analysis: An Application to the Pattern of British Demand.* Economic Journal, Vol. 54, 1954, pp511-527.
16. Leser, C.E.V: *Family Budget Data and Price-Elasticities of Demand.* The Review of Economic Studies, Vol.9, No.1 (Nov., 1941) pp 40-57.
17. Bhattacharya, N: *The average Elasticity of Variable Elasticity Engel Curve.* Technical Report No.Eco/2/73, Indian Statistical Institute, Calcutta, 1973.

18. Stuvel, G and S.F. James: *Household Expenditure on Food in Holland.* Journal of the Royal Statistical Society, Series A, Vol. 113, 1950, pp59-80.
19. Houthakker, H.S: *An International Comparison of Household Expenditure Patterns, Commemorating the Centenary of Engel's Law.* Econometrica, Vol.25, No.4 (Oct., 1957), pp 532-551.
20. Iyengar, Sreenivasa N: *On a Method of Computing Engel Elasticities from Concentration Curves.* Econometrica, Vol. 28, No. 4, (Oct., 1960), pp 882-891.
21. Liviatan, N: *Consumption Pattern of Israel, Jerusalem.* Academic Press Ltd, Jerusalem, 1964.
22. Theil, H: *The Information Approach to Demand Analysis.* Econometrica, Vol. 33, No. 1, 1965, pp67-87.
23. Duessenberry, James (1949): *Income, Saving and the Theory of Consumer Behaviour*. Harvard University Press, Cambridge, Massachusetts, 1967.
24. Goon, A.M, Gupta, M.K & B. Dasgupta: *Fundamentals of Statistics (Vol. 2).* The World Press Pvt. Lmtd. Calcutta, 1998.
25. Johnston, J: *Econometric Methods (2nd Ed).* McGraw-Hill, New York, 1960.

Table 4.4: ANALYSIS OF VARIANCE TO TEST THE INTERCLASS HOMOGENEITY OF THE SLOPE COEFFICIENTS OF REGRESSIONS

**1. Beverages**

| PMCE (Rs) Groups | df | SSxx | SPxy | SSyy | b | Adjusted SSyy | df |
|---|---|---|---|---|---|---|---|
| 0-840 | 99 | 2517368 | 125027.2 | 46977.3 | 0.05 | 40767.727 | 98 |
| 840-1680 | 99 | 5808262 | 804028.5 | 388099 | 0.138 | 276798.64 | 98 |
| 1680-2520 | 63 | 3311312 | 220149 | 339996.5 | 0.066 | 325360.13 | 62 |
| 2520-3360 | 44 | 2579943 | 116310.8 | 417548 | 0.045 | 412304.41 | 43 |
| 3360-4200 | 28 | 1951415 | 330750.3 | 493921.5 | 0.169 | 437861.74 | 27 |
| 4200-+ | 32 | 34756527 | 476288 | 149069.4 | 0.014 | 142542.55 | 31 |
| Total | 365 | 50924826 | 2072554 | 1835612 | 0.483 | 1635635.2 | 359 |

Test of Significance

| Source of variation | df | SS | MS | F |
|---|---|---|---|---|
| Difference(Total-Within groups) | 5 | 115627.1 | 23125.42 | 5.089859 |
| Within groups | 360 | 1635635 | 4543.431 | |
| Total | 365 | 1751262 | | |

**2. Meat**

| PMCE (Rs) Groups | df | SSxx | SPxy | SSyy | b | Adjusted SSyy | df |
|---|---|---|---|---|---|---|---|
| 0-840 | 99 | 2517368 | 369399.1 | 195376 | 0.147 | 141170.3 | 98 |
| 840-1680 | 99 | 5808262 | 478304.3 | 241771.4 | 0.082 | 202383.57 | 98 |
| 1680-2520 | 63 | 3311312 | 217069.6 | 254879.5 | 0.066 | 240649.69 | 62 |
| 2520-3360 | 44 | 2579943 | 55957.31 | 273427.2 | 0.022 | 272213.52 | 43 |
| 3360-4200 | 28 | 1951415 | -147420 | 205303.1 | -0.076 | 194166.2 | 27 |
| 4200-+ | 32 | 34756527 | 1239657 | 160605.1 | 0.036 | 116390.42 | 31 |
| Total | 365 | 50924826 | 2212968 | 1331362 | 0.276 | 1166973.7 | 359 |

*Test of Significance*

| Source of variation | df | SS | MS | F |
|---|---|---|---|---|
| Difference(Total-Within groups) | 5 | 68222.81 | 13644.56 | 4.209214 |
| Within groups | 360 | 1166974 | 3241.594 | |
| Total | 365 | 1235197 | | |

**3. Vegetables**

| PMCE (Rs) Groups | df | SSxx | SPxy | SSyy | b | Adjusted SSyy | df |
|---|---|---|---|---|---|---|---|
| 0-840 | 99 | 2517368 | 472725.2 | 357876.4 | 0.188 | 269105.46 | 98 |
| 840-1680 | 99 | 5808262 | 221502.6 | 354816.9 | 0.038 | 346369.77 | 98 |
| 1680-2520 | 63 | 3311312 | 111610 | 221909.7 | 0.034 | 218147.78 | 62 |
| 2520-3360 | 44 | 2579943 | 46537.35 | 223764.9 | 0.018 | 222925.42 | 43 |
| 3360-4200 | 28 | 1951415 | -135880 | 221983.2 | -0.07 | 212521.63 | 27 |
| 4200-+ | 32 | 34756527 | 618476.4 | 154592.7 | 0.018 | 143587.16 | 31 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Total | 365 | 50924826 | 1334971 | 1534944 | 0.226 | 1412657.2 | 359 |
| *Test of Significance* | | | | | | |
| Source of variation | df | SS | MS | F | | |
| Difference(Total-Within groups) | 5 | 87290.85 | 17458.17 | 4.449021 | | |
| Within groups | 360 | 1412657 | 3924.048 | | | |
| Total | 365 | 1499948 | | | | |

**4. Cereals, salt, sugar and edible oils**

| | | | | | | Adjusted | |
|---|---|---|---|---|---|---|---|
| PMCE (Rs) Groups | df | SSxx | SPxy | SSyy | b | SSyy | df |
| 0-840 | 99 | 2517368 | 182574.5 | 123209.3 | 0.073 | 109967.86 | 98 |
| 840-1680 | 99 | 5808262 | 357646.3 | 131302.9 | 0.062 | 109280.65 | 98 |
| 1680-2520 | 63 | 3311312 | 157512.7 | 125575.3 | 0.048 | 118082.7 | 62 |
| 2520-3360 | 44 | 2579943 | -20213.5 | 87636.71 | -0.008 | 87478.337 | 43 |
| 3360-4200 | 28 | 1951415 | -67141.2 | 48751.25 | -0.034 | 46441.155 | 27 |
| 4200-+ | 32 | 34756527 | 19226.72 | 50730.36 | 6E-04 | 50719.723 | 31 |
| Total | 365 | 50924826 | 629605.5 | 567205.7 | 0.14 | 521970.42 | 359 |

| Test of Significance | | | | |
|---|---|---|---|---|
| Source of variation | df | SS | MS | F |
| Difference(Total-Within groups) | 5 | 37451.2 | 7490.241 | 5.165976 |
| Within groups | 360 | 521970.4 | 1449.918 | |
| Total | 365 | 559421.6 | | |

**5. Food Item (Combined)**

| | | | | | | Adjusted | |
|---|---|---|---|---|---|---|---|
| PMCE (Rs) Groups | df | SSxx | SPxy | SSyy | b | SSyy | df |
| 0-840 | 99 | 2.81E+09 | 1.55E+09 | 8.59E+08 | 0.553 | 281611.33 | 98 |
| 840-1680 | 99 | 580826.2 | 1861485 | 1544515 | 3.205 | -4421342.6 | 98 |
| 1680-2520 | 63 | 3311312 | 706339.3 | 1293419 | 0.213 | 1142749.1 | 62 |
| 2520-3360 | 44 | 2579943 | 198601.5 | 1165074 | 0.077 | 1149785.8 | 43 |
| 3360-4200 | 28 | 1951415 | -19679.7 | 963296.8 | -0.01 | 963098.33 | 27 |
| 4200-+ | 32 | 34756527 | 2353646 | 635066 | 0.068 | 475681.56 | 31 |
| Total | 365 | 2.85E+09 | 1.56E+09 | 8.64E+08 | 0.546 | -408416.48 | 359 |

| Test of Significance | | | | |
|---|---|---|---|---|
| Source of variation | df | SS | MS | F |
| Difference(Total-Within groups) | 5 | 12911990 | 2582398 | 2276.63 |
| Within groups | 360 | -408416 | 1134.49 | |
| Total | 365 | 13320406 | | |

**6. Pan, tobacco and intoxicants**

| PMCE (Rs) Groups | df | SSxx | SPxy | SSyy | b | Adjusted SSyy | df |
|---|---|---|---|---|---|---|---|
| 0-840 | 99 | 2517368 | 97290.75 | 144255.3 | 0.039 | 140495.25 | 98 |
| 840-1680 | 99 | 5808262 | 83747.97 | 349653.5 | 0.014 | 348446 | 98 |
| 1680-2520 | 63 | 3311312 | -109611 | 405432.9 | -0.033 | 401804.57 | 62 |
| 2520-3360 | 44 | 2579943 | 74470.71 | 299199.8 | 0.029 | 297050.16 | 43 |
| 3360-4200 | 28 | 1951415 | 99739.45 | 333974.1 | 0.051 | 328876.31 | 27 |
| 4200-+ | 32 | 34756527 | 987287.2 | 397843.9 | 0.028 | 369799.2 | 31 |
| Total | 365 | 50924826 | 1232925 | 1930360 | 0.128 | 1886471.5 | 359 |

Test of Significance

| Source of variation | df | SS | MS | F |
|---|---|---|---|---|
| Difference(Total-Within groups) | 5 | 14038.12 | 2807.625 | 0.535786 |
| Within groups | 360 | 1886471 | 5240.199 | |
| Total | 365 | 1900510 | | |

**7. Entertainment and telecommunication**

| PMCE (Rs) Groups | df | SSxx | SPxy | SSyy | b | Adjusted SSyy | df |
|---|---|---|---|---|---|---|---|
| 0-840 | 99 | 2517368 | 250231.1 | 46525.64 | 0.099 | 21652.198 | 98 |
| 840-1680 | 99 | 5808262 | 723174.5 | 229835.4 | 0.125 | 139794.45 | 98 |
| 1680-2520 | 63 | 3311312 | 42157.4 | 214646.5 | 0.013 | 214109.83 | 62 |
| 2520-3360 | 44 | 2579943 | 385677.6 | 266861.9 | 0.149 | 209206.61 | 43 |
| 3360-4200 | 28 | 1951415 | 242729.6 | 375890.9 | 0.124 | 345698.58 | 27 |
| 4200-+ | 32 | 34756527 | 2403817 | 721104.3 | 0.069 | 554852.54 | 31 |
| Total | 365 | 50924826 | 4047787 | 1854865 | 0.58 | 1485314.2 | 359 |

Test of Significance

| Source of variation | df | SS | MS | F |
|---|---|---|---|---|
| Difference(Total-Within groups) | 5 | 47810.12 | 9562.023 | 2.317576 |
| Within groups | 360 | 1485314 | 4125.872 | |
| Total | 365 | 1533124 | | |

**8. Health Care**

| PMCE (Rs) Groups | df | SSxx | SPxy | SSyy | b | Adjusted SSyy | df |
|---|---|---|---|---|---|---|---|
| 0-840 | 99 | 2517368 | 141705.5 | 9689.989 | 0.056 | 1713.222 | 98 |
| 840-1680 | 99 | 5808262 | 425413.4 | 96811.13 | 0.073 | 65652.65 | 98 |
| 1680-2520 | 63 | 3311312 | 98994.34 | 181787.2 | 0.03 | 178827.66 | 62 |
| 2520-3360 | 44 | 2579943 | -149380 | 736433.3 | -0.058 | 727784.09 | 43 |
| 3360-4200 | 28 | 1951415 | 75627.86 | 445108.4 | 0.039 | 442177.42 | 27 |
| 4200-+ | 32 | 34756527 | 97503.78 | 1010891 | 0.003 | 1010617.1 | 31 |
| Total | 365 | 50924826 | 689865 | 2480721 | 0.143 | 2426772.2 | 359 |

Test of Significance

| Source of variation | df | SS | MS | F |
|---|---|---|---|---|
| Difference(Total-Within groups) | 5 | 44603.03 | 8920.607 | 1.323329 |
| Within groups | 360 | 2426772 | 6741.034 | |
| Total | 365 | 2471375 | | |

**9. Clothing and Housing**

| PMCE (Rs) Groups | df | SSxx | SPxy | SSyy | b | Adjusted SSyy | df |
|---|---|---|---|---|---|---|---|
| 0-840 | 99 | 2517368 | 279442 | 79829.76 | 0.111 | 48810.127 | 98 |
| 840-1680 | 99 | 5808262 | 860162.9 | 629309.9 | 0.148 | 501925.8 | 98 |
| 1680-2520 | 63 | 1917445 | 1388092 | 3311312 | 0.724 | 2306433.4 | 62 |
| 2520-3360 | 44 | 2579943 | 1488252 | 3247206 | 0.577 | 2388701 | 43 |
| 3360-4200 | 28 | 1951415 | 133710.3 | 3647461 | 0.069 | 3638299.2 | 27 |
| 4200-+ | 32 | 34756527 | 4850909 | 8035768 | 0.14 | 7358734.9 | 31 |
| Total | 365 | 49530960 | 9000568 | 18950887 | 1.768 | 16242904 | 359 |

**Test of Significance**

| Source of variation | df | SS | MS | F |
|---|---|---|---|---|
| Difference(Total-Within groups) | 5 | 1072435 | 214487.1 | 4.753789 |
| Within groups | 360 | 16242904 | 45119.18 | |
| Total | 365 | 17315339 | | |

**10. Education**

| PMCE (Rs) Groups | df | SSxx | SPxy | SSyy | b | Adjusted SSyy | df |
|---|---|---|---|---|---|---|---|
| 0-840 | 99 | 2517368 | 177880.7 | 100317.9 | 0.071 | 87748.558 | 98 |
| 840-1680 | 99 | 5808262 | 593199.5 | 464553.5 | 0.102 | 403969.87 | 98 |
| 1680-2520 | 63 | 3311312 | 488067.3 | 829014.6 | 0.147 | 757076.46 | 62 |
| 2520-3360 | 44 | 2579943 | 634049.5 | 1698686 | 0.246 | 1542861.1 | 43 |
| 3360-4200 | 28 | 1951415 | 46338.54 | 1522531 | 0.024 | 1521430.7 | 27 |
| 4200-+ | 32 | 34756527 | 3416591 | 4745413 | 0.098 | 4409560 | 31 |
| Total | 365 | 50924826 | 5356127 | 9360516 | 0.688 | 8722646.7 | 359 |

**Test of Significance**

| Source of variation | df | SS | MS | F |
|---|---|---|---|---|
| Difference(Total-Within groups) | 5 | 74527.48 | 14905.5 | 0.615178 |
| Within groups | 360 | 8722647 | 24229.57 | |
| Total | 365 | 8797174 | | |

**11. Transportations**

| PMCE (Rs) Groups | df | SSxx | SPxy | SSyy | b | Adjusted SSyy | df |
|---|---|---|---|---|---|---|---|
| 0-840 | 99 | 2517368 | 64845.92 | 10826.6 | 0.026 | 9156.2094 | 98 |
| 840-1680 | 99 | 5808262 | 221517.7 | 81790.66 | 0.038 | 73342.334 | 98 |
| 1680-2520 | 63 | 3311312 | 82625.18 | 93499.2 | 0.025 | 91437.498 | 62 |
| 2520-3360 | 44 | 3.17E+09 | 1.59E+09 | 9.1E+08 | 0.501 | 115069959 | 43 |
| 3360-4200 | 28 | 3.37E+09 | 1.61E+09 | 9.33E+08 | 0.476 | 168451469 | 27 |
| 4200-+ | 32 | 6.78E+09 | 3.22E+09 | 1.88E+09 | 0.474 | 354555993 | 31 |
| Total | 365 | 1.33E+10 | 6.41E+09 | 3.72E+09 | 1.54 | 638251357 | 359 |

Test of Significance

| Source of variation | df | SS | MS | F |
|---|---|---|---|---|
| Difference(Total-Within groups) | 5 | 3620908 | 724181.6 | 0.467192 |
| Within groups | 360 | 5.58E+08 | 1550072 | |
| Total | 365 | 5.62E+08 | | |

**12. Miscellaneous Items**

| PMCE (Rs) Groups | df | SSxx | SPxy | SSyy | b | Adjusted SSyy | df |
|---|---|---|---|---|---|---|---|
| 0-840 | 99 | 2517368 | 356243.1 | 195961.1 | 0.142 | 145547.62 | 98 |
| 840-1680 | 99 | 5808262 | 1039851 | 827399.6 | 0.179 | 641235.56 | 98 |
| 1680-2520 | 63 | 3311312 | 614847.8 | 1268744 | 0.186 | 1154578.5 | 62 |
| 2520-3360 | 44 | 2579943 | -350877 | 2320886 | -0.136 | 2273165.8 | 43 |
| 3360-4200 | 28 | 1951415 | 1107628 | 4952675 | 0.568 | 4323981.9 | 27 |
| 4200-+ | 32 | 34756527 | 15415908 | 18280164 | 0.444 | 11442593 | 31 |
| Total | 365 | 50924826 | 18183601 | 27845829 | 1.381 | 19981102 | 359 |

Test of Significance

| Source of variation | df | SS | MS | F |
|---|---|---|---|---|
| Difference(Total-Within groups) | 5 | 1371953 | 274390.7 | 4.943704 |
| Within groups | 360 | 19981102 | 55503.06 | |
| Total | 365 | 21353056 | | |

**13. Non-food item**

| PMCE (Rs) Groups | df | SSxx | SPxy | SSyy | b | Adjusted SSyy | df |
|---|---|---|---|---|---|---|---|
| 0-840 | 99 | 9752756 | -7383793 | 11268812 | -0.757 | 5678556.9 | 98 |
| 840-1680 | 99 | 5808262 | 3946583 | 8E+08 | 0.679 | 797681526 | 98 |
| 1680-2520 | 63 | 3311312 | 2604973 | 3192055 | 0.787 | 1142751.3 | 62 |
| 2520-3360 | 44 | 2579943 | 2381342 | 3347821 | 0.923 | 1149791.9 | 43 |
| 3360-4200 | 28 | 1951415 | 1971095 | 2954072 | 1.01 | 963098.07 | 27 |
| 4200-+ | 32 | 34756527 | 32402843 | 30684235 | 0.932 | 475686.09 | 31 |
| Total | 365 | 58160214 | 35923043 | 8.52E+08 | 3.574 | 807091410 | 359 |

Test of Significance

| Source of variation | df | SS | MS | F |
|---|---|---|---|---|
| Difference(Total-Within groups) | 5 | 22530619 | 4506124 | 2.009939 |
| Within groups | 360 | 8.07E+08 | 2241921 | |
| Total | 365 | 8.3E+08 | | |

*CHAPTER - 5*

# RURAL-URBAN DIFFERENTIALS IN CONSUMPTION BEHAVIOUR

## 5.1: INTRODUCTION

Comparative analysis of consumption behaviour between rural and urban areas would give a broad picture of the difference in the living standard of the people in the State. According to 2001 census, more than half (51 percent) of the population in Mizoram lived in rural areas whose main occupation is agriculture and allied activities. At the same time, the majority of urban households depend on secondary and service sectors. Differences in occupational structure lead to the difference in the attitude towards a consumption of various commodity groups. Further, there is wide disparity of facilities available for households in the two areas. As a consequence, the researcher feels that it is necessary to study the consumption behaviour of rural and urban areas; even though the effects of area on consumption pattern cannot be easily identified (*Prais & Houthakker, 1955*). In other words, the location of human dwelling is not supposed to have much influence on consumption habits.

The present exercise tries to estimate a few parameters and analyze the consumption behaviour of rural and urban areas

of Mizoram. Side by side with the analysis of consumption behaviour between the two areas, an attempt is also made to test the difference of consumption behaviour using the technique of Analysis of Covariance (ANOCOV). An attempt is also made to analyze the aggregate consumption function in Mizoram. The whole analysis is based on the data of our Sample Survey conducted during July-August, 2007 covering 193 urban households and 179 rural households of Mizoram.

## 5.2: METHODS OF ANALYSIS

In line with the analysis in the previous Chapter, the present exercise is based on the estimation and analysis of expenditure elasticities for Linear and Double-Log Engel's functions using Ordinary Least Squares (OLS) method. The two forms of Engel's function have been fitted and the function, which has the best fit, is considered for the analysis. Per capita expenditure on individual commodity groups are used as dependent variable (Y) and the per capita total consumer expenditure on all commodities as an independent variable (X).

The following forms of Engel's functions are used in the present exercise:

(a) Linear function: $Y = b_0 + b_1X$ (5.1)

The OLS estimators are

$$b_1 = \frac{n\sum XY - \sum X \sum Y}{n\sum X^2 - \left(\sum X\right)^2} \text{ and } b_0 = \overline{Y} - b_1\overline{X}$$

and the expenditure elasticity ($\eta$) is $b_1 \frac{\overline{X}}{\overline{Y}}$

(The elasticities are worked out at the mean values of the variables)

(b) Double-Log function: $Y = \alpha X^{\beta}$

or $\log Y = \log\alpha + \beta \log X$

or $\log Y = b_0 + b_1 \log X$ (5.2)

Where $b_0 = \log\alpha$ and $b_1 = \beta$

The OLS estimators are

$$b_1 = \frac{n\sum(\log X)(\log Y) - \sum \log X \sum \log Y}{n\sum(\log X)^2 - \left(\sum \log X\right)^2} \text{ and } b_0 = \overline{\log Y} - b_1\overline{\log X}$$

and the expenditure elasticity ($\eta$) is $b_1$.

## 5.3: EMPIRICAL RESULTS

The estimated regression lines and expenditure elasticities for linear and double-log Engel functions for various commodity groups are presented in Table 5.1 and Table 5.2.

The fits of either function are better in rural areas than in urban areas for all food items. It is observed that the expenditure elasticity for food item is less than unity in rural and urban areas. Hence, the proportion of expenditure on food items decreased with the increase in total consumer expenditure. Thus, food item can be, technically, considered as ‘necessity’ in all areas of Mizoram.

Within food category, it is observed that the elasticity for beverages is the highest for both areas (i.e. 0.98 in rural and 0.51 in urban areas) indicating that it is the most elastic items within food category. At the same time, the item group of cereals, salt, sugar and edible oils shows the lowest elasticity (though the estimates are insignificant for urban areas). It may be concluded that the items group of cereals, salt, sugar and

edible oils forms the most important staple food of the people living in rural and urban areas of Mizoram.

**Table 5.1**: Estimated regression lines and the corresponding expenditure elasticities on food Items for rural and urban areas of Mizoram

| Items | | *Rural Areas* | | | | *Urban Areas* | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | Intercept | Slope | Expenditure Elasticity | $R^2$ | Intercept | Slope | Expenditure Elasticiy | $R^2$ |
| Beverages | a | 1.2* (6.1) | 0.064 (.004) | **0.98** | 0.58 | 100.68 (12.36) | 0.037 (.004) | **0.478** | 0.33 |
| | b | 0.13 (.06) | 0.91 (.06) | **0.91** | 0.58 | 3.9 (1.6) | 0.51 (.052) | **0.51** | 0.38 |
| Meat | a | 27.8 (6.4) | 0.041 (.004) | **0.63** | 0.34 | 116.25 (8.96) | 0.0188 (.003) | **0.31** | 0.19 |
| | b | 0.95 (.5) | 0.63 (.06) | **0.63** | 0.38 | 13.5 (4.9) | 0.32 (.04) | **0.32** | 0.27 |
| Vegetables | a | 58.99 (7.6) | 0.043 (.006) | **0.46** | 0.29 | 89.6 (9.9) | 0.026 (.003) | **0.44** | 0.33 |
| | b | 3.6 (1.4) | 0.49 (.05) | **0.49** | 0.33 | 4.6 (1.9) | 0.46 (.052) | **0.46** | 0.33 |
| Cereals, salt, sugar and edible oil | a | 139.6 (4.1) | 0.016 (.003) | **0.09** | 0.15 | 195.76 (6.5) | .0004* (.002) | **0.006** | 0 |
| | b | 59.6 (9.07) | 0.14 (.02) | **0.14** | 0.20 | 126.9 (27.6) | 0.06 (.03) | **0.06** | 0.02 |
| **Food item** | **a** | **227.55 (11.9)** | **0.163 (.008)** | **0.45** | **0.70** | **502.3 (24.4)** | **0.083 (.008)** | **0.31** | **0.38** |
| | **b** | **13.95 (2.05)** | **0.49 (.02)** | **0.49** | **0.78** | **-53.7 (11.4)** | **0.33 (.03)** | **0.33** | **0.50** |

a = linear i.e. $Y = b_0+b_1X$ , b = double-log i.e. Y=. $\alpha X^{\beta}$ and *insignificant estimate.
Figures in parentheses indicate the standard error of the respective estimate

With the exception of vegetables, which have more or less equal elasticities for both areas, the expenditure elasticities for all other food items turn out to be significantly higher in rural areas than in urban areas. It would not be possible to draw a general conclusion temporally since at a certain range of family income the demand for food is income inelastic. However, the outcome of this analysis shows that the rural households are more responsive to the changes in total consumer expenditure or income in the consumption of food items than urban households. This is also pointing to the fact that the income earned by rural households is at a rather low range.

Table 5.2 presents the estimated regression lines and the corresponding elasticities for non-food items separately for both rural and urban areas. The expenditure elasticities of non-food items are greater than unity (i.e. 1.3 for rural and 1.2 for urban areas) indicating that the proportion spent on it increases with an increase in the total consumer expenditure. Non-food item can be considered as luxury for both rural and urban areas. In line with the earlier result of less than unit elasticity of food items, this study confirms that there is a structural shift in the consumption pattern from food to non-food items with the

increase in income of the consumer. The same result is observed for both rural and urban areas.

**Table 5.2**: Estimated regression lines and the corresponding expenditure elasticities on non-food items for rural and urban areas

| | | *Rural Areas* | | | | *Urban Areas* | | | |
|---|---|---|---|---|---|---|---|---|---|
| Items | | Intercept | Slope | Expenditure Elasticiy | $R^2$ | Intercept | Slope | Expenditure Elasticiy | $R^2$ |
| Pan, tobacco & intoxicants | a | 60.5 (7.2) | 0.035 (.005) | **0.389** | 0.23 | 62.39 (11.79) | 0.029 (.004) | **0.56** | 0.24 |
| | b | 4.7 (1.9) | 0.44 (.06) | **0.44** | 0.28 | 1.72 (1.03) | 0.56 (.07) | **0.56** | 0.26 |
| Entertainment and telecommunications | a | -38.2 (4.98) | 0.114 (.003) | **1.4** | 0.87 | 37.38 (11.42) | 0.077 (.004) | **0.84** | 0.71 |
| | b | 0.01 (.004) | 1.3 (.04) | **1.3** | 0.86 | 0.35 (.12) | 0.83 (.041) | **0.83** | 0.71 |
| Health care | a | -26.6 (9.2) | 0.07 (.006) | **1.4** | 0.44 | 31.83 (10.94) | 0.0211 (.003) | **0.64** | 0.16 |
| | b | .004* (.004) | 1.4 (.14) | **1.4** | 0.44 | 0.54 (0.48) | 0.65 (.11) | **0.65** | 0.16 |
| Clothing and housing | a | -201.2 (18.19) | 0.38 (.01) | **1.9** | 0.84 | -188.36 (34.07) | 0.283 (.01) | **1.4** | 0.78 |
| | b | 0.0009 (.0004) | 1.7 (.06) | **1.7** | 0.88 | 0.04 (.02) | 1.2 (.06) | **1.2** | 0.77 |
| Education | a | -41.53 (10.6) | 0.122 (.007) | **1.4** | 0.62 | -94.66 (28.96) | 0.145 (.009) | **1.32** | 0.57 |
| | b | 0.002 (.0017) | 1.5 (.097) | **1.5** | 0.65 | 0.011 (.009) | 1.3 (.09) | **1.3** | 0.57 |
| Transportations | a | -3.498* (4.88) | 0.036 (.003) | **1.09** | 0.41 | -93.92 (12.98) | 0.0698 (.004) | **1.97** | 0.60 |
| | b | 0.04 (.03) | 0.99 (.1) | **0.99** | 0.41 | .000002* (.000002) | 2.2 (.13) | **2.2** | 0.69 |
| Miscellaneous | a | 22.98 (8.9) | 0.081 (.006) | **0.8** | 0.51 | -256.98 (44.48) | 0.292 (.01) | **1.5** | 0.70 |
| | b | 0.51 (.24) | 0.79 (.06) | **0.79** | 0.52 | .002* (.002) | 1.5 (.08) | **1.5** | 0.72 |
| **Non-food item** | **a** | **-227.55 (11.94)** | **0.837 (.008)** | **1.3** | **0.98** | **-502.33 (24.39)** | **0.917 (.008)** | **1.25** | **0.99** |
| | **b** | **0.09 (.008)** | **1.3 (.011)** | **1.3** | **0.99** | **0.102 (.008)** | **1.2 (.0096)** | **1.2** | **0.99** |

a = linear i.e. $Y = b_0+b_1X$ , b = double-log i.e. Y=. $\alpha X^{\beta}$ and *insignificant estimate.

Figures in parentheses indicate the standard error of the respective estimate

It is interesting to note that the elasticity only of the item group of pan, tobacco & intoxicants is less than unity for both areas (0.44 with $R^2$ of 0.28 in rural areas and 0.56 with $R^2$ of 0.26 in urban areas) within non-food category. The proportion spent on this group would decrease with an increase in total expenditure despite the difference in the level of income. Hence, this group can be considered as necessity for both rural and urban areas of Mizoram. There can be no denying the fact that the uses of these items are very common among the Mizo community inspite of their injurious effect to health. Furthermore, it is observed that the consumption of this items group is more responsive to changes in income of the urban households than rural households as the magnitude of the elasticity is higher in urban areas than in rural areas.

There is a significant difference of consumption behaviour between rural and urban areas for the item group of entertainment & telecommunications and health care. The elasticity of entertainments & telecommunications turns out to be greater than unity (i.e. 1.4) for rural areas, while it is less than unity (i.e. 0.84) for urban areas. Thus, entertainment & telecommunications is luxury item for rural population while it

is necessity for urban population. In the same way, the expenditure elasticity for health care is greater than unity (i.e. 1.4) in rural areas, but it is less than unity (i.e. 0.64) for urban areas. Technically, health care can be classified as luxury item for rural population; but it is necessity for urban population.

Following the above observations it may be argued that the items group of entertainment & telecommunications has become the basic consumption items of the majority of urban households. However, in rural areas, the services of this kind are not provided unless the effort is well worth the cost. Because this is a type of utility with a strong demonstration effect, its consumption would spread with amazing rapidity once it is within the reach of the households at large. Hence, it is found to be highly elastic among the rising income-group of rural community. Likewise, expenditure on health care activities highly depends on the income of rural households. This is a clear indication that many rural households do not have any access to health care facilities. From the viewpoint of welfare economics, the government is required to treat health-care as public goods whose provision should be made available through budgetary means. Such provisions are justified on

account of market failure and the possibility of immense external benefits that should have accrued to the community.

Within non-food items, significant difference has also been observed in case of miscellaneous items. The elasticity of this item is less than unity (0.79 with $R^2$ of 0.52) in rural areas, while it is greater than unity (1.5 with $R^2$ of 0.52) in urban areas. It can be concluded that miscellaneous items belongs to the class of necessity for rural population; whereas, it is luxury for urban population. The consumption of miscellaneous items is not highly dependent upon total consumer expenditure for rural population. It may be argued that many items that are consumed in urban areas are not available in rural areas. These items are, basically, supposed to be luxury items.

In addition to these items, it has been found that the elasticity for other commodity groups is more than unity for both rural and urban areas. Hence, the items groups of clothing & housing; education; and transportations are luxury items for both rural and urban populations.

## 5.4: TEST OF THE HOMOGENEITY OF RURAL - URBAN CONSUMPTION BEHAVIOUR:

The differences of consumption behaviour between rural and urban areas of Mizoram have been analyzed in the previous section. It has been observed that the two areas show different behaviour in the consumption of some commodity groups. However, same behaviour has been observed for some items. Hence, the researcher feels it necessary to precisely test the homogeneity of consumption behaviour for all commodity groups using a suitable statistical method. Consequently, the method of Analysis of Covariance (ANOCOV) has been chosen to test

1) the differences in intercepts (assuming equal slope coefficient)
2) the differences in slope coefficients, and
3) the differences in the complete relationship of Engel's curves.

Model: Let $Y_i$, $X_i$ (i = 1,2) indicate the appropriate partitioning of the data. The simplest model would be

$$Y = X\beta + U$$

*or*

$$\begin{bmatrix} Y_1 \\ Y_2 \end{bmatrix} = \begin{bmatrix} 1 & X_1 \\ 1 & X_2 \end{bmatrix} \begin{bmatrix} \beta_1 \\ \beta_2 \end{bmatrix} + \begin{bmatrix} U_1 \\ U_2 \end{bmatrix} \qquad (5.3)$$

Equation (5.3) does not consider the class effect in the total variation. It merely indicates the variation in Y explained by the variation in X variables. If we, however, wish to investigate the possible existence of class effect in the form of different intercepts, we would postulate a more general model by introducing the matrix of 'Dummy variables' D.

$$Y = D\alpha + X\beta + U$$

*or*

$$\begin{bmatrix} Y_1 \\ Y_2 \end{bmatrix} = \begin{bmatrix} 0 \\ 1 \end{bmatrix} \alpha + \begin{bmatrix} 1 & X_1 \\ 1 & X_2 \end{bmatrix} \begin{bmatrix} \beta_1 \\ \beta_2 \end{bmatrix} + \begin{bmatrix} U_1 \\ U_2 \end{bmatrix} \qquad (5.4)$$

*or*

$$Y_1 = \beta_1 + \beta_2 X_2$$
$$Y_2 = (\alpha + \beta_1) + \beta_2 X_2$$

If there is no class effect, $\alpha = 0$. Hence, the appropriate hypothesis will be $H_0$: $\alpha = 0$.

Applying OLS to Eq (5.3) gives the residual sum of squares (RSS) of

$$s's = Y'Y - \hat{\beta}X'Y \qquad (5.5)$$

Likewise, if we apply OLS to Eq (5.4), the RSS will be

$$e'e = Y'Y - \tilde{\alpha}'D'Y - \tilde{\beta}X'Y \qquad (5.6)$$

The reduction in RSS in moving from Eq (5.3) to Eq (5.4) is then

s's – e'e.

So far, the model assumes constant slope coefficients. Now, we must allow the slope to vary from class to class as well as the intercepts. This amounts simply to running separate regression for each class. The Least Square lines for both classes may then be

$$Y_1 = X_1 b_1 + r_1$$

$$Y_2 = X_2 b_2 + r_2 \qquad (5.7)$$

If we define a block-diagonal matrix Z as

$$Z = \begin{bmatrix} X_1 & 0 \\ 0 & X_2 \end{bmatrix}$$

(Note that the first column of each of the X matrix consists ones to allow a single intercept)

Then Eq (5.7) reduces to

$$Y = Zb + r \qquad (5.8)$$

Application of OLS to Eq (5.8) gives RSS of

$r'r = Y'Y - \hat{b}'Z'Y$.

Thus, the complete ANOCOV Table will be:

| Source | Sum of Squares | d.f. | Mean Square Error |
|---|---|---|---|
| Z | Residual: r'r = $s_4$<br>Incremental (differential slopes)<br>e'e – r'r = $s_3$ | n-2k<br><br>k – 1 | $MS_4 = s_4/(n-2k)$<br><br>$MS_3 = s_3/(k-1)$ |
| X and D | Residual: e'e = $s_2$<br>Incremental (differential intercepts)<br>s's – e'e = $s_1$ | n – k – 1<br><br>p-1=1 | $MS_2 = s_2/(n-k-1)$<br><br>$MS_1 = s_1$ |
| X | Residual: s's | n – k | |

*Note: k is the number of parameters (i.e. 2 for the present analysis), p is number of classes (i.e. 2) and n is the total number of observations.*

Thus,

1) Test of differential intercepts: $F_{(1)} = \frac{MS_1}{MS_2} \sim F_{1,(n-k-1)}$

2) Test of differential slope coefficients: $F_{(2)} = \frac{MS_3}{MS_4} \sim F_{(k-1),(n-2k)}$

3) Test for overall homogeneity: $F_{(3)} = \frac{MS_1 + MS_2}{MS_4} \sim F_{2,(n-2k)}$

The following hypotheses are being tested for the estimated Engel's curves between rural and urban areas for all commodity groups:

1) Intercepts are equal (i.e. $\alpha = 0$)

2) Slope coefficients (mpc) are equal.

3) Overall regressions are equal.

The test criteria:

*If calculated F < theoretical F, accept the null hypothesis (i.e. no difference)*

- *theoretical F, reject the null hypothesis (i.e. significant difference)*

Results: The result of the Analysis of Covariance (ANOCOV) is presented in Table 5.3.

Table 5.3: VALUE OF F-RATIO ASSOCIATED WITH DIFFERENT NULL HYPOTHESIS UNDERLYING THE ANALYSIS OF COVARIANCE APPLIED TO TEST THE HOMOGENEITY OF EXPENDITUREPATTERNS FOR DIFFERENT ITEMS BETWEEN RURAL AND URBAN AREAS
(Based on the Sample Survey during July-August, 2007, data)

| Sl No | Items | F(1) | F(2) | F(3) |
|---|---|---|---|---|
| 1 | Beverages | 43.57 | 16.24 | 23.07 |
| 2 | Meat | 56.94 | 16.57 | 30.19 |
| 3 | Vegetables | 0.44* | 7.32 | 3.88 |
| 4 | Cereals, salt, sugar and edible oils | 41.99 | 16.81 | 30.29 |
| 5 | Food Items | 70.84 | 38.27 | 58.14 |
| 6 | Pan, tobacco & intoxicants | 0.69* | 0.82* | 0.75* |
| 7 | Entertainments and telecommunications | 5.26 | 39.07 | 22.44 |
| 8 | Health Care | 4.45 | 54.35 | 29.72 |
| 9 | Clothing and housing | 273.8 | 87.63 | 125.22 |
| 10 | Education | 0.86* | 2.49* | 1.68* |
| 11 | Transportations | 18.6 | 26.57 | 23.23 |
| 12 | Miscellaneous Items | 4.91 | 100.36 | 53.3 |
| 13 | Non-Food Items | 70.84 | 38.27 | 39 |

a) Theoretical $F_{(1, 369)}(.05)$ corresponding to $F_{(1)}$ 3.84;
b) Theoretical $F_{(1, 368)}(.05)$ corresponding to $F_{(2)}$ is 3.84
c) Theoretical $F_{(2, 368)}$ (.05) corresponding to $F_{(3)}$ is 3.00
* Insignificant at 5% level of significance.
Note: Details of analysis are given in Table 5.7 at the end of the chapter

The analysis reveals that households in rural and urban areas of Mizoram have differing behaviour in the consumption of beverages; meat; vegetables; cereals, salt, sugar and edible oils; all food items; entertainment & telecommunications; health care; clothing and housing; transportations; miscellaneous items; and all non-food items as the calculated F's for these commodity groups are greater than theoretical F at 5 percent level of significance. In case of vegetables, the difference of intercept terms is not significant. So, vegetables have the same intercept but different slopes for rural and urban areas. It can, still, be said that the two areas have different behaviour in the consumption of vegetables because the marginal propensities (slopes) are significantly different from each other.

In case of pan, tobacco & intoxicants, and education, rural and urban areas do not show any significant difference of consumption behaviour. Thus, it can be concluded that the rural and urban households have the same behaviour in the consumption of these two commodity groups.

Following the above results, it may be concluded that rural and urban areas of Mizoram have shown different consumption behaviour for food and non-food items, though the same behaviour is observed in two sub-groups of non-food items.

## 5.5: ESTIMATES OF AGGREGATE CONSUMPTION FUNCTION

There is a long tradition of theoretical and empirical works on consumption function. *Keynes* (1936) postulated that consumption is a function of absolute income. This is known, in consumption theory, as Absolute Income Hypothesis (AIH). Keynes postulated the hypotheses that the consumption expenditure is a stable function of real income and the marginal propensity to consume is positive but less than one. However, theoretical and empirical limitations of AIH led to a number of hypotheses in the subsequent years. We will not go into detail analysis of the theories of consumption function because it has been elaborated in the earlier chapter.

In the present exercise, the consumption function in respect of Mizoram as well as separate estimates of consumption functions for rural and urban Mizoram have been

calculated with the method of Ordinary Least Square (OLS). The Linear and Double-log consumption function are estimated. The total per capita monthly consumer expenditure on all items is used as dependent variable (C) while per capita monthly income has been used as an independent variable (Y). The estimated consumption functions have been presented in Table 5.4.

It is observed that the fits of double-log function are better than linear function (as $R^2$ are high) in all cases. Hence, the present exercise will be, according to statistical criteria, based on the estimates of double-log function.

TALBE 5.4: ESITMATES OF CONSUMPTION FUNCTION

| | Functions | $R^2$ | MPC | APC |
|---|---|---|---|---|
| Mizoram | C = 543.46 + 0.59 Y | 0.88 | 0.59 | 0.82 |
| | Log C = 1.88 + 0.74 log Y | 0.90 | 0.61 | |
| Rural | C = 271.56 + 0.71 Y | 0.81 | 0.71 | 0.93 |
| | Log C = 1.49 + 0.79 log Y | 0.83 | 0.74 | |
| Urban | C = 846.53 + 0.54 Y | 0.87 | 0.54 | 0.78 |
| | Log C = 2.096 + 0.72 log Y | 0.87 | 0.54 | |

The estimated marginal propensity to consume (MPC) of Mizoram is 0.61 with $R^2$ of 0.90, which implies that the income

elasticity of consumption is less than unity (i.e. 0.74). Less than unity elasticity further indicates that the average propensity to consume (APC) decrease with an increase in income of the consumer. From this result, it is also evident that there is a wide disparity of consumption behaviour between rural and urban areas. The MPC of rural areas (i.e. 0.74) is significantly greater than the urban MPC (i.e. 0.56). Eventually, it is possible to conclude that the consumption function in respect of rural population is more responsive to the changes in income. Further, the fits are better in urban areas than in rural areas for both types of consumption functions[1].

The autonomous consumption (intercept term) is found to be positive for both functional forms. Positive autonomous consumption indicates the dissavings of the people who are at the bottom income range. Further, the average propensity to consume (APC) is less than marginal propensity to consume (MPC) in all cases (i.e. MPC<APC). Hence, the contention of Absolute Income Hypothesis that MPC < APC is found to be true in our analysis.

[1] This is in line with the observation of Roy Choudhury (1968).

Side by side with the marginal propensity to consume analyzed so far, it is considered necessary to elaborate what is happening in saving function. It is well known in economic theory that what is not consumed is saved and hence, the saving propensities and the corresponding income elasticity of saving have been worked out from the corresponding consumption function.

Table 5.5 presents the average propensity to save (APS) and marginal propensity to save (MPS) corresponding to the consumption function given above.

TABLE 5.5: PROPENSITIES TO SAVES FOR RURAL AND URBAN AREAS OF MIZORAM

| | APS | MPS | Income elasticity to save |
|---|---|---|---|
| Rural Areas | 0.07 | 0.26 | 3.7 |
| Urban Areas | 0.22 | 0.44 | 1.99 |
| Mizoram | 0.18 | 0.39 | 2.12 |

The average propensity to save (APS) is 0.07 and 0.22 for rural and urban areas respectively. At the same time, the marginal propensity to save (MPS) is 0.26 and 0.44 for rural and urban areas respectively. The overall results to a great extent revealed the diversity in saving behaviour. The rural

sector appears to have an extremely low saving rate. As the MPS for urban areas is significantly higher than that of rural areas, it can be concluded that urban population has better saving habit than rural population. However, as the income elasticity of saving is quite high, there exist a high saving potential in rural areas with the development of the economy.

Looking at the overall picture of the State, the income elasticity of saving is greater than unity (i.e. 2.12). This indicates the average propensity to save increases as income increases and conversely, the average propensity to consume decreases as income increases. In other words, the result that has emerged from this study reveals that saving is an increasing function of income.

As it has already been observed, there is a wide disparity of consumption/saving behaviour between rural and urban areas of Mizoram. It is necessary to precisely test the difference in consumption behaviour using suitable method. Since the difference of intercept terms is quite high between rural and urban areas, it is considered appropriate to test only the slope (MPC) of the consumption function. Consequently, the Chow

Test is adopted for testing significance of the difference in consumption behaviour.

The test statistic underlying the null hypothesis of equal slope coefficients of the consumption functions is

$$F = \frac{MSP - MSA}{MSA} \sim F_{k,(n1+n2-k)}$$

where MSP is the mean square error of the pooled (whole area) residual sum of squares (RSS) and MSA is the mean square error of the combined residual between rual and urban areas (i.e. RSS1+RSS2).

The result of the Chow Test is presented below in Table 5.6.

Table 5.6: THE CHOW TEST FOR THE EQUALITY OF REGRESSIONS BETWEEM RURAL AND URBAN AREAS UNDER THE NULL HYPOTHESIS OF EQUAL SLOPE COEFFICIENTS (MPC)

| Unexplained Variation | | RSS | df | MS | F |
|---|---|---|---|---|---|
| Rural | RSS(1) | 29849952.29 | 177 | 168643.8 | |
| Urban | RSS (2) | 65748702.89 | 191 | 344234 | |
| Combined (Rural + Urban) | RSS(a) | 95598655.18 | 368 | 259779 | |
| Pooled (Mizoram) | RSS(p) | 108927576.7 | 370 | 294398.9 | |
| Difference | RSS(p)-RSS(a) | 13328921.51 | 2 | 6664461 | 25.65 |

1 % level Critical $F_{2, 368} = 4.61$

Since the calculated F = 25.65 is significantly higher than theoretical F-statistic at all level of significance, the null hypothesis of equal slope coefficients (MPC) for both rural and urban areas is rejected. This test confirms the earlier results of the existence of wide disparity of consumption/saving behaviour between rural and urban areas. Hence, it can be concluded that rural and urban areas of Mizoram exhibit significantly different consumption behaviour as well as saving behaviour.

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REFERENCE:


1. Prais, S.J and H.S. Houthakker: *The Analysis of Family Budgets.* Cambridge University Press, 1955.
2. Keynes, J.M.: *The General Theory of Employment, Interest and Money*. Macmillan, New York, 1936
3. Coondoo, Dipankor: *A Comparision of Consumer Expenditure Patterns of Indian Middle Class and Working Class Families.* Sankhya: The Indian Journal of Statistics, Vol.37, Section C, Part 2, 1975.
4. Leser, C.E.V: *Forms of Engel Functions.* Econometrica, Vol. 31, No.4 (Oct., 1963).
5. Singh, Amarjit & Haramol Singh: *Changing Consumption Pattern In Punjab: Projections of Consumer Demand for 1973-74.* Economic and Political Weekly, Vol. VI, No. 50, 1971
6. Prasad, A.R: *Consumption Behaviour in India-theory and evidence*. Reliance Publishing House, New Delhi, 2001.
7. Johnston, J: *Econometric Methods (2nd Ed)*. McGraw-Hill, New York, 1960.
8. Johnston, J and J. Dinardo: *Econometric Methods.* 4th Ed. McGraw-Hill Companies, Inc., International Edition, 1997., New York.
9. Koutsoyiannis, A: *Theory of Econometrics.* Harper and Row Publishers, Inc., New York, 1973.

Table 5.7: ANALYSIS OF COVARIANCE (ANOCOV) TO TEST THE HOMOGENEITY OF CONSUMPTION BEHAVIOUR BETWEEN RURAL AND URBAN AREAS FOR VARIOUS COMMODITY GROUPS (Sum of Squares are calculated in Deviation terms)

**1. Beverages**

| SS | Rural | Urban | Total | (SSxy)**2/Sxx(total) | e'e |
|---|---|---|---|---|---|
| SSyy | 1128050 | 2160197 | 3288247 | 1271382.9 | 2016864.06 |
| SSxx | 159905661.3 | 502612670 | 662518331.3 | (SSxyT)**2 | |
| SSxy | 10220862 | 18801793 | 29022655 | 8.423E+14 | |
| (SSxy)**2 | 1.04466E+14 | 3.5351E+14 | 4.57973E+14 | | |
| (SSxy)**2/SSxx | 653297.8206 | 703339.651 | | | |
| r'r | 474752.1794 | 1456857.35 | **1931609.528** | | |

*ANOCOV Table*

| Source | Sum of squares | df | Mean Square | F(1) | F(2) | F(3) |
|---|---|---|---|---|---|---|
| Z | 1931609.528 | 368 | 5248.938935 | 43.573294 | 16.2422297 | 23.07 |
| | (Incremental Slope) | | | | | |
| | 85254.472 | 1 | 85254.472 | | | |
| X and D | 2016864 | 369 | 5465.756098 | | | |
| | (Incremental intercept) | | | | | |
| | 238161 | 1 | 238161 | | | |
| X | 2255025 | 370 | | | | |

**2. Meat**

| SS | Rural | Urban | Total | (SSxy)**2/Sxx(total) | e'e |
|---|---|---|---|---|---|
| SSyy | 787678.8068 | 942673.595 | 1730352.402 | 383899.85 | *1346452.6* |
| SSxx | 159905661.3 | 502612670 | 662518331.2 | (SSxyT)**2 | |
| SSxy | 6502150.919 | 9445911.21 | 15948062.13 | 2.543E+14 | |
| (SSxy)**2 | 4.2278E+13 | 8.9225E+13 | 1.31503E+14 | | |
| (SSxy)**2/SSxx | 264393.1817 | 177522.86 | | | |
| r'r | 523285.6251 | 765150.735 | *1288436.36* | | |

*ANOCOV Table*

| Source | Sum of squares | df | Mean Square | F(1) | F(2) | F(3) |
|---|---|---|---|---|---|---|
| Z | 1288436.36 | 368 | 3501.185761 | 56.94 | 16.57 | 30.19 |
| | (Incremental Slope) | | | | | |
| | 58016.19 | 1 | 58016.19 | | | |
| X and D | 1346452.55 | 369 | 3648.9229 | | | |
| | (Incremental intercept) | | | | | |
| | 207757.45 | 1 | 207757.45 | | | |
| X | 1554210 | 370 | | | | |

**3. Vegetables**

| SS | Rural | Urban | Total | (SSxy)**2/Sxx(total) | e'e |
|---|---|---|---|---|---|
| SSyy | 1023050.493 | 1279204.65 | 2302255.14 | 612556.85 | *1689698.3* |
| SSxx | 159905661.3 | 502612670 | 662518331.2 | (SSxyT)**2 | |
| SSxy | 6862115.501 | 13283110.7 | 20145226.21 | 4.058E+14 | |
| (SSxy)**2 | 4.70886E+13 | 1.7644E+14 | 2.2353E+14 | | |
| (SSxy)**2/SSxx | 294477.5611 | 351047.716 | 645525.2775 | | |
| r'r | 728572.9323 | 928156.93 | *1656729.862* | | |

*ANOCOV Table*

| Source | Sum of squares | df | Mean Square | F(1) | F(2) | F(3) |
|---|---|---|---|---|---|---|
| Z | 1656729.862 | 368 | 4501.983321 | 0.44 | 7.32 | 3.88 |
| | (Incremental Slope) | | | | | |
| | 32968.428 | 1 | 32968.428 | | | |
| X and D | 1689698.29 | 369 | 4579.128157 | | | |
| | (Incremental intercept) | | | | | |
| | 1993.71 | 1 | 1993.71 | | | |
| X | 1691692 | 370 | | | | |

**4. Cereals, salt, sugar and edible oils**

| SS | Rural | Urban | Total | (SSxy)**2/Sxx(total) | e'e |
|---|---|---|---|---|---|
| SSyy | 256695.9348 | 402699.856 | 659395.791 | 10994.142 | *648401.65* |
| SSxx | 159905661.3 | 502612670 | 662518331.2 | (SSxyT)**2 | |
| SSxy | 2504814.775 | 194040.702 | 2698855.477 | 7.284E+12 | |
| (SSxy)**2 | 6.2741E+12 | 3.7652E+10 | 6.31175E+12 | | |
| (SSxy)**2/SSxx | 39236.24096 | 74.9121465 | 39311.1531 | | |
| r'r | 217459.6938 | 402624.944 | *620084.6379* | | |

*ANOCOV Table*

| Source | Sum of squares | df | Mean Square | F(1) | F(2) | F(3) |
|---|---|---|---|---|---|---|
| Z | 620084.6379 | 368 | 1685.012603 | 41.99 | 16.81 | 30.29 |
| | (Incremental Slope) | | | | | |
| | 28317.0111 | 1 | 28317.0111 | | | |
| X and D | 648401.649 | 369 | 1757.186041 | | | |
| | (Incremental intercept) | | | | | |
| | 73785.651 | 1 | 73785.651 | | | |
| X | 722187.3 | 370 | | | | |

**5. Food Item**

| SS | Rural | Urban | Total | (SSxy)**2/Sxx(total) | e'e |
|---|---|---|---|---|---|
| SSyy | 6076684.84 | 9135967.51 | 15212652.35 | 6941463.6 | *8271188.7* |
| SSxx | 159905661.3 | 502612670 | 662518331.2 | (SSxyT)**2 | |
| SSxy | 26089943.22 | 41724855.3 | 67814798.49 | 4.599E+15 | |
| (SSxy)**2 | 6.80685E+14 | 1.741E+15 | 2.42165E+15 | | |
| (SSxy)**2/SSxx | 4256791.983 | 3463827.42 | 7720619.404 | | |
| r'r | 1819892.857 | 5672140.09 | *7492032.949* | | |

*ANOCOV Table*

| Source | Sum of squares | df | Mean Square | F(1) | F(2) | F(3) |
|---|---|---|---|---|---|---|
| Z | 7492032.949 | 368 | 20358.78519 | 70.84 | 38.27 | 58.14 |
| | (Incremental Slope) | | | | | |
| | 779155.781 | 1 | 779155.781 | | | |
| X and D | 8271188.73 | 369 | 22415.14561 | | | |
| | (Incremental intercept) | | | | | |
| | 1587977.27 | 1 | 1587977.27 | | | |
| X | 9859166 | 370 | | | | |

**6. Pan, tobacco and intoxicants**

| SS | Rural | Urban | Total | (SSxy)**2/Sxx(total) | e'e |
|---|---|---|---|---|---|
| SSyy | 856707.7821 | 1754856.77 | 2611564.553 | 624779.04 | *1986785.5* |
| SSxx | 159905661.3 | 502612670 | 662518331.2 | (SSxyT)**2 | |
| SSxy | 5641567.208 | 14703642.7 | 20345209.89 | 4.139E+14 | |
| (SSxy)**2 | 3.18273E+13 | 2.162E+14 | 2.48024E+14 | | |
| (SSxy)**2/SSxx | 199037.8596 | 430146.554 | 629184.4138 | | |
| r'r | 657669.9225 | 1324710.22 | *1982380.14* | | |

*ANOCOV Table*

| Source | Sum of squares | df | Mean Square | F(1) | F(2) | F(3) |
|---|---|---|---|---|---|---|
| Z | 1982380.14 | 368 | 5386.902554 | 0.69 | 0.82 | 0.75 |
| | (Incremental Slope) | | | | | |
| | 4405.38 | 1 | 4405.38 | | | |
| X and D | 1986785.52 | 369 | 5384.242602 | | | |
| | (Incremental intercept) | | | | | |
| | 3712.48 | 1 | 3712.48 | | | |
| X | 1990498 | 370 | | | | |

**7. Entertainment and telecommunications**

| SS | Rural | Urban | Total | (SSxyT)**2/ SSxx(total) | e'e |
|---|---|---|---|---|---|
| SSyy | 2407399.842 | 4255619.02 | 6663018.86 | 4937171.2 | *1725847.7* |
| SSxx | 159905661.3 | 502612670 | 662518331.2 | (SSxyT)**2 | |
| SSxy | 18286725.92 | 38905637.4 | 57192363.31 | 3.271E+15 | |
| (SSxy)**2 | 3.34404E+14 | 1.5136E+15 | 1.84805E+15 | | |
| (SSxy)**2/SSxx | 2091260.198 | 3011560.81 | 5102821.011 | | |
| r'r | 316139.6435 | 1244058.2 | *1560197.848* | | |

*ANOCOV Table*

| Source | Sum of squares | df | Mean Square | F(1) | F(2) | F(3) |
|---|---|---|---|---|---|---|
| Z | 1560197.848 | 368 | 4239.668065 | 5.26 | 39.07 | 22.44 |
| | (Incremental Slope) | | | | | |
| | 165649.812 | 1 | 165649.812 | | | |
| X and D | 1725847.66 | 369 | 4677.09393 | | | |
| | (Incremental intercept) | | | | | |
| | 24597.34 | 1 | 24597.34 | | | |
| X | 1750445 | 370 | | | | |

**8. Health Care**

| SS | Rural | Urban | Total | (SSxyT)**2/ SSxx(total) | e'e |
|---|---|---|---|---|---|
| SSyy | 1925288.744 | 1366090.09 | 3291378.836 | 749863.36 | *2541515.5* |
| SSxx | 159905661.3 | 502612670 | 662518331.2 | (SSxyT)**2 | |
| SSxy | 11678339.53 | 10610631.3 | 22288970.82 | 4.968E+14 | |
| (SSxy)**2 | 1.36384E+14 | 1.1259E+14 | 2.48969E+14 | | |
| (SSxy)**2/SSxx | 852900.4735 | 224000.514 | 1076900.987 | | |
| r'r | 1072388.27 | 1142089.58 | *2214477.849* | | |

*ANOCOV Table*

| Source | Sum of squares | df | Mean Square | F(1) | F(2) | F(3) |
|---|---|---|---|---|---|---|
| Z | 2214477.849 | 368 | 6017.602851 | 4.45 | 54.35 | 29.72 |
| | (Incremental Slope) | | | | | |
| | 327037.65 | 1 | 327037.65 | | | |
| X and D | 2541515.5 | 369 | 6887.575881 | | | |
| | (Incremental intercept) | | | | | |
| | 30661.5 | 1 | 30661.5 | | | |
| X | 2572177 | 370 | | | | |

**9. Clothing and housing**

| SS | Rural | Urban | Total | (SSxyT)**2/ SSxx(total) | e'e |
|---|---|---|---|---|---|
| SSyy | 26736231.36 | 51184046.5 | 77920277.82 | 10914728 | *67005550* |
| SSxx | 159905661.3 | 502612670 | 662518331.2 | (SSxyT)**2 | |
| SSxy | 60063160.08 | 24973346.6 | 85036506.73 | 7.231E+15 | |
| (SSxy)**2 | 3.60758E+15 | 6.2367E+14 | 7.23121E+15 | 1.146E+16 | |
| (SSxy)**2/SSxx | 22560697.16 | 1240852.21 | 23801549.37 | | |
| r'r | 4175534.194 | 49943194.2 | *54118728.44* | | |

*ANOCOV Table*

| Source | Sum of squares | df | Mean Square | F(1) | F(2) | F(3) |
|---|---|---|---|---|---|---|
| Z | 54118728.44 | 368 | 147061.7621 | 273.8 | 87.63 | 125.2 |
| | (Incremental Slope) | | | | | |
| | 12886821.56 | 1 | 12886821.56 | | | |
| X and D | 67005550 | 369 | 181586.8564 | | | |
| | (Incremental intercept) | | | | | |
| | -4.95E+07 | 1 | -49546170.16 | | | |
| X | 17459379.84 | 370 | | | | |

**10. Education**

| SS | Rural | Urban | Total | (SSxyT)**2/ SSxx(total) | e'e |
|---|---|---|---|---|---|
| SSyy | 3812592.747 | 18515213.2 | 22327805.9 | 12822177 | *9505628.9* |
| SSxx | 159905661.3 | 502612670 | 662518331.2 | (SSxyT)**2 | |
| SSxy | 19459231.77 | 72708698.2 | 92167929.97 | 8.495E+15 | |
| (SSxy)**2 | 3.78662E+14 | 5.2866E+15 | 5.66522E+15 | | |
| (SSxy)**2/SSxx | 2368031.863 | 10518148.7 | 12886180.55 | | |
| r'r | 1444560.884 | 7997064.46 | *9441625.349* | | |

*ANOCOV Table*

| Source | Sum of squares | df | Mean Square | F(1) | F(2) | F(3) |
|---|---|---|---|---|---|---|
| Z | 9441625.349 | 368 | 25656.59062 | 0.86 | 2.49 | 1.68 |
| | (Incremental Slope) | | | | | |
| | 64003.551 | 1 | 64003.551 | | | |
| X and D | 9505628.9 | 369 | 25760.51192 | | | |
| | (Incremental intercept) | | | | | |
| | 2.21E+04 | 1 | 22088.1 | | | |
| X | 9.53E+06 | 370 | | | | |

**11. Transportations**

| SS | Rural | Urban | Total | (SSxyT)**2/ SSxx(total) | e'e |
|---|---|---|---|---|---|
| SSyy | 511449.6007 | 4055972.47 | 4567422.067 | 2518770 | *2048652* |
| SSxx | 159905661.3 | 502612670 | 662518331.2 | (SSxyT)**2 | |
| SSxy | 5768432.556 | 35081675.4 | 40850107.93 | 1.669E+15 | |
| (SSxy)**2 | 3.32748E+13 | 1.2307E+15 | 1.264E+15 | | |
| (SSxy)**2/SSxx | 208090.282 | 2448652.85 | 2656743.133 | | |
| r'r | 303359.3187 | 1607319.61 | *1910678.933* | | |

*ANOCOV Table*

| Source | Sum of squares | df | Mean Square | F(1) | F(2) | F(3) |
|---|---|---|---|---|---|---|
| Z | 1910678.933 | 368 | 5192.062318 | 18.6 | 26.57 | 23.23 |
| | (Incremental Slope) | | | | | |
| | 137973.067 | 1 | 137973.067 | | | |
| X and D | 2048652 | 369 | 5551.902439 | | | |
| | (Incremental intercept) | | | | | |
| | 1.03E+05 | 1 | 103274 | | | |
| X | 2.15E+06 | 370 | | | | |

**12. Miscellaneous**

| SS | Rural | Urban | Total | (SSxyT)**2/ SSxx(total) | e'e |
|---|---|---|---|---|---|
| SSyy | 2064530.22 | 61796628.9 | 63861159.13 | 38546902 | *25314257* |
| SSxx | 159905661.3 | 502612670 | 662518331.2 | (SSxyT)**2 | |
| SSxy | 12918261.02 | 146887963 | 159806223.6 | 2.554E+16 | |
| (SSxy)**2 | 1.66881E+14 | 2.1576E+16 | 2.1743E+16 | | |
| (SSxy)**2/SSxx | 1043624.512 | 42927834.6 | 43971459.09 | | |
| r'r | 1020905.708 | 18868794.3 | *19889700.05* | | |

*ANOCOV Table*

| Source | Sum of squares | df | Mean Square | F(1) | F(2) | F(3) |
|---|---|---|---|---|---|---|
| Z | 19889700.05 | 368 | 54048.09796 | 4.91 | 100.36 | 53.3 |
| | (Incremental Slope) | | | | | |
| | 5424556.95 | 1 | 5424556.95 | | | |
| X and D | 25314257 | 369 | 68602.32249 | | | |
| | (Incremental intercept) | | | | | |
| | 3.37E+05 | 1 | 336992.41 | | | |
| X | 25651249.41 | 370 | | | | |

**13. Non-food Item**

| SS | Rural | Urban | Total | (SSxyT)**2/ SSxx(total) | e'e |
|---|---|---|---|---|---|
| SSyy | 113802459.7 | 428298927 | 542101386.6 | 533830198 | *8271188.7* |
| SSxx | 159905661.3 | 502612670 | 662518331.2 | (SSxyT)**2 | |
| SSxy | 133815718.1 | 460887815 | 594703532.7 | 3.537E+17 | |
| (SSxy)**2 | 1.79066E+16 | 2.1242E+17 | 2.30324E+17 | | |
| (SSxy)**2/SSxx | 111982566.9 | 422626787 | 534609353.6 | | |
| r'r | 1819892.857 | 5672140.09 | *7492032.949* | | |

*ANOCOV Table*

| Source | Sum of squares | df | Mean Square | F(1) | F(2) | F(3) |
|---|---|---|---|---|---|---|
| Z | 7492032.949 | 368 | 20358.78519 | 70.84 | 38.27 | 38.99 |
| | (Incremental Slope) | | | | | |
| | 779155.751 | 1 | 779155.751 | | | |
| X and D | 8271188.7 | 369 | 22415.14553 | | | |
| | (Incremental intercept) | | | | | |
| | 1.59E+06 | 1 | 1587977.3 | | | |
| X | 9859166 | 370 | | | | |

*CHAPTER – 6*

# MAJOR FINDINGS AND CONCLUSION

## 6.1: INTRODUCTION:

As suggested by the title of the thesis, it has been attempted in this study to analyze the changes in the pattern of consumption expenditure in Mizoram. Engel's Law has been taken as the underpinning theoretical assumption of declining share of food as consumer's expenditure rises. In order to find the general applicability of the received theory, we classified the various consumption items into necessities, luxuries and semi-luxuries and estimated their respective expenditure elasticities. It has also been observed that for the different income classes, there have been changes in the consumption pattern leading to the creation of class difference. This points to the fact that a certain consumption goods and services which are regarded as a luxury to one class becomes a necessity to other class.

In another context, this study has also attempted to examine the rural-urban difference in consumption behaviour. While an average city-dweller has been found to spend almost twice the amount his counterpart in rural areas did, we have also examined how much difference exists in terms of allocation of his budgets to key segments.

## 6.2: MAJOR FINDINGS:

The main findings and observations are presented below:

1) In India, the total per capita average monthly consumer expenditure (PMCE) at current prices have continuously increased for the last 30 years (i.e. 1973 to 2003). It increased from Rs.53.8 in 1973 to Rs.789.1 in 2003. Similarly, the average PMCE of North-Eastern Region (NER) has continuously increased from Rs.435.5 in 1994 to 835.5 in 2003.

2) The patterns of consumer expenditure of India as well as NER have undergone significant changes during each of the study period. For the whole India, the share of food items continuously decreased from 67.8 percent in 1973 to 61.8 percent in 1983, 60.7 in 1993 and 46.2 percent in 2003. Similarly, NER also showed the same pattern that the share of food decreased from 59.7 percent in 1994 to 56.4 percent in 1998 and 48.9 percent in 2003.

3) According to the 55th NSS Round (July 1999- June 2000), the per capita average monthly consumer expenditure (PMCE) for Mizoram was Rs.889.24, of which, the average for rural areas was Rs.721.8 and for urban areas Rs.1056.6. According to this data on household consumption expenditure, the households on average spent 55 percent of their income on food in Mizoram. While rural Mizoram is allocating 59.4 percent of the monthly household budget for food, the urban also spends 52 percent under the head. Though there is a differential to the tune of 7.4 percent the rural is showing a consumption pattern similar to urban areas. There is a declining share of food in the household expenditure as the level of income rises.

4) According to the data of our sample survey (July – August 2007), the average PMCE of the whole study area was Rs. 1971 while the average for rural areas was Rs.1151.26 and for urban areas Rs.2731.8. At the same time, while average per capita monthly income (PMI) of the whole area was Rs.2414.8, it was Rs.1237.5 in rural and Rs.3506.7 in urban areas. If the

differences are taken to estimate correctly, the average propensity to consume (APC), the result obtained comes to 0.82 for the entire population and 0.93 in rural areas and 0.78 in urban areas. The contention of the Absolute Income Hypothesis (AIH) of the declining APC with an increase in income is found to be true in the state.

5) An examination of six PMCE classes revealed that the share of food item decreased with an increase in the total consumer expenditure i.e. it is 55.3 percent in the bottom class and 14.9 percent in the top class. On the contrary, the share of clothing and housing showed an increasing tendency with the total expenditure. Consequently, Engel's Law is found to hold true to the observation of the consumption pattern of various PMCE classes of Mizoram.

6) An analysis of concentration in consumer expenditure for six PMCE classes of the state reveals that (i) there is more concentration in urban consumption than in rural consumption, and (ii) there is more concentration

in the consumption of non-food items than in food item in all areas.

7) Estimated expenditure elasticity for food items is less than unity for linear and double-log Engel's functions. Thus, the proportion of expenditure spent on food decreases with an increase in total consumer expenditure. Food is technically a necessity judging from the inelastic state of the demand for it. Further, the positive intercept terms of the food consumption function suggests that the increase in its price will act to mount the indebtedness of the poor. The elasticity of non-food, on the other hand, is more than unity implying that non-food may be, technically, regarded as luxury items in the state.

8) Category-wise analysis of food items revealed that cereals, salt, sugar and edible oils have the lowest elasticity. This indicates cereals; salt, sugar and edible oils form the most important staple food in Mizoram. As the intercept term for this group is positive, the present investigation suggested that even a slight

increase in the prices of these items would result in the indebtedness of the poor.

9) Category-wise analysis of non-food items indicated that the commodity groups of pan, tobacco & intoxicants and health care are treated as necessities. While health care is a necessity encompassing the welfare needs of everybody, the fact that a large majority of the people still consume pan, tobacco & intoxicants which are injurious to health defies any logic of rational behaviour.

10) The items groups of education, transportations, clothing & housing, entertainment & telecommunications, and miscellaneous may be considered as luxury items as their estimated expenditure elasticities are greater than unity. The lower income and therefore lower consumption is evident from the spending on education, which is estimated at Rs.98.57 a month in rural areas, compared to Rs.300.53 a month in urban areas. Proper education, which is the key to human resource development, is

beyond the reach of certain sections of the society. One of the main reasons for this is the emergence of private educational institutions and professional institutions.

11) An Analysis of Variance (ANOVA) test revealed that there is no significant inter-class difference in the consumption behaviour in the following groups: (i) pan, tobacco & intoxicants, (ii) education, and (iii) total non-food items.

12) Comparative analysis revealed that entertainments & telecommunications are luxury items for rural community, but it is necessity for urban community. Similarly, health care is luxury for rural households while it is necessity for urban households. The higher proportion of medical bill in rural areas is attributed to the poor sanitation and healthcare facilities provided in villages. Further, the facilities of enjoyment (like phones, television, etc) available in urban areas are not accessible to a number of rural households.

13) An Analysis of Covariance (ANOCOV) test between rural and urban areas resulted in the significant difference of overall consumption behaviour between rural and urban areas of Mizoram. However, category-wise analysis of items reveals that there is no significant difference in case of pan, tobacco & intoxicants and education.

14) The marginal propensity to consume (MPC), at aggregative level, of Mizoram is 0.61 which indicates the income elasticity of consumption is less than unity (i.e. 0.74). It implies the ratio of consumption to income (or average propensity to consume) decrease with an increase in income. The hypothesis that the consumption increases with the increase in income but less than proportionately is found to be true in Mizoram. The average propensity to consume is found to be less than marginal propensity to consume. This is in line with the contention of Keynesian Absolute Income hypothesis that MPC < APC. Further, the Chow Test proved the evidence of wide disparity of

consumption behaviour between rural and urban areas at aggregative consumption functions. Thus, the MPC of rural areas (0.74) is significantly higher than urban MPC (0.56), which suggests that the responsiveness of consumption to the changes in income is greater in rural areas than in urban areas.

15) The saving rate or average propensity to save (APS) of the state is 0.18 (i.e. 18 percent of the total income). Urban saving rate is found to be higher than rural saving rate at 0.07 (i.e. 7 percent) and 0.22 (i.e. 22 percent) for rural and urban areas respectively.

16) The marginal propensity to save (MPS) in Mizoram is 0.39 and the estimated income elasticity of saving is more than unity (i.e. 2.12). Thus, APS is found to increase with the increase in income levels or saving is an increasing function of income. Further, the MPS of urban areas (0.44) is significantly higher than rural MPS (0.26). Accordingly, it may be concluded that urban households have a higher saving potential than rural households.

## 6.3: CONCLUSION:

The present study gives operational evidence of Engel's Law and the broad applicability of Keynesian Absolute Income Hypothesis in the analysis of consumer behaviour in Mizoram. According to our sample survey data, the major share of household expenditure was accounted for by food, which manifests a characteristic of low-income economy. The differing expenditure elasticity, between rural and urban areas also exhibits a rather inequitable distribution of income within the state. It will therefore be fitting and appropriate for the government to take measure for the greater generation of income without losing sight of distributional justice.

# BIBLIOGRAPHY

# BIBLIOGRAPHY


**Ackley, Gardner** — *Macroeconomics: Theory and Policy*. New York: Macmillan, 1978.

**Ahluwalia, I.J** — *Behaviour of Prices and Outputs in India: A Macro-Econometric Approach.* Macmillan, Delhi, 1979.

**Allen, R.G.D & A.L.Bowley** — *Family Expenditure*.London Staples, 1935.

**Ando, A. and F. Modigliani** — *Velocity and the Investment Multiplier*. American Economic Review, September, 1965.

**Angevine, G.E.** — *Forecasting Consumption with a Canadian Consumer Sentiment Measure.* Canadian Journal of Economics, May 1974, pp 273-89

**Bailey, M.J.** — *National Income and the Price Level.* McGraw Hill 2nd Ed., 1971.

**Bal, H.K. & H.S. Bal** — *Expenditure Elasticities for Rural Punjab*. Indian Journal of Agricultural Economics, Vol. 25, 1970, pp121-128.

**Ball, R.J & P.S. Drake** — *The Relationship between Aggregate Consumption and Wealth.*International Economic Review, Vol.V, pp63-81, January 1964.

**Battacharya, N** — *The Average Elasticity of Variable Elasticity Engel Curve*. Technical Report No.Eco/2/73, Indian Statisitical Institute, Calcutta, 1973.

**Bhattachary, S.S., et al.** — *Between States Variation in Consumer Prices and Per Capita Household Expenditure Data.* Sarvekshana, Vol.III, No.4, 1980, pp107-120.

**Bhattacharya, N & G.S.Chatterjee** *A Further Note on Between State Variations in Level of Living in rural India.* Technical Report No.NIRU/4/80 of Indian Statistical Institute, Calcutta, 1980.

**Bhattacharya, N & T.Maitra** *An Analysis of Engel Curves based on NSS Household Budget Data for 7th to 22nd Rounds.* Technical Paper at the 10th Indian Econometric Conference at Madurai, 1970.

**Biswas, A.K. & D.K. Bose** *Estimation of Increase in Demand for Food & Cereals During the Third Five Year Plan Period.*Studies Relating to Planning for National Development, No. 167, Indian Statistical Institute, Calcutta

**Blaug, Mark** *Economic Theory in Retrsospect.* 5th Edition. Cambridge University Press, United Kingdom, 1996.

**Blinder, A.R. & A.Deaton** *Time Series Consumption Function Revisited.* Brookings Paper on Economic Activity, Vol.2, 1985, pp 465-521.

**Blinder, A.S.** *Distribution Effects and the Aggregate Consumption Function.* Journal of Political Economy, June 1975, pp447-75.

**Bodkin, R.G.** *Windfall Income and Consumption* .American Economic Review, September 1959 pp602-14

**Bodkin, R.G.** *Windfall Income and Consumption: Comment.* American Economic Review, June 1963, pp445-447.

**Bojner, H.** *The Effect on Consumption of Household size and Composition.* European Economic Review, 9, 1977, pp169-193.

**Bose, D.K.** *Expenditure Consumption Curves for Some Selected Commodities*. Studies on Consumer Behaviour, Indian Statistical Series, No.6, Asia Publishing House, Bombay and Statistical Publishing Society, Calcutta, 1960.

**Brady, D.S & H.A.Barber** *The Pattern of Food Expenditures*. Review of Economics and Statistics, XXX, 1948, pp198.

**Brown, A & A. Deaton** *Models of Consumer Behaviour*. Economic Journal, 82, No.328, 1972.

**Brown, J.A.C.** *The Consumption of Food in Relation to Household Composition and Income*. Econometrica, Vol. 22, 1954, pp444-460.

**Brown, T.M.** *Habit Persistence and Lags in Consumer Behaviour*. Econometrica, Vol. 20, 1952, pp355-371.

**Burk, Marguerite C** *Changes in the Demand for Food from 1941 to 1950*.Journal of Farm Economics.Vol.33, No.3 (Aug., 1951), pp 281-298.

**Burk, Marguerite C** *An Appraisal of Changes in Rural Food Consumption.* Journal of Farm Economics, XL: 3:572-580, August 1958.

**Burk, Marguerite C** *The Study of Regional Food Consumption.* Journal of Farm Economics, XLI: 5:1040-1049, December 1959.

**Campbell, J and N. Mankiw** *Permanent Income, Current Income and Consumption.* Journal of Business and Economic Statistics, Vol.8 (1990) pp 265-279

**Chakravari, S.K.** *Behaviour of Prices in India, 1952-70: An Empirical Study*. Macmillan, 1977, Delhi.

**Chambers, M.J** — *An Alternative Time Series Model of Consumption: Some Empirical Evidence.*Applied Economics, Vol. 23 (1991), pp 1361-1366

**Chern, Wen S., et al.,** — *Analysis of Food Consumption Behaviour By Japanese Households.* Agriculture and Development Economic Division of the Food and Agriculture Organisation, 2002. Working Paper No. 206. www.fao.org/es/esa

**Coondoo, Dipankor** — *A comparison of consumer expenditure pattern of Indian middle class and working class families.* Sankhya: The Indian Journal of Statistics. 1975, vol.37, Series C, Pt. 2, pp 81-101..

**Coondoo, Dipankor** — *The Effect of Relative Prices on Engel Elasticity of Cereals in India.* Arthaniti, Vol. 12, 1969.

**Coondoo, Dipankor., et al.** — *Engel Curve Analysis with Non-Monetized Consumption.* Journal of Income and Wealth, Vol. 5, No.2, July 1981.

**Cranfield, John A.L., et al.** — *Changes in the Structure of Global Food Demand.* American Journal of Agricultural Economics, Vol. 80, No.5, 1998, pp.1042-1050.

**Dandekar, V.M & P. Venkataramaiah** — *Data Base of Indian Economy.* Vol. II, ed., The Indian Econometric Society, Hyderabad, 1975.

**Davidson, J.E.H., et al.,** — *Econometric Modelling of Aggregate Time Series Relationship between Consumers, Expenditure and Income in United Kingdom.* The Economic Journal, Vol. 88, 1978, pp 661-692

**Davis, M.A.** — *The Consumption Function in Macroeconomic Models: A comparative study.* Applied Economics, Vol.16., 1984, pp 799-838

**Davis, T.E.** — *The Consumption Function as Tool for Prediction.* Review of Economic Statistics, Vol.34, 1952, pp270-77

**Deaton, A.** *Life-cycle Models of Consumption: Is the evidence consistent with the theory?*. National Bureau of Economic Research, Working Paper No. 1910, 1986.

**Deaton, A.** *Wealth Effect on Consumption in a Modified Life Cycle Model*. The Review of Economic Studies, Vol.39, 1972, pp443-454.

**Deaton, A.** *The Analysis of Consumer Demand in the United Kingdom, 1900-1970*. Econometrica, 42, No.2, 1974, pp341-367.

**Deaton, A. & J. Muellbauer** *An Almost Ideal Demand System*. American Economic Review, No.70, pp312-336, 1980.

**Devendra, B. Gupta** *Consumption Pattern in India.* Tata McGraw Hill Publishing Company Limited, New Delhi, 1973.

**Doom, Van J.** *Aggregate Consumption and the Distribution of Incomes*. European Economic Review, October, 1975, pp417-23.

**Dowling, J. & A. Lahiri** *Growth, Structural Transformation and Consumption Behaviour: Evidence from Asia*. World Bank Discussion Paper, No.200, 1986.

**Duessenberry, James S. (1949)** *Income, Saving and the Theory of Consumer Behaviour*. Harvard University Press, Cambridge, Massachussets, 1967.

**Economic Research Service/USDA** *Cross-Country Analysis of Food Consumption Pattern.* Working Paper No.01-1, 1997

**Evans, Michael K** *The Importance of Wealth in the Consumption Function.* Journal of Political Economy, Vol.75, pp335-351, Part.1, April 1967.

**Farrel, M.J.** *The New Theories of the Consumption Function.* The Economic Journal, Vol.69, No.276 (Dec.1959),pp 678-696.

**Farrel, M.J.** *Some Aggregation Problems in Demand Analysis.* Review of Economic Studies, Vol.21, 1954, pp193.

**Ferber, R.** *A Study of Aggregate Consumption Functions.* National Bureau of Economic Research, Technical Paper 8, 1953.

**Flavin, M.** *The Adjustment of Consumption to Changing Expectations about future income.* Journal of Political Economy, Vol. 89, No. 5, 1981, pp 974-1009

**Friedman, M (1957)** *A Theory of Consumption Function*. Oxford & BH Publishing Co. New Delhi, 1970.

**Friend, I** *Relationship between Consumers' Expenditure, Savings and Disposable Icome.*The Review of Economics and Statistics, vol.28, 1946, pp208-15.

**Friend, I. & I.B.Kravis** *Consumption Patterns and Permanent Income.* American Economic Review, May 1957, pp269-301.

**Ganguly, A.** *Consumption Pattern in Different Occupation Group.* Studies on Consumer Behaviour, Indian Statistical Series, No.6, Asia Publishing House and Statistical Publishing Society, Calcutta, 1960.

**Ghose, Suchismita & N.Bhattacharya** *Effect of Reference Period on Engel Elasticities of Clothing and Other Items: Further Results.* Sankhya: The Indian Journal of Statistics, 1995, Vol.57, Series B, Pt.3, pp 433-449

**Gilboy, E.** *The Propensity to Consume.* Quarterly Journal of Economics, pp120-140, November 1938.

**Goreaux, L.M.** *International Comparison of Engel Curves-- Annex of Log-normal Adjustment of Engel Curves.* Paper submitted to the 19th European Congress of the Econometric Society, Luxembourg, August 1957.

**Goreaux, L.M.** *Income Elasticity of the Demand for Food.* Rome, FAO, 1959, Mimeo.

**Goreaux, L.M.** *Income and Food Consumption.* Monthly Bulletin of Agricultural Economics and Statistics, No.9, October 1960, pp1-13.

**Goreaux, L.M.** *Consumption Patterns in India.* Tata McGraw Hill Publishing Company Limited, 1973, Bombay-New Delhi.

**Government of India** *Reports of Households Consumption Expenditures.* Various Rounds of National Sample Survey of Organisation, Ministry of Statistics and Programme Implementation.

**Government of Mizoram** *Statistical Handbook 2006.* Directorate of Economics and Statistics.

**Gupta, D.B.** *Consumption Patterns in India, A Study of Inter-regional variations.* Tata McGraw-Hill Publishing Company Limited, Bombay-New Delhi, 1973.

**Gupta, D.B** *A Comparison of Consumption Patterns in Uttar Pradesh and Madras - A study of inter-regional variations with reference to India.* Indian Economic Review, New Series, 3, (1968) pp 129-144

**Gupta, K.L.** *Income, Consumption and Saving in Urban and Rural India:* A Note. The Review of Income and Wealth, Series 16, No. 4 (Dec., 1970) pp 377-388.

**Haavelmo, T.** *Family Expenditures and the Marginal Propensity to Consumer*. Econometrica, No.15, October 1947, pp335-341.

**Haines, George H.** *Consumer Behaviour Learning Models of Purchasing.* Jr. London: Collier-McMillan; New York: The Free Press, 1969.

**Hall, R.E** *Stochastic Implications of the Life Cycle Hypothesis: Theory and Evidence. Journal of Political Economy, Vol. 86, 1978, pp 971-987.*

**Hood, W.C.** *Empirical Studies of Demand.* Canadian Journal of Economics and Political Science, Vol.21, 1955, pp309-327.

**Houthakker, H.S.** *An International Comparision of Household Expenditure Patterns.* Econometrica, Vol.25,pp532-551.

**Houthakker , H.S & L.D.Taylor** *Consumer Demand in the United States 1929-1970. 2nd Ed., Harvard University Press, Cambridge, Massachusset.*

**Houthakker, H.S** *An International Comparison of Household Expenditure Patterns, Commemorating the Centenary of Engel's Law*. Econometrica, Vol.25, No.4 (Oct., 1957), pp 532-551.

**Houthakker, H.S** *The Permanent Income Hypothesis.* American Economic Review, June 1958, pp398.

**Houthakker, H.S** *The Influence of Prices and Incomes on Household Expenditures.* Bulletin de 1' Institut International de Statistique 37(2): 1960, pp9-22.

**Houthakker, H.S** *The Present State of Consumption Theory*. Econometrica, 29:4:704-740, October 1961.

**Houthakker, H.S. & L.Taylor** *Consumer Demand in the USA, 1929-1970: Analysis and Projections.* Harvard University Press, 1970.

**Iyengar, N.S.** *On a Problem of Increase on Consumer Demand.* Sankhya-The Indian Journal of Statistics, Vol.22, 1960, pp379-390.

**Iyengar, N.S.** *On a Method of Computing Engel Elasticities from Concentration Curves.* Econometrica, Vol.28, 1960, pp882-891.

**Iyengar, N.S.** *A Consistent Method of Estimating the Engel Curve from Grouped Survey Data.* Econometrica, 32, 1964, pp591-618.

**Iyengar, N.S.** *Contributions to Analysis of Consumer Expenditure.* Unpublished Doctoral Disseration, Indian Statistical Institute, 1964.

**Iyengar, N.S. & L.R.Jain** *Projection of Consumption, Rural/Urban India, 1970-71 and 1975-76.* Economic and Political Weekly, 4, No.48, November 29, 1969.

**Iyengar, N.S. & L.R.Jain** *Changes in the Pattern of Consumption in India.* Arthavijnan, 16, No.3, 1974, pp231-266.

**Iyengar, N.S. & N.Bhattacharya** *Studies on Consumer Behaviour in India- A Survery of Research in Economics.* Econometrics, Vol.III, Allied Publishers, New Delhi.1970.

**Iyengar, N.S. & S. Krishna Moorty** *On Some Econometric Models of India.* Arthaniti, Vol. 2, 1959.

**Iyengar, N.S., et al.,** *Economies of Scale in Household Consumption: A Case Study.* Indian Economic Journal, 15, 1968. Econometric Annual, pp 465-477.

**Johar, R.S. & H.S.Sandhu** *Consumption Pattern in Punjab.* The Indian Economic Journal, Vol.29, No.4, 1982, pp69-85.

**Jones, R.C.** *Transitory Income and Expenditures on Consumption Categories.* American Economic Review, Vol. 50 (May, 1960) pp 584-92

**Keynes, J.M.** *The General Theory of Employment, Interest and Money.* New York: Harcourt, Brace, 1936.

**Klein, L.** *The Use of Economic Models as a Guide to Economic Policy.* Econometrica, Vol.15, 1947, pp111-51.

**Klein, L.R & J.B.Lansing** *Decision to Purchase Consumer Durable Good.* Journal of Marketing, XX:2:108-132, October 1955.

**Klein, L.R & N.Liviatan** *The Significance of Income Variability on Saving Behaviour.* Oxford University Institutes of Statistics, Bullettin. Vol. 19 (May, 1957), pp 151-60.

**Koutsoyiannis, A** *Modern Microeconomics.* 2nd Edition, Macmillan, 1979, Hong Kong.

**Kreinin, M.E.** *Windfall Income and Consumption -Additional Evidence.* American Economic Review, Vol. 51 (June, 1961), pp 388-90.

**Krishnamurthy, K.** *Consumption Function for India: A Macro-time Series Study.* Indian Journal Economic Journal, 13, October-December 1965, pp217-231.

**Kuznet, Simon** *Uses of National Income in Peace and War*. Occasional Paper 6, National Bureau of Economic Research, New York, 1942.

**Kuznet, Simon** *National Income: A Summary of Findings.* National Bureau of Economic Research. Princeton University Press, Princeton, 1946.

**Laumas, Prem S. & Khan A. Mohabbat.** *The Permanent Income Hypothesis: Evidence from Time-Series Data.* The American Economic Review, Vol.62, No.4 (Sept., 1972) pp 730-734.

**Leser, C.E.V** *Family Budget Data and Price-Elasticities of Demand.* The Review of Economic Studies, Vol.9, No.1 (Nov., 1941)pp 40-57.

**Leser, C.E.V** *Forms of Engel Functions.* Econometrica, Vol.31, No.4 (October, 1963), pp 694-703

**Leser, C.E.V** *Demand Relationships for Ireland.* Economic Research Institute Paper No.4, Dublin, 1962.

**Liviatan, N.** *Consumption Pattern of Israel, Jerusalem.* Academic Press Limited, Jerusalem, 1964.

**Liviatan, N.** *Errors in Variables and Engel Curve Analysis.* Econometrica, Vol.29, 1961, pp336-362.

**Mack, R.** *The Direction of Change in Income and Consumption Function.* Review of Economics and Statistics, Vol.30, 1948, pp239-258.

**Mahajan, B.M.** *Inter-regional Homogeneity of Consumer Behaviour in India*. Arthavijnan, Vol.13, 1971, pp1-13.

**Maitra, T.** *On Regional Temporal Variation of Engel Curves in Rural India*. ISI Technical Report No.Econ/2/69, 1969.

**Mammon, Thampy** *Consumption Function: Some Further Tests.* The Indian Economic Journal, Vol. 30, No. 1 (July-Sept., 1982) pp 15-22

**Marshall, Alfred (1890)** *The Principles of Economics.* 8th Edition, Macmillan, New York, 1948

**Mazumdar, Amita** *Consumer Expenditure Pattern in India.* Technical Report No. ERU/17/83, Indian Statistical Institute, Calcutta, 1983.

**Modigliani, F. and R.E.Brumberg** *Utility Analysis and Consumption Function: An Interpretation of Cross section data.* Post Keynesian Economics, Rutgers University Press. pp 388-436

**Modigliani, F & A. Ando** *The Life Cycle Hypothesis of Saving: Aggregate Implications and Tests.* American Economic Review, Vol. 53, (1963) pp 56-83

**Modigliani, F. & R. Brumberg** *Utility Analysis and Consumption Function: An Interpretation of Cross section data.* Post Keynesian Economics, Rutgers University Press. pp 388-436

**Molana, H** *The Time Series Consumption Function: Error Correction, Random Walk and Steady State.* The Economic Journal, Vol. 101 (1990) pp 383-402.

**Muellbauer, J. & R. Lattimore** *The Consumption Function: A Theoretical and Empirical Overview.* Handbook of Applied Econometrics, Vol. 1: Macroeconomics edited by M.H. Wickens, Oxford, 1995.

**Nair, P.R.G.** *Food grains Price Policies in India, in Food Policy in India*. Indian Economic Association, 1968.

**Narasimham, N.V.A.** *A Short-Term Planning Model for India*. North Holland Publishing Co., Amsterdam, 1956.

**Nisbet, Charles T & Firouz Vakil** *Some Estimates of Prices and Expenditure Elasticities of Demand for Marijuana Among UCLA Students.* The Review of Economics and Statistics, Vol.54, No.4 (Nov., 1972), pp 473-475

**Phillips, L.** *Applied Consumption Analysis.* North Holland, Amsterdam, 1974.

**Prais, S.J & H.S Houthakker** *The Analysis of Family Budgets.* Cambridge University Press, 1955.

**Prasad, A.R.** *Consumption Behaviour in India: Theory and Evidence.* Reliance Publishing House, New Delhi, 2001.

**Rao, C.R.** *Data Base Indian Economy.* Vol.I, ed., The Indian Econometric Society, Hyderabad, 1972.

**Reid, M.** *Consumption, Saving and Windfall Gains.* American Economic Review, September, p728-737.

**Roy Choudhury, Uma Datta** *Income, Consumption and Saving in Urban and Rural India*. The Review of Income and Wealth, Series 14, No. 1 (March, 1968) pp 37-56.

**Roy, J. and S.K. Dhar** *A Study of Pattern of Consumer Expenditure in Rural and Urban India.* ISI PD WP No.101, 1958.

**Roy, J., et al.** *A Study of Concentration Curves as a Description of Consumption Pattern.* Studies on Consumer Behaviour, Asia Publishing House, London, 1960.

**Roy, J., et al.** *A Study on the Pattern of Consumer Expediture in Rural and Urban India*. Indian Statistical Series, No.6, Calcutta, Indian Statistical Instute, 1960.

**Rudra, A.** *Survey of Research on Consumption, Savingsand Capital Formation.* The Data Base of Indian Economy. Indian Econometric Society, New Delhi, 1972.

**Rudra, A.** *Consumption, Savings and Capital Formation.*A Trend Report, in Lakdawala, D.T.(ed.), A Survey of Research in Economics, Vol.2, Macro-economics,(ICSSR Project), Allied Publishers, New Delhi, 1976, pp47-123.

**Rudra, A. and B.Roy** *Some Results in Consumption Studies on Consumer Behaviour*. Asia Publishing House, London, 1960.

**Saha, Somesh** *Some Further Estimates of Engel Elasticities for Rural and Urban India*. Sankhy, The Indian Journal of Statisitics, Series D, Vol.42, Parts 1, 1980, pp127-150.

**Singh, Amarjit & Haramol Singh** *Changing Consumption Pattern In Punjab: Projections of Consumer Demand for 1973-74.* Economic and Political Weekly, Vol. VI, No. 50, 1971.

**Singh, Balbir** — *A Study of Consumption Function,*Unpublished Ph.D, Thesis of the University of Delhi.

**Singh, Balbir & Ramesh C. Kumari** — *The Relative Income Hypothesis -A Cross Country Analysis*. The Review of Income and Wealth, Series 17, 1971. Pp 341-348

**Sinha, R.P** — *An Analysis of Food Expenditure in India*.Journal of Farm Economics, Vol. 48, No.1 (Feb., 1966), pp 113-123.

**Stigler, George J** — *The Early History of Empirical Studies of Consumer Behavior*. The Journal of Political Economy, Vol. LXII, April 1954, pp 95-113.

**Stone, R** — *Linear Expenditure Systems and Demand Analysis: An Application to the Pattern of British Demand.* Economic Journal, Vol. 54, 1954, pp 511-527

**Theil, Henri., et al.,** — *International Evidence on Consumption Patterns.*Greenwich, CT: JAI Press Inc., 1989.

**Upender, M.** — *Estimation of Propensity to Save*.Finance India, Vol.VIII, No.2, June 1994.

**Upender, M.** — *The Short and Long Run Aggregate Consumption Functions.* Indian Journal of Applied Economics, Vol.5, No.2, January-March, 1996.

**Upender, M.** — *Estimates of Expenditure Elasticities of Demand.* Finance India, Vol.XII, No.3, September, 1998.

**Upender, M.** — *Expenditure Elasticity for Clothing*. Anvesak, Vol.29, December 1999.

**Varian, Hal R** — *Revealed Preference*. www.ischool.bekerly.edu/~hal/Papers/2005/revpref.pdf.

**Wold, H.** *Demand Analysis.* Stockholm and New York: 1953.

**Working, H.** *Statistical Laws of Family Expenditure.* Journal of the American Statistical Association, Vol. 38, 1943, pp43-56.

**Woytinsky, W.S.** *Consumption-Saving Function.* The Review of Economics and Statistics, Vol.30, No.1, February 1948, pp45-56.

**Yang, Charles Yneu** *An International Comparison of Consumption Functions.* The Review of Economics and Statistics, Vol. 46, No.3 (Aug., 1964) pp 279-286.

**Zeldes, S.P.** *Consumption and Liquidity Constraints:An Empirical Investigation.*Journal of Political economy, Vol. 97, 1989, pp 305-345.

**Zellner, Arnorld** *The Short-Run Consumption Function.* Econometrica, Vol.25, No.4 (Oct., 1957) pp552-567.

# APPENDICES

## APPENDIX-I

FORMAT OF QUESTIONAIRES
FOR THE
SAMPLE SURVEY: JULY-AUGUST, 2007.

Schedule Type – I:

**Identification of Sample Household:**

| Sl No | Particulars | Name |
|---|---|---|
| 1 | Village/Town | |
| 2 | R.D. Block | |
| 3 | District | |
| 4 | Name of Head of Household | |
| 5 | Name of the informant | |
| 6 | Family Size : Total<br>Male<br>Female | |
| 7 | Monthly average household income (in Rs) | |
| 8 | Allotted Sample No. | |
| 9 | Areas (Rural or Urban) | |

Schedule Type – II:

**Household Consumption Expenditures on Pan, tobacco & intoxicants and Beverages for the last 1 day.**

| Sl. No | Items | Amount (in Rs.) |
|---|---|---|
| 1 | Pan, Zarda, Supari, etc. | |
| 2 | Cagarettes | |
| 3 | Chewing tobacco, Khaini, etc | |
| 4 | Liquors | |
| 5 | Other intoxicants | |
| | *Total exp. on pan, tobacco & intoxicants* | |
| 6 | Tea | |
| 7 | Coffee | |
| 8 | Ice products | |
| 9 | Fruits juice and other processed juice. | |
| | *Total exp. on Beverages.* | |

Schedule Type – III:

**Household Consumption Expenditures on Meat and Vegetables for the last 7 days.**

| Sl. No | Items | Amount (in Rs.) |
|---|---|---|
| 1 | Egg, Fish and meat | |
| 2 | Vegetables (potatoes, cabbage, onion, etc) | |

Schedule Type – IV:

**Household Consumption Expenditures on cereals, salt, sugar and edible oils, entertainments and telecommunications, health care and miscellaneous for the last 30 days.**

| Sl. No | Items | Amount (in Rs.) |
|---|---|---|
| 1 | Rice (PDS and other sources) | |
| 2 | Wheat/Atta (PDS and other sources) | |
| 3 | Bread (Bakery) | |
| 4 | Sugar (PDS and other sources) | |
| 5 | Salt | |
| 6 | Edible Oils (Mustard, groundnuts, etc oils) | |
| | *Total exp. on cereals, salt, sugar and edible oils* | |
| 7 | Telephone (Basic and Mobile), internet, etc | |
| 8 | Newspaper, magazines | |
| 9 | Cable TV | |
| 10 | Other entertainments and recreational expenses | |
| | *Total exp. on entertainment and telecommunications* | |
| 12 | Medicines | |
| 13 | X-Ray, ECG, Doctor/Surgeon's fees | |
| 14 | Other medical expenses | |
| | *Total exp. on health care.* | |
| 15 | Monthly expenditures on miscellaneous items | |

Schedule Type – V:

**Household Consumption Expenditure on clothing and housing, education and transportations for the last 365 days.**

| Sl. No | Items | Amount (in Rs.) |
|---|---|---|
| 1 | Clothing (Shirts, trousers, etc) and footwear | |
| 2 | Bedding (bed sheets, mosquito nets, etc) | |
| 3 | Housing (Constructions, purchases and repairs) and house rent. | |
| 4 | Furniture and utensils | |
| | *Total exp. on clothing and housing* | |
| 5 | Students' admission, tuition and monthly fees | |
| 6 | Stationeries | |
| 7 | Books | |
| 8 | Other educational expenses. | |
| | *Total exp. on education* | |
| 9 | Bus fares, air fares, etc | |
| 10 | Other transportation expenses | |
| | *Total exp. on transportations.* | |

Schedule VI: TABULATON FORMAT

**Per Capita Monthly Consumer Expenditure (PMCE) on groups of items.**

| Sl. No | Items | Amount (Rs) | Estimation Formula for PMCE (Rs) |
|---|---|---|---|
| (1) | (2) | (3) | (4) |
| 1 | Beverages | | [(3)x30]/family size |
| 2 | Meat | | [(3)x4]/ family size |
| 3 | Vegetables | | -do- |
| 4 | Cereals, salt, sugar and edible oils | | (3)/ family size |
| **5** | **Total Food Items** | | |
| 6 | Pan, tobacco & intoxicants | | [(3)x30]/family size |
| 7 | Entertainments & telecommunications | | (3)/ family size |
| 8 | Health care | | (3)/ family size |
| 9 | Clothing and Housing | | [{(3)/12}]/family size |
| 10 | Education | | -do- |
| 11 | Transportations | | -do- |
| 12 | Miscellaneous items | | (3)/ family size |
| **13** | **Total Non-food Items** | | |
| **14** | **Total per capita expenditures** | | **5+13** |
| 15 | Per capita monthly income | | (3)/ family size |

# APPENDIX - II

## Table 1: MIZORAM AT A GLANCE: 2006

| Sl No. | Particulars | Unit | |
|---|---|---|---|
| 1 | **State Capital** | | Aizawl |
| 2 | **Geographical Area** | Sq.Km | 21081 |
| 3 | **Geographical Location** | | |
| | (i) Longtitude | degree | 92$^{o}$.15' E to 93$^{o}$.29'E |
| | (ii) Latitude | degree | 21$^{o}$.58' N to 24$^{o}$.29' E |
| 4 | **Length** | | |
| | (i) North to South | KM | 277 |
| | (ii) East to West | KM | 121 |
| 5 | **International Borders** | | |
| | (i) With Myanmar | KM | 404 |
| | (ii) With Bangladesh | KM | 318 |
| 6 | **Inter-State Borders** | | |
| | (i) With Assam | KM | 123 |
| | (ii) With Tripura | KM | 66 |
| | (iii) With Manipur | KM | 95 |
| 7 | **Administrative set up** | | |
| | (i) District | No. | 8 |

| | | | |
|---|---|---|---|
| | (ii) Autonomous District Council | No. | 3 |
| | (iii) Sub-Division | No. | 23 |
| | (iv) R.D. Block | No. | 26 |
| | (v) Total Villages (2001 Census) | No. | 817 |
| | (a) Inhabited | No. | 707 |
| | (b) Uninhabited | No. | 110 |
| 8 | **As per 2001 Census** | | |
| A | **Population** | | |
| | (i) Persons | Nos. | 888,573 |
| | (ii) Male | Nos. | 459,109 |
| | (iii) Female | Nos. | 429,464 |
| | (iv) Rural | Nos. | 447,567 |
| | (v) Urban | Nos. | 441006 |
| B | **Decadal Population Growth (1991-2001)** | | |
| | (i) Absolute | Nos. | 1,98,817 |
| | (ii) Percentage | % | 28.8 |
| C | **Population Density** | Per Sq Km | 42 |
| D | **Sex Ratio** | Female per 1000 male | 935 |
| E | **0-6 Population** | | |
| | (i) Persons | Nos. | 1,43,734 |

| | | | |
|---|---|---|---|
| | (ii) Males | Nos. | 73,176 |
| | (iii) Females | Nos. | 70,558 |
| F | Literacy | | |
| | (i) Persons | Nos. | 661,445 |
| | (ii) Males | Nos. | 3,50,105 |
| | (iii) Females | Nos. | 3,11,340 |
| | (iv) Total Percentage | % | 88.49 |
| G | Total Workers | | |
| | (i) Main Workers | Nos. | 3,62,450 |
| | (ii) Marginal Workers | Nos. | 1,04,709 |
| | (iii) Total Workers | Nos. | 4,67,159 |
| | (iv) Percentage of total population | % | 52.57 |
| 9 | **State Income** | | |
| | (i) NSDP at current Prices (1999-2000 series) during 2003-04 | Rs. In Lakhs | 2,02,316 |
| | (ii) Per Capita Income (2003-04) at current prices | Rs. | 21,327 |
| 10 | **State Budget** | | |
| | **A. Total revenue receipt** | | |
| | (i) 2004-05 (actual) | Rs. In Lakhs | 1,50,186.83 |
| | (ii) 2005-06(Rough Estimate) | Rs. In Lakhs | 1,88,637.14 |
| | **B. Total Revenue Expenditure** | | |

| | | | |
|---|---|---|---|
| | (i) 2004-05 (actual) | Rs.In Lakhs | 1,39,551.38 |
| | (ii) 2005-06(Rough Estimate) | Rs. In Lakhs | 1,70,763.68 |
| | **C. Total Capital Receipt** | | |
| | (i) 2004-05 (actual) | Rs. In Lakhs | 49,399.75 |
| | (ii) 2005-06(Rough Estimate) | Rs. In Lakhs | 32,866.25 |
| | **D. Capital Expenditure** | | |
| | (i) 2004-05 (actual) | Rs. In Lakhs | 78,444.92 |
| | (ii) 2005-06(Rough Estimate) | Rs. In Lakhs | 65,681.54 |
| 11 | **Plan Outlay** | | |
| | (i) 10th Five Year Plan Outlay | Rs.in Crore | 2,300.01 |
| | (ii) Annual Plan approved outlay | | |
| | (a) 2004-05 Annual Plan | Rs. In Lakhs | 61,652.10 |
| | (b) 2005-06 Annual Plan | Rs. In Lakhs | 68,500.00 |
| | (iii) Annual Plan Actual Expenditure | | |
| | (a) 2004-05 Annual Plan | Rs. In Lakhs | 53,378.76 |
| | (b) 2005-06 Annual Plan | Rs. In Lakhs | 70,193.59 |

Source: *Statistical Handbook 2006.* Mizoram. Directorate of Economics and Statistics, Government of Mizoram.

**Table 2: SECTORAL SHARE OF NSDP IN PERCENTAGES**

**During 2003-04 At current prices**

| Sl No | Sector | Share (%) |
|---|---|---|
| **A** | **Agriculture & Allied Sector** | **21.12** |
| | 1.Agruculture | 19.23 |
| | 2.Forestry | 0.55 |
| | 3.Fishing | 1.34 |
| **B** | **Industry Sector** | **15.74** |
| | 4.Mining & Quarriying | 0.45 |
| | 5.Manufacturing: | |
| | 5.1.Manufacturing (registered) | 0.35 |
| | 5.2.Manufacturing (unregistered) | 0.59 |
| | 6.Construction | 12.23 |
| | 7.Electricity,Gas &Water supply | 2.12 |
| **C** | **Services Sector** | **63.14** |
| | 8.Transport, Storage & Communication: | |
| | 8.1.Railways | 0.02 |
| | 8.2.Transport by other means | 0.23 |
| | 8.3.Storage | 0.03 |
| | 8.4.Communication | 0.47 |
| | 9.Trade, Hotel & Restaurants | 8.77 |
| | 10.Banking &Insurance | 3.92 |
| | 11.Real estate, ownership of dwellings&business services | 20.19 |
| | 12.Public Asministration | 16.48 |
| | 13.Other Services | 13.03 |
| **D** | **Total** | **100** |

Source: *Statistical Handbook 2006.* Mizoram. Directorate of Economics and Statistics, Government of Mizoram.

Table 3: MONTHLY AVERAGE TEMPERATURE IN MIZORAM FOR THE YEAR OF 2005

| | | Temperature in Celsius Degree | |
|---|---|---|---|
| Sl. No | Month | Minimum | Maximum |
| 1 | January | 11.2 | 23.11 |
| 2 | February | 14.6 | 26.31 |
| 3 | March | 15.39 | 26.78 |
| 4 | April | 17.78 | 28.57 |
| 5 | May | 16.26 | 26.68 |
| 6 | June | 19.37 | 27.87 |
| 7 | July | 18.64 | 27.61 |
| 8 | August | 18.6 | 25.76 |
| 9 | September | 19.28 | 28.19 |
| 10 | October | 17.57 | 27.21 |
| 11 | November | 14.48 | 26.52 |
| 12 | December | 12.89 | 25 |
| **13** | **Average** | **16.33** | **26.63** |

Source: *Statistical Handbook, Mizoram 2006.* Directorate of Economics and Statistics, Government of Mizoram.

Table 4:DISTRICT-WISE AREA, NO. OF HOUSEHOLD, POPULATION & LITERACY RATE (2001 CENSUS)

| District | Area (Sq. Km) | No. of Household | Population | | | Literacy Rate (%) |
|---|---|---|---|---|---|---|
| | | | Total | Male | Female | |
| Mamit | 3025 | 12253 | 62785 | 33114 | 29671 | 79.1 |
| Kolasib | 1382 | 14053 | 65960 | 34562 | 31398 | 91.3 |
| Aizawl | 3756 | 64753 | 325676 | 166877 | 158799 | 96.5 |
| Champhai | 3185 | 22059 | 108392 | 55756 | 52636 | 91.2 |
| Serchhip | 1421 | 10116 | 53861 | 27380 | 26481 | 95.1 |
| Lunglei | 4536 | 27889 | 137223 | 71402 | 65821 | 84.2 |
| Lawngtlai | 2557 | 13902 | 73620 | 38776 | 34844 | 64.7 |
| Saiha | 1399 | 11109 | 61056 | 31242 | 29814 | 82.2 |
| Mizoram | 21081 | 176134 | 888573 | 459109 | 429464 | 88.8 |