Measuring the pattern of household consumer expenditure in Iraq using Engel functions

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Abstract :   The study aims to analyze the reality of household spending on the main commodity groups and how the distribution of individual spending on these groups and estimate the elasticity of spending demand and the marginal tendency of consumption to identify the nature of consumption patterns and saturation levels by sectors of the main commodity groups. The method of quantitative analytical analysis was based on cross-sectional data for the Iraq poverty monitoring and evaluation survey for 2017 using Engel function.

The food group ranked first in the average total expenditure per capita (32.4%) ‹followed by the housing ‹fuel and energy group (24%) ‹then the transport group ‹which ranked third (12.1%). On the other hand ‹other commodity groups are classified as luxury and semi-luxury according to their spending elasticity ‹with the consumption pattern consistent with the three commodity and service groups (food ‹housing and transport) between 2007 and 2017.

Accordingly ‹the Iraqi consumer with low and below average saturation in most of the major commodity and service groups as evidence of the high values of spending elasticity of demand ‹where they were greater than the correct one.

INTRODUCTION: Consumption is one of the basic economic variables in the economy, As it constitutes the main component of the national spending of various economies, And one of the elements of aggregate demand in the economic balance and its close association with production, saving and investment according to the concept of economic theory, in addition to being the ultimate goal in all economic activities, but the goal of development in its axes and dimensions is Achieving the maximum satisfaction of the needs of society from different goods and services to the level of economic welfare. Therefore, the criterion of failure or success of development lies in increasing the level of actual consumption in the long run

Since 2003, Iraq has witnessed major shifts in the philosophy of the political and economical system. There is no doubt that any changes in economic and social policies will leave an impact on the family and the needs of its members, and indicators of spending and family income, especially as consumption as an economic variable is particularly important with the increasing volume of total spending resources towards current spending, which is reflected in the nature of trends, patterns and consumer habits at the household and individual level.

The method of quantitative analytical analysis is based on cross-sectional data that comes from household budget research. This study adopted the methodology of individual equation in analyzing the demand function of each commodity group individually. (Usually a year), it is assumed that there will be no changes in the prices of goods during the period of research and consequently the conversion of demand functions to the functions of Engel (Engel Functions).

This study came to indicate the pattern of household expenditure based on the analysis monitoring and evaluation of poverty survey in Iraq for (2017/2018), which is the latest survey or research conducted by the Department of Living Conditions of the Central Statistical Organization of the Ministry of Planning.

Study Objective: The study aims to Estimating the spending elasticity's of demand and the marginal tendency of consumption to identify the nature of consumption patterns and indicate saturation levels by sectors for the main commodity groups and in the light of household budget research data.

Study hypothesis "The research stems from the hypothesis that "the changes in the volume of spending and the associated consumerism led to shifts in patterns of consumption and household spending in Iraq after 2003."

Structure of the study:

The study was divided into four axes:
   1) The concept of the pattern of family spending and its importance.
   2) Characterization and formulation of the model and the choice of function.
   3) Estimating functions and analyzing the results.
   4) Conclusions and recommendations
   1) The concept of the pattern of family spending and its importance.
A. Concept of family consumption pattern:
   The pattern of household consumption is one of the basic indicators through which the real living and economic level of the family can be identified the Changes in income, which in turn lead to changes in demand for goods and

various groups, are an appropriate measure of economic development plans and their developments in the level of living for different social groups.

Consumption patterns are the way in which consumer spending has been distributed among groups of goods and services. In this sense, it differs from the tendency of consumption and the volume of consumption. The latter relates to the total expenditure, so it is a method adopted by the family or the individual to choose the quality and quantity of goods and services that satisfy needs and desires in the light of the physical possibilities available to them[i]. this meaning the way in which the family in the selection of the quantity and quality of services that satisfy their needs and desires. The families differ in their consumption patterns due to the disparity in their monthly spending, which is mainly due to the disparity in the distribution of income and also social and cultural factors that have an important impact on the pattern of family consumption.

There is a view that the pattern of family consumption as a general trend of consumption is determined by objective and subjective factors in a particular society and during a certain period of time.

There is also a close correlation between public consumption and household consumption. The increase in public consumption leads to an increase in family consumption due to the expansion of services provided by the state to society members for free and at nominal prices, while individuals paid a price to buy them. Individuals direct that part of their income to purchase other consumer goods. The bottom line is that the expansion of public consumption is one of the tools for redistributing of national income to those with limited incomes[ii].

There are two types of consumer spending, namely, consumer consumption cash and self-consumption expenditure. Consumer spending is the expenditure on all goods and services that the household receives, whether cash, installment or debt, which is at the disposal of the family. Self-consumption expenditure is every commodity consumed by Households producing them directly without putting them on the market and entering the scope of cash exchange[iii].

In the light of the foregoing, household consumption includes the consumption expenditure of these households and the value of consumer goods and services acquired or used by the family, through transfers from the government or from non-profit institutions. This is the most appropriate concept for analysis because it takes into account all consumer goods and services available to the family to satisfy the needs and the wishes of its members.

The way in which household spending is distributed among commodity groups varies, but sometimes it is seen that a group of households whose economic and social conditions are similar in their consumption pattern converge to some extent with the classification of members of society into limited categories of households with almost similar consumption patterns.[iv]

B.   The importance of studying the pattern of family consumption:

The importance of the pattern of household consumption as an indicator of the behavior and behavior of consumers is an important tool that helps the planner to predict the size of demand and to formulate price and tax policies of the State and address inflation and the issue of redistribution of income to achieve the principle of social justice can be limited to these functions.

The volume of the household consumption in the household sector is an important part of the total consumption. In this context, this sector can be considered as an important economic sector that can play an important role in the development process through its impact on aggregate demand and thus assessing what society consumes as a whole[v].

1) Through the study of the pattern of family consumption is to identify the nature of consumption of different groups of society and Thus be able to develop a consumer plan that enables us to keep pace with changes in the real standard of living.

2) Knowing the pattern of household consumption by expenditure categories helps to measure the spending elasticities of demand and price elasticities of the owners of different spending categories on each of the major consumer goods groups, so that demand can be estimated to meet the needs of citizens and satisfy their consumer desires.

3) Measure the quantity of goods and services consumed by an individual in a given period of time and thus explain what society as a whole consumes[vi].

2) Characterization and formulation of the model and the choice of function.

Several linear and non-linear models were used to estimate functions and then differentiate between them to test the best and most suitable for economic theory and statistical and standard criteria.

The formulation of any model needs to:

A.   Determine the variables that enter the form.

B.   Theoretical prediction about the signal and the size of the estimated parameters.

C.   The mathematical form of the model in terms of the number of equations and their properties, whether linear or nonlinear. These paragraphs will be discussed in succession:

A.   Define form variables:

Independent or explanatory variable: The average total expenditure per capita and is denoted by the symbol (Y).

The dependent variable: the average per capita expenditure on the main groups (Ci) and the number (12) groups.

    B. Theoretical expectations of estimation results: The results of the estimation should be consistent with the logic of the economic theory in terms of the nature of the signal (positive or negative) and the amount of parameters. In terms of the amount of parameters, the economic theory indicates that the marginal propensity to consume the parameter (β_1) is between zero and the correct one ($0 < \beta < 1$).

    C. Mathematical formulas of the model: Angel functions take many formulas to determine the form and formula of the relationship between consumer spending on a particular commodity and income through the analysis of the household budget research data. More than one formula has been used in the standard aspect to mention them.

Linear function: One of the first functions used in estimating and analyzing data.

$$C_{ij} = \beta_0 + \beta_1 Y_{ij} + U_{ij} \ldots\ldots\ldots\ldots(1)$$

Where :

C_{ij}: represents the individual's spending on group (i).

Y_{ij}: represents the income expressed as (total expenditure) per capita.

β_1: marginal propensity to consume.

U_{ij}: random error and it`s normal distribution with arithmetic mean (U = 0) and variance (σ^2).

The calculation of the income elasticity (expenditure) of any commodity group towards total spending according to the formula of the linear function is as follows:

$$\text{MPC} = (dC_{ij}) / (dy_{ij}) = \beta_1 \ldots\ldots\ldots\ldots(2)$$

marginal propensity to consume) represents the ratio of change in consumption to change in income[vii].

$$\eta i = (dC_{ij}) / (dy_{ij}) * Y i / C i = \beta_1 * Y / C \ldots\ldots\ldots (3)$$

In the calculation of marginal propensity to consume and spend elasticity, the average monthly total expenditure ($\acute{Y}$) as well as the average expenditure on the good or service ($\overline{C}$) will be used to take into account all changes that may occur at different levels.

$$\eta i = \beta_1 * \acute{Y} / \acute{C} \ldots\ldots\ldots (4)$$

The double logarithmic formula is one of the most commonly used functions for its easy processing and having the property of correcting the problem of heterogeneity.

$$C_{ij} = \beta_0 * y_{ij}{}^{\beta 1} \quad U_{ij} \ldots\ldots\ldots \ldots\ldots\ldots (5)$$

By converting this nonlinear formula to the linear formula using the logarithm:

$$Log\ C_{ij} = Log\ \beta_0 + \beta_1 Log\ y_{ij} + Log\ U_{ij} \ldots\ldots\ldots. (6)$$

The above formula is known as the double logarithmic form and in the form of a linear model where it adopts the same method of estimation used in estimating the parameters of the linear model. After estimating the parameters of the logarithmic model above, the indicators can be calculated below:

$$\eta_i = \beta_1 \ldots\ldots. \ldots..(7) \qquad \text{Spending Elasticity}$$

$$\text{MPC} = \beta_1 (Log\ \acute{C}) / (Log\ \acute{Y}) \ldots\ldots\ldots (8) \text{ marginal propensity to consume}$$

The selection of the appropriate function has been adopted according to the following criteria:

    A. Economic criterion: It relates to the economic theory, ie, it is assumed that the sign of features and their value is fully consistent with the logic of economic theory has already been referred to.

    B. Statistical criterion: represented by the significance of the estimated parameters using the test (t) and the significance of the model as a whole through the test (F) as well as the coefficient of determination (R^2), which reflects the explanatory power of the explanatory variables (independent) of the dependent variable.

    C. The standard criterion: It is no less important than the criteria above and is to pass the estimated model of standard tests, which is the normal distribution of the random variable and the homogeneity of variance and the problem of self-correlation and these are the assumptions of the regression model and the random variable.

Commodities are classified economically into three types according to income elasticity of demand (spending elasticity).

    A. Durable and luxury goods: if their spending elasticity is greater than the correct one $\eta i > 1$.

    B. Necessary goods: if the value of their tunnel elasticity is limited between one and zero, that is $0 < \eta i < 1$.

    C. Low Commodities: if their spending elasticity is less than zero, ie negative spending elasticity $\eta i < 0$

3) Estimating functions and analyzing the results.

Estimates of the average monthly expenditure per capita on (12) good groups, and will display the appropriate function and the most accurate and consistent data by following the statistical, standard and economic tests of these groups, respectively[viii].

1. Estimation of spending on food and soft drinks.
   Results of Estimating the Expenditure Function on Foodstuffs

$\log C1 = -0.219 + 0.892 \log Y$

S.E   0.250   0.106

T (-0.88) $(8.44)^{1\%}$

$R^2 = 81.66\%$ $R^2(adj) = 80.52\%$ $F_{(2,18)} = (71.25)^{1\%}$

D-W= 1.85   MPC = 0.71   η3=0.89

   A. Statistical Analysis

   we note that the level of significance of the test (F) is less than (0.01) This is why we reject the null hypothesis and accept the alternative hypothesis, which provides the significance of the model statistically, also note that the value of the coefficient of determination (R ^ 2)¯rate (80.52%), meaning that (80)% of the variables in the dependent variable is interpreted by the model and this indicates the high explanatory power of the model, as test (t) indicates the significance of the parameter at the level of (1%) that is, the average total expenditure per capita effect on the dependent variable, as well as the absence of standard problems, including the problem of self-correlation based on the test Durban-Watson (DW) of 1.85.

B - Economic analysis: The marginal propensity to consume in this group (0.71), that the increase in per capita income by one thousand dinars leads to an increase in spending on food by (710) dinars, which is relatively high, and perhaps the reason for that developing countries, including Iraq is still below the level of saturation in this major commodity group is therefore greater than the share of expenditure on food items in other commodity groups when there is an increase in income.

Expenditure elasticity (0.89) is a logical and consistent result of economic theory, because this group of commodities is at the forefront of the good groups in terms of importance, ranging from zero to the right one (1 <0.89 0 <) that the demand for food is inelastic demand This confirms that the group is classified among the necessary commodities. This means that the total spending increase by 1%, the average spending on food will increase by (0.89%) and therefore spending on goods is greatly affected by the change in the level of income, and that high spending elasticity indicates That the individual is still below the saturation level of this necessary in this group.

2. Estimation of spending function on alcoholic beverages and tobacco:
   Results of Estimation of Spending Function on Alcoholic Beverages and Tobacco:

Pearson correlation of alcoholic and Total = -0.075

P-Value = 0.767

$\log C2 = 2.00 - 0.559 \log Y$

   S.E   1.54   0.649

T   (1.3) (-0.86)

$R^2 = 4.7\%$ $R^2(adj) = 0.00\%$ $F_{(2,18)} = (0.72)$

D-W= 2.3   MPC= - 0.16   η3 = - 0.559

   A. Statistical analysis:

   This function did not pass all the statistical tests (SE, R2, F, T). Despite the adoption of various formulas and function as shown in table (14) above, either in linear or non-linear formulas, as well as for the standard tests, and therefore Reject the above estimate results.

   B. Economic analysis: From the economic point of view, the results showed estimates contrary to the logic of economic theory and inconsistent with it, as the marginal propensity to consume (0.16) .This is contrary to the theory as well as spending elasticity , which took a negative signal, so these results were rejected and not adopted.

The statistical explanation for this case is that there is no linear correlation between the two variables, if the Pearson correlation coefficient shows a value of (0.07) which is no different from zero, which indicates that there is no correlation between them.

3 - Estimation of the function of spending on clothing and shoes
   Results of Estimation of Expenditure Function on Clothing and Shoes Group

$\log C3 = -2.53 + 1.554 \log Y$

S.E   0.436   0.185

T $(-5.79)^{1\%}$ $(8.38)^{1\%}$

$R^2 = 81.44\%$ $R^2(adj) = 80.28\%$ $F_{(2,18)} = (70.23)^{1\%}$

D-W=2.3

MPC = 0.74   η3=1.554

A. Statistical Analysis

The double logarithmic function has been to represent the function of spending on clothes and shoes.It passed all the statistical tests starting from the overall model significance as the value of (F) (70.23%) which is significant at a level less than 1% as well as the T test which indicates the significance of the parameter. The explanatory (average per capita total expenditure) has an effective effect on the dependent variable (average per capita expenditure on clothing and shoes), indicating that the explanatory power of the model was (80.28%), which means that more than (80%) of the changes that occur in the dependent variable It is caused by the explanatory variable (average total spending), either 19% is due to other factors not present in the model. Also, the model passes the standard tests represented by self-correlation through the Darren-Watson test (DW = 2.3) which is within the admission area (du <DW <4-du). There is no self-correlation between residues. The problem of asymmetry of asymmetry is also lacking.

B. Economic Analysis:

The marginal propensity to consume the average per capita expenditure towards total spending is (0.74), which is a relatively high percentage, meaning that the increase of income by one thousand dinars will lead to an increase in the average per capita expenditure on this group by (740) dinars. This group of goods classifies among the durable and luxury goods, being greater than the correct one, It`s a elasticity demand .This can be explained by the fact that this type of household consumption is greatly affected "increase or decrease incomes, as Engel explained.

4 - Estimation of the spending function on the housing, water and electricity

Results of Estimation of Expenditure Function on Housing, Water and Electricity Group

$\log C4 = 0.061 + 0.695 \log Y$

S.E   0.398   0.169

T   (0.15) $(4.12)^{1\%}$

$R^2 = 51.45\%$ $R^2(adj) = 48.4\%$ $F_{(2,18)} = (16.95)^{1\%}$

D-W=1.33   MPC = 0.50 $\eta4=0.695$

A. Statistical Analysis

It is clear from the table above that the double logarithmic function is the best representative function of the relationship between total spending and spending on housing, water and electricity , So we reject the null hypothesis and accept the alternative hypothesis which assumes a fundamental relationship between the two variables. The test (F), which indicates the significance of the estimated model as a whole and the level of significance of 1%. The model has also passed the standard problems represented by the problem of heterogeneity of variance and normal distribution of residues and the problem of self-correlation between residual values.

B. Economic Analysis:

Economically, the model corresponds to the economic logic as the teachers' signal (β ,0, β˄1) shows a positive indication of the positive correlation between the average total expenditure and the average expenditure on housing, water and electricity and that the marginal propensity to consume is (0.50) which is relatively high. The increasing in the average total spending by JD (1000) will rise the demand for this group by JD (500). The spending elasticity on housing, water and fuel reached (0.951), which means that the demand for housing is not flexible.

5. Determination of spending function on furniture and household appliances

Results of Estimation of Expenditure Function on Furniture and Household Appliances

$\log C5 = -2.68 + 1.588 \log Y$

S.E   0.400   0.169

T $(-6.71)^{1\%}$ $(9.37)^{1\%}$

$R^2 = 84.59\%$ $R^2(adj) = 83.63\%$ $F_{(2,18)} = (87.85)^{1\%}$ D-W=2.33

A. Statistical Analysis

The results of the estimate indicate the significance of statistical tests of the estimated model, where the value of (F) is (87.85), which is much higher than the tabular value of the level of significance, which is less than 1%, which confirms the significance of the overall model. Test (t) which indicates the significance of each of the parameters (˄0, β˄1) at a level less than 1%, this means acceptance of the alternative hypothesis, which assumes that there is a significant relationship between the two variables in the model.

The explanatory power of the model is more than 84%, which means that 84% of the changes in the average expenditure per capita on furniture and other household appliances is due to the income represented by the total average spending (2.33). It is within the acceptance area du <DW<4-du, meaning that there is no subjective correlation of values

B. Economic Analysis:

Economically, the model estimation results correspond to economic logic. The parameter ($\beta\hat{}1$) shows a positive indication of a direct correlation between total spending and the demand for the goods of this group of furniture and household appliances.

While the marginal propensity of consumption in this group is (0.714), which is high compared to other consumption patterns, a logical result of being a normal commodity, and the results of statistical analysis indicate spending elasticity of (1.588), which means that the elastic demand for goods in this group, which indicates that households It has not yet reached the level of saturation is required or because of the limited disposable income and the multiplicity and diversity of needs. Therefore, this group of goods are classified as durable and luxury goods because their spending elasticity is greater than the correct one. It is confirmed that the consumer is saturated low and below average.

6. Estimation of the Health Group Spending Function:

Results of Estimating Expenditure Function on Health Group

log C 6= -3.64+ 1.989 log Y

S.E   0.860   0.364

T $(-4.24)^{1\%}$ $(5.46)^{1\%}$

$R^2 = 65.1\%$ $R^2(adj) = 62.87\%$ $F_{(2,18)} = (29.79)^{1\%}$

D-W=2.44   MPC=0.881   η6=1.989

   A. Statistical Analysis

   The results of the estimation indicate the significance of the estimated model as a whole. The calculated value (F) was (29.79), which exceeds the tabular value (F) by the level of significance of 1%, while the significance of the parameter ($\beta\hat{}1$) is (t) calculated (5.46) which is higher than the value of (t) tabular value of (1.33), and therefore reject the null hypothesis and accept the alternative hypothesis, which provides for a significant relationship between the two variables, in contrast, the explanatory power of the model (65.06%) This means that (65%) of the changes The average expenditure on health returns to income, represented by the average of total expenditure per capita. As for standard tests, the model is completely devoid of standard problems. A problem of self-link through Darren Watson test of the $ (2.44) and the problem of the heterogeneity of variance.

   B. Economic Analysis:

   The model corresponds to the economic logic where the sign of the parameter ($\hat{}1$) shows a positive indicating the existence of a positive between total spending and spending on health.

   It is clear from the function that the marginal propensity to consume is high (0.881), and that the expenditure elasticity of demand for health is (1.989), which means that the demand is flexible, which means that an increase in total spending by (10%) will increase the relative spending on health to (19.89%). This is an indication of the deterioration of the health situation and health services and the tendency of individuals to private medical clinics inside and outside Iraq, and as long as the spending elasticity is greater than the right one, they are classified as luxury goods.

7. Estimate the expenditure function on the transport set

   Results of Estimation of Expenditure Function on Transport Group

C 7= 3.40+ 0.11 Y

S.E   7.65   0.031

T   (0.44) $(3.53)^{1\%}$

$R^2 = 43.74\%$ $R^2(adj) = 40.23\%$ $F_{(2,18)} = (12.44)^{1\%}$

D-W=2.125   MPC=0.11   η7=0.884

   A. Statistical Analysis

   We find that the value of (F) calculated (12.44) which is significant at the level of 1% and therefore rejects the null hypothesis which assumes that the model is not significant and accept the alternative hypothesis which provides the significance of the model as a whole and for parameter ($\beta\hat{}1$) we find that the value of (t) Significant at the level of (1%) and therefore reject the null hypothesis which assumes that the regression coefficient ($\beta\hat{}1$) in the model is not significant. The explanatory strength of the model was (43.74) = R2. As for the standard tests, we find that the model is devoid of standard problems, especially the problem of heterogeneity of variance, natural distribution of residues and the problem of self-correlation.

Economic Analysis:

The model corresponds to the economic logic, as the signal of the parameters ($\beta\hat{}1$ and β)0) is positive, which indicates the positive correlation between the two variables. The marginal propensity to consume only (0.11), which is relatively low compared to other consumption patterns, which means that the increase in average spending the total per capita amount of JD (1000) will increase the per capita spending on transportation by JD (110).

As for spending elasticity, it reached to (0.884), which means that the increase of total spending by (10%) will lead to increase the relative spending on transport by (8.9), that is, the demand for transport is inelastic, which indicates that the consumer is saturated low and below average. Within semi-essential goods.

8. Estimation of the spending function on the communications group

Results of Estimating Expenditure Function on Telecommunications Group:

$C8 = 0.56 + 0.029\ Y$

S.E   1.41   0.0057

T   (0.40) $(5.08.)^{1\%}$

$R^2 = 61.68\%$ $R^2(adj) = 59.29\%$ $F_{(2,18)} = (25.76)^{1\%}$ D-W=2.36

A. Statistical Analysis

Statistical tests (SE, R2, F, T) indicate the significance of the model, wholly and partially, completely, through the test of F, which showed the significance of the level of 1% and this indicates the significance of the model as a whole, while the test (t), showed the significance of the parameter (β β1). The explanatory power of the model can be inferred by the (R2) coefficient of (61.68%), which is acceptable in explaining the changes in the model due to income.

On the other hand, we find that the standard tests were significant and that the model does not suffer from standard problems, as the value of Durban - Watson (2.36) This is an indicator that the model is free from the problem of self-correlation as well as for the homogeneity of variance.

B. Economic Analysis:

It seems that the model has passed the test of the economic criterion, the special reference to the parameters is positive and this is consistent with the logic of economic theory, which reflects the direct relationship between the two variables, while the marginal tendency of consumption was (0.029), a weak percentage and may reflect the level of saturation in this group. We also note that the agreement elasticity reached (0.923), which is less than the correct one and represents the inelastic demand, which indicates that the families did not reach the level of full satisfaction.

9. Estimation of the function of spending on entertainment and culture

Results of Estimating Expenditure Function on Entertainment and Culture Group:

$C9 = -1.40 + 0.0255\ Y$

S.E   1.54   0.0062

T   (−0.91) $(4.11)^{1\%}$

$R^2 = 51.30\%$ $R^2(adj) = 48.26\%$ $F_{(2,18)} = (16.85)^{1\%}$

D-W=1.738   MPC=0.0255   η9=1.29

A. Statistical Analysis

The estimated model has passed the statistical tests, starting with the test of the significance of the parameter (β´1) using the test (t) which reached to(4.11) and the level of significance of 1%, and the value of (F) calculated greater than the tabular value, so the model is significant as a whole, either the explanatory strength of the estimated model was (51.30%), or about (51.30%) of the changes in the average spending on entertainment and culture due to the income represented by the total expenditure, while the standard tests are completely devoid of problems, where the value of Durban - Watson (1.74)) Which is no self-correlation problem

B . Economic Analysis:

Economically, the parameter (β´1) is a positive signal to confirm the nature of the positive relationship between the two variables, while the marginal propensity to consume was (0.025), which is low, which reflects the low level of saturation in this group. As for spending elasticity on entertainment and culture, it reached (1.29), which means that the increase of spending by 10% will lead to increase the relative spending on entertainment by (12.9%), that is, demand is elasticity, and it seems that this type of household consumption is still a commodity Perfectionism, and that the individual is still at a low saturation level.

10. Estimation of spending function on education group

Results of Estimating Expenditure Function on the Education Group

$\log C\ 10 = -6.20 + 2.714\ \log Y$

S.E   1.48   0.622

T $(−4.19)^{1\%}$ $(4.36)^{1\%}$

$R^2 = 57.61\%$ $R^2(adj) = 54.59\%$ $F_{(2,18)} = (19.03)^{1\%}$

D-W=2.53   MPC=0.291   η6=2.714

A. Statistical analysis:

The double logarithmic function was tested as the best possible function of the relationship between total spending and demand for education in terms of statistical and standard tests as well as economic criterion.

It is clear from the results above that the model is significant according to the test (F). Therefore reject the hypothesis The alternative hypothesis, which assumes a fundamental relationship between the two variables, is accepted, and the explanatory power of the model is 57.61%, which is acceptable in such discretionary functions. As for the standard tests, the model is devoid of the standard problems of the problem of instability of variance, especially the normal distribution of residues and the problem of self-correlation.

Economic analysis: In economic terms, the model is identical to the logic of economic theory, where the indication of the parameter is positive, indicating the direct relationship between total spending and education. The marginal propensity to consume is (0.291), which is a relatively high value, which means that the increase The per capita income of (1000) dinars will increases the expenditure on education by (290) dinars

The double logarithmic function shows that spending elasticity on education reached (2.714), meaning that demand is elasticity. This means that increasing total spending by 10% will increase relative spending on education (27.14%). Perfectionism, which is characterized by a higher demand than the proportion of high income or total spending.

11. Estimation of the spending function on the group of restaurants and hotels

Results of Estimating Expenditure Function on Restaurants and Hotels Group

$C11 = -1.32 + 0.0215\ Y$

S.E   2.19   0.0088

T (-0.56) $(2.43)^{2\%}$

$R^2 = 27\%$ $R^2(adj) = 22.4\%$ $F_{(2,18)} = (5.9)^{2\%}$

D-W=1.855   MPC=0.0215   η9=1.31

A. Statistical Analysis

That all statistical tests are significant, but at a relatively lower level than the other functions estimated. The model is significant according to the F test and at a level less than (5%). This confirms the quality of the model as a whole. The significance of the parameter ($β^1$) was also less than the level of (5%) through the test (t) and its value (2.43), while the determinant of R2, which shows the explanatory power of the model was a value (27%) and the rate (22.4%) and here indicates the weakness of the force The standard tests do not suffer from measurement problems either in terms of self-correlation according to the Durban-Watson test (1.85), which is within the area of acceptance and not rejection as well as the problem of instability of variance.

B. Economic Analysis:

From the economic point of view, the results of the estimation of the model coincide with the logic of the theory in terms of the positive signal and the marginal propensity of consumption, which is relatively low (0.0215) .This may be due to the nature of the consumer pattern of the Iraqi individual. It is noted that the least group in terms of spending on goods is the group of restaurants and hotels, which achieved about (1.5%) of the total expenditure per capita and comes second after education group. Expenditure elasticity of demand (1.31) means that the demand is elasticity and indicates a low level of saturation required or because of limited income and multiple needs and diversity and according to the economic theory classified among luxury goods.

12. Estimation of the expenditure function on a variety of goods and services

Results of Estimating Expenditure Function on Various Goods and Services Group:

$\log C\ 12 = -2.941 + 1.637\ \log Y$

S.E   0.634   0.269

T $(-4.64)^{1\%}$ $(6.09)^{1\%}$

$R^2 = 69.89\%$ $R^2(adj) = 68\%$ $F_{(2,18)} = (37.13)^{1\%}$

D-W=1.27   MPC=0.634   η12=1.637

A. Statistical Analysis

The double logarithmic function was chosen as the best possible function to represent the relationship between the two variables. The estimated model is characterized by the overall significance according to the (F) test, which was calculated at (37.13%), which exceeds the tabular value with freedom degree (16) and the level of significance (1%). The significance of the parameters ($β^1$. B^0) was achieved according to the test (t) and the level of significance less than 1%, in contrast, the ratio of the coefficient of determination R2 (about 70%), which is acceptable to show the explanatory power of the estimated model.

B . Economic Analysis:

Economically, the model is identical to the logic of the theory in terms of the signal and the value of the parameter, the signal is positive and this is an indication of the direct relationship between the two variables, and that the value of the marginal propensity to consume (0.634), which is relatively high compared to consumption patterns, which means that the increase in the average total spending by (1000) This will increase the average expenditure on miscellaneous goods and services in this group by JD (634). The function shows that the elasticity of spending demand on this group

is (1.637) This means that demand is flexible and that the increase in the total spending by (10%) leads to increase the relative spending on goods and services of this group by (16.37%), which indicates that the individual did not reach To saturation level and they are classified as luxury goods.

In sum, the double logarithmic function and the linear function are the best formulas for estimating the spending functions in terms of economic, statistical and standard tests. The quantitative indicators of the pattern of consumer spending represented by the marginal tendency of consumption and the elasticity of spending demand are consistent with the logic of economic theory except the function of spending on alcohol and smoke.

The results showed that there are (4) commodity groups with less elasticity than the correct one (food, housing, transport and communication) and classified among the necessary and semi-essential goods, while there are (7) commodity groups with more elasticity than the correct one (clothing, shoes, education, health and entertainment). Culture, furniture, restaurants, hotels, miscellaneous goods and services) are classified as luxury and semi-luxury goods.

In general, it can be said that the Iraqi consumer is saturated low and below average, where the increase of income by (1000) dinars will lead to (890) dinars on the food and beverage group, while the remaining (110) dinars will be directed to the rest of the commodity groups and should be noted here that the results of the analysis were similar to previous studies and research related to the subject.

4) Conclusions and recommendations

A. Conclusions

1) The pattern of consumption falls within the traditional expenditure of developing countries, where necessities, especially foodstuffs, still represent a large area at the individual and household levels, a pattern that has not changed throughout the study period.

2) The study showed that the logarithmic function is the best function used according to economic, statistical and standard tests to represent most commodity groups. Note that the linear function was among the best for three groups of goods.

3) The basic indicators of the pattern of consumer spending represented by the marginal tendency of consumption and the elasticity of spending demand are identical and the logic of economic theory for all estimated functions except one function.

4) Commodity groups of food, housing, fuel, energy, transport and communications are classified as essential and semi-essential goods. In contrast, other commodity groups are classified as luxury and semi-luxury according to their spending elasticities.

5) The Iraqi consumer with low and below average saturation in most of the major commodity and service groups as evidence of the high values of spending elasticities of demand, where they were greater than the correct one.

B. Recommendations

1) Continue to provide government support and continue the ration card program, especially for the least spending groups of the community to improve the level of saturation of the goods of this group.

2) The need to study the economic and social conditions of the least-spending governorates in (Wasit, Dhi Qar, Ninawa) to diagnose the causes and develop remedies in order to ensure the improvement of the living level of the members of those governorates.

3) The high value of spending elasticity's of demand for basic goods and services means a low level of saturation, which requires attention to raise the purchasing power of individuals and increase the level of economic and social welfare for them.

4) It is necessary to focus on economic policy in order to achieve a better income return for the least spenders in order to distribute more justice in the distribution of income and spending.

5) Since household budget research is the main source of research and studies on consumer behavior, these surveys should be developed and regularized in the future in order to achieve more accurate and clear results of consumer spending behavior.

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