

THE CHANGE IN HOUSEHOLD CONSUMPTION PATTERNS IN JORDAN: 1997–2017

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Abstract

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This study aims to determine the change in consumption patterns of the Jordanian household during 1997–2017, as well as to estimate the income elasticities. The data from the household expenditure and income surveys conducted by the Jordanian Department of Statistics in the years: 1997, 2006, 2008, 2010, 2013, and 2017 were used. Graphs were prepared and percentages were calculated to measure changes in household consumption patterns. The average household expenditure index was used to measure the impact of income on changing consumption patterns (Selim, 2014). To estimate income elasticity, a pooled data regression model was adopted (Sugiarto & Wibowo, 2020). The estimated model is statistically significant at a level of 0.05. The study found a decrease in the percentage of household spending on the food group and an increase in the percentage of spending on the non-food group during the study period. This change in the family's consumption pattern coincided with an increase in its income. Value of income elasticity was < 1 for food, clothing, and housing. It was > 1 for transportation and communication, education, and health. Therefore, we conclude that the consumer behavior of the Jordanian family is fully consistent with the theory of consumer behavior and its applications.

Keywords: Household Consumption, Engel Law, Income Elasticity, Jordanian Households, Pooled Panel Data

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1. INTRODUCTION

An increase in a household income often influences changes in its consumption patterns. The higher the family's income, the lower the percentage of its income allocated to basic commodities (such as food, clothing, and housing). At the same time, increasing the proportion of what it allocates from its income on luxury goods (such as transportation, education, and health).

The consumption pattern of rich families differs from that of poor families. Poor families

allocate a larger percentage of their income on food commodities.

Engel studied this phenomenon and reached the formulation of this relationship, which is known today as "Engel's law". A number of field studies were subsequently conducted, which proved the validity of this law. It also estimated the income elasticity of demand for food and non-food commodity groups (Blow et al., 2004; Chai et al., 2013; Babalola & Isitor, 2014). According to Engel's law, according to income elasticity, commodities are classified into two categories: luxuries commodities,

which have income elasticity > 1 and necessities commodities, which have income elasticity < 1 .

The increasing interest of economists in developed and developing countries in conducting applied studies in order to identify other factors that affect consumer behavior (such as prices and economic and social characteristics of the family: family size, level of education, profession, place of residence, etc.) (Kalwij & Salverda, 2004; Chai & Moneta, 2010; Babalola & Isitor 2014).

Increasing interest at the Jordanian official level in order to improve the standard of living of the family on the one hand, and how to distribute its income to various commodities on the other hand. This interest was represented in developing and implementing development plans and conducting various economic surveys by the Department of Statistics. The most important of which is the survey of household expenditures and income in the years: 1997, 2002, 2006, 2008, 2010, 2013, and 2017. This increase in household income and expenditure was accompanied by a decrease in the proportion of expenditure on the food group from 44.3% to 32.7%. On the other hand, the percentage of spending on non-food items increased from 55.7% to 67.3% during this period. The consumption pattern varies between households according to the family size. In 2017, the percentage of household spending on food amounted to 28.4%; for small-sized households (1-2); 33.6% for medium-sized households (5-6), and 39.1% for large size households (13-14). The consumption pattern varied among households according to their place of residence. In 2017, household spending on food commodities was estimated to be 28.3% in the Amman region, where the average annual income of the family amounted to 11.242 JD. While this percentage reached 39.8% in the Jerash region, which averaged an annual income of 9.078 JD (www.dos.gov.jo).

It is noted the scarcity of applied studies that dealt with consumer behavior in Jordan, especially the study of the change in the consumption patterns of the Jordanian household and estimate of income elasticities of demand for various commodities over a long period of time on the one hand. It also shows the spatial difference in the consumption pattern of the household during a specific period of time. Al-Habashneh and Al-Majali's (2014) study was limited to estimating Engel curves for household expenditure, using the data of the Household Expenditure and Income Survey for the year 2010 only. Consequently, the extent of the changes is not taken into account in the case of comparison with the data of household expenditure and income surveys for previous years (1997, 2002, 2006, 2008). However, what distinguishes this study is the study of the effect of family size in addition to family income in determining the consumption pattern. The researchers concluded that the size of the family does not affect the demand for housing, transportation, and health. While it affects the demand for the rest of the commodity groups. Household size does not affect per capita consumption for all commodity groups. The pattern of household consumption in urban areas is not similar to that of household consumption in the countryside. Abu-Al Sondos et al. (2012) conducted a study at the macroeconomic level to measure the private consumption function and to determine

the contribution of private consumption expenditure to the gross domestic product (GDP). This study found that the average per capita GDP declined while private consumer spending continued to increase. The study also estimated the value of the marginal propensity to consume at 82.9%. and the value of the estimated multiplier is 5.85.

Therefore, the importance of this study comes from the fact that it deals with the extent of change in household consumption patterns, estimating the income elasticity of demand for various commodities in the Jordanian family budget, and determining the extent of spatial variation in household consumption patterns over a long period of time (1997-2017).

Its importance is also due to the fact that it complements the results of previous studies in Jordan and provides the Jordanian economic decision-maker with assistance in evaluating economic policies related to consumer behavior and improving their standard of living, on the one hand, and building future economic policies that ensure rationality in the consumption behavior of the Jordanian household and the development of infrastructure in transportation, education, health culture, and entertainment.

The research aims to determine the extent of changes that occurred in household consumption patterns at the national and regional levels during the time period 1997-2017. Determine the extent of spatial variation in household consumption patterns. As well as to estimate the elasticity of income demand for the food and non-food commodities groups, which are included in the household budget during this period. And to ensure the compatibility of the consumer behavior of the Jordanian household with the theory of consumer behavior.

Therefore, this study attempts to answer the following questions:

RQ1: What is the extent of change in the consumption pattern of the Jordanian household during 1997-2017?

RQ2: Is there spatial variation in the household consumption pattern in Jordan?

RQ3: What is the value of the income elasticity of demand for food and non-food commodities for the Jordanian household during 1997-2017?

RQ4: To what extent is the consumer behavior of the Jordanian family consistent with the theory of consumer behavior?

To answer the first and second questions, the descriptive statistical approach was adopted, which is represented in calculating ratios and preparing graphs and tables.

To estimate the income elasticity of demand for different commodity groups, the Engel model was adopted. This model was used by researchers (Kalwij & Salverda, 2004; Blow et al., 2004; Selim, 2014; Banks et al., 1997). There are 9 mathematical equations that can represent the Engel model (Table 2). Choosing one of them depends on the extent of statistical suitability according to the results of statistical tests. In this study, the double-log functional type is used to estimate income elasticities of 8 commodity groups among the 12 regions. The panel data used in this research is the annual data from 12 regions and for the national level during 1997-2017. The data are based on the Household Income and Expenditures

Surveys (HIES), which were conducted by the Jordanian Department of Statistics during the period from 1997 to 2017. In most studies, it is preferred to use household expenditure rather than household income. The reason for this adoption is that people declare total spending more honestly than income. Expenditure also reflects the permanent income of the family better than income (Selim, 2014). According to Engel, the proportion of expenditure spent on food is inversely related to total income.

The most important finding of this study is the occurrence of a clear change in the consumption pattern of the household. It was represented in the decrease in the share of food and the increase in the share of non-food commodities (education, health, and transportation). This change coincided with an increase in household income. There is a spatial variation in the consumption pattern of the household. Household allocates a greater proportion of its income to food in the poor region than in the rich region. The value of elasticity was estimated to be less than one for food, clothing, and housing commodities. While it was larger than one for transportation, education, and health. The consumer behavior of the Jordanian family is consistent with consumer behavior according to economic theory.

The remainder of this paper is structured as follows. Section 2 reviews the relevant literature. Section 3 studies the changes in the consumption pattern of the Jordanian household during 1997–2017. Section 4 analyses the methodology that has been used to conduct empirical research. Section 5 represents the research results. Section 6 provides a discussion and Section 7 concludes the paper.

2. LITERATURE REVIEW

Piekut and Piekut (2022) conducted a study to compare consumption in European households in the years 2004–2020. In order to identify groups of countries with similar consumption and expenditure structures, they used cluster analysis. The results of the study showed an increase in consumption expenditures European households in all countries have access to food and housing. European countries were classified into 6 clusters according to their consumption structure in 2004, 2019, and 2020.

Tran (2022) firmly believes that understanding and changing household consumption behavior is the primary driving force of the nation's economic growth in Vietnam, which has accounted for more than two-thirds of the GDP over the past three decades. This paper aims to provide a new way to understand household consumption decisions in a developing country based on several different but interrelated economic hypotheses of household consumption behavior. Using a three-wave balanced panel dataset generated from nationally representative Vietnamese household surveys, Tran (2022) finds strong evidence to support the importance of the permanent income hypothesis, the life-cycle factor hypothesis, and the precautionary saving hypothesis. However, there is no evidence for the sex ratio hypothesis.

Hone and Marisennayya (2019) evaluated the consumption expenditure of the households in Debreworkos town in Ethiopia. They applied the multiple linear regression model to identify

determinants for the consumption expenditure of a household. They found that disposable income and family size are directly related to consumption; and saving amount is negatively related to consumption. Also, they mentioned that disposable income is the most determinant factor to determine household consumption.

The study conducted by Sugiarto and Wibowo (2020) aimed to reveal the determinants of regional household final consumption expenditure in Indonesia. They used a dynamic panel data regression model with the first-difference generalized method of moments (FD-GMM) approach and applied it to data from 33 provinces during 2010–2019. They found that real gross regional product and government spending had a positive impact on regional household final expenditure, while the inflation rate and unemployment rate had a negative impact.

Alalo et al. (2020) used the data from the Household Expenditure Survey in Kuwait to study the spending patterns of Kuwaiti and expatriate households in Kuwait across nine different main commodity groups. They used the Hickman estimation method. The results indicate that there are different factors that influence the probability of consumption of a commodity and the level of expenditure between the two household groups. Kuwait's spending is more responsive to food, housing, communications, and leisure goods, and less responsive to clothing, health, transportation, and restaurants than expatriates. There is a significant variation in spending patterns across all commodities between the two household groups.

Mikula (2017) assessed the differentiation of the structure of household consumption expenditure in Eastern and Western European countries. Also, she determined the changes in this differentiation in the period 2004–2015. Mikula (2017) used Eurostat-published data for the analysis. She used the Bray-Curtis measure to determine the differentiation of the structure of expenditure and Pearson's correlation coefficients to determine the correlation between the share of expenditures on a particular group of goods in households' total consumption expenditures and real GDP per capita. The author found that the structure of household consumption expenditure in Eastern and Western Europe countries is similar. An evident difference in the standard of living caused by different levels of the economic development. The level of GDP per capita had an impact on the structure of households' consumption expenditures. However, a wide variation between countries with respect to the existing dependencies may be indicative of a considerable effect of non-income conditions of the consumption level and its patterns.

Babalola and Isitor (2014) identified the determinants of food expenditure among urban households in Lagos State, Nigeria. They concluded that 60% of the family's income was spent on food, which is a very high percentage. This high percentage indicates the existence of the phenomenon of poverty and food insecurity in the study area. The results of the regression analysis carried out by the two researchers showed that 65.5% of the variance in household spending on food in the study area was explained by the following variables: family income, tribe, family size, and family composition.

Selim (2014) studied the changes in the expenditure patterns of Turkish households during 1987-1994. The author estimated the total expenditure elasticities for eleven expenditure groups by using Engel curves and the double-log function type. The results of the study showed that there is a positive change in the total elasticities of spending on goods and services (with the exception of the clothing group). Clothing was a luxury good in 1987 and approached the category of essential in 1994.

Al-Habashneh and Al-Majali (2014) estimated the Engel curves for household expenditure using data on household expenditures and income surveys conducted by the Jordanian Department of Statistics in the year 2010. The researchers reached the following results: Family size does not affect the demand for housing, transportation, and health. While it affects the demand for the rest of the commodity groups. The family size does not affect the per capita consumption of all commodity groups. The household consumption pattern in urban areas is not similar to the household consumption pattern in the countryside.

Skalova and Stavkova (2012) evaluated the household consumption behavior of European countries, especially in the Visegrad Four (V4), using consumption spending categories classified according to the classification of individual consumption by purpose and using data available in Eurostat. They used cluster analysis to search for similarities in household consumption behavior in European Union (EU) countries. They found that the categories with the highest share of European household expenditures are: food and non-alcoholic beverages, as well as housing, water, gas and other fuels, and transport.

Kalwij and Salverda (2004) studied the changes in household spending patterns in the Netherlands during the period 1979-1998. They used the Engel curve to measure elasticities and to determine the variables affecting household consumption patterns. These determinants are family demographics,

employment, family budget, and relative prices. They found that the share of spending on food and clothing decreased, and the share of spending on housing increased. It also concluded that the characteristics of the family, the budget, and the price are the main determinants of food expenses and that the only price is the factor of explanation for housing expenses.

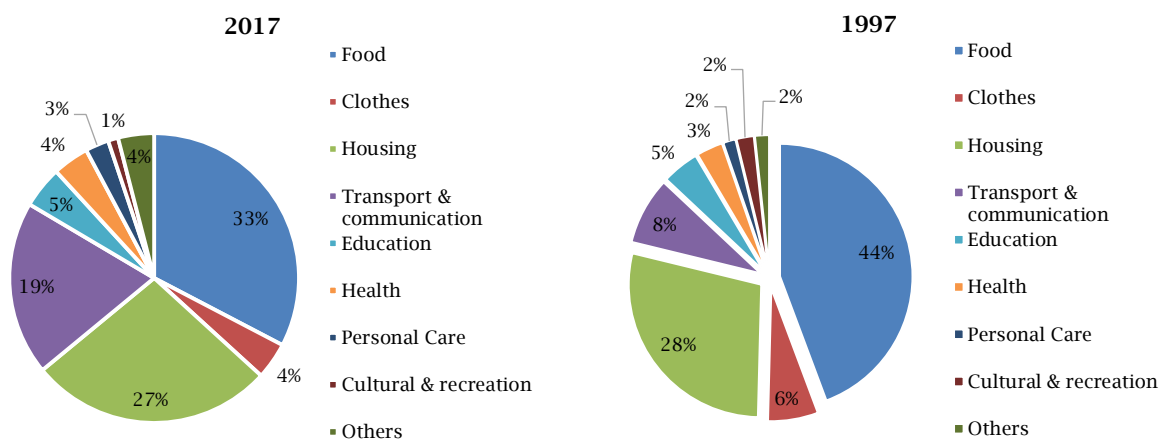
Blow et al. (2004) analyzed British consumers' spending on different goods and services changes between 1975 and 1999 and examined the reasons behind these changes. They used published data from annual family expenditure surveys. They found that British families spent less on basic goods such as food, fuel, and clothing, and more on durable goods and leisure over time. The following factors are behind these changes in consumer behavior: family income, relative prices, and demographic shift.

Ellensburg (2003) analyzed the impact of income levels, race, and household location (urban or rural) in determining household expenditure patterns in South Africa. He found these factors affected.

3. CHANGES IN HOUSEHOLD CONSUMPTION PATTERNS DURING THE PERIOD 1997-2017

It is noted from Figure 1 that radical changes have occurred in the consumption pattern of the Jordanian household during the past forty years. These changes were represented in the decrease in the percentage of annual spending on the following commodity groups: food (-11%), clothes and footwear (-2%), housing (-1%), and culture and entertainment (-1%). At the same time, the share of household spending was increased on the following commodity groups: transportation and communications (+11%), health (+1%), personal care (+1%), and other commodities (+2%). The percentage of its spending on education reached (5%) and remained stable over time.

Figure 1. Household consumption pattern in Jordan in the years 1997-2017



Source: Jordanian Department of Statistics (DOS), Households Expenditures and Income Surveys in 1997 and 2017 (<http://dosweb.dos.gov.jo/ar/economic/expenditures-income/>).

At the regional level, a significant change was observed in household consumption patterns during the time period 1997-2017. Table 1 shows us

that the percentage of household expenditure on the food group in all Jordanian regions was decreasing, and non-food groups were increasing

from 1997 to 2017. Also, a clear discrepancy in household consumption patterns among the Jordanian regions was found. The share of household expenditure on food in the high-income region was always less than the share of household expenditure in the low-income region over the time. In 1997, estimated family income was 5.427 JD in the Amman region (the highest among the other Jordanian regions), and 38.7% was the share of household expenditure on food the lowest among other regions. In the same year, the share of household expenditure on food was 54.7% in the Ajlon region, in which the household income of 3.784 JD was the lowest among Jordanian regions. The regional variation in household consumption patterns

continued over time. In 2017, the family's income amounted to 12.657 JD in Amman (it still ranks first among other Jordanian regions), and the percentage of household expenditure on food was 28.3%, which is the lowest among other regions. On the other hand, the household income reached 9.139 JD in the Mafraq region (which ranks lowest among the Jordanian regions), and the family's expenditure on food was 37.2%. In summary, we find that the increase in household income had a negative impact on the percentage of what the household allocates from its budget to spend on food commodities in all Jordanian regions during 1997-2017.

Table 1. Household income and percentage of household expenditure on food commodities by region

Year Region	1997		2017	
	Food share (%)	Income (JD)	Food share (%)	Income (JD)
Amman	0.387	5489	0.283	12657
Balqa	0.501	4753	0.331	11450.9
Zarqa	0.453	4254	0.373	9562.6
Madaba	0.427	4789	0.353	10413
Irbid	0.478	4286	0.365	10432
Maghraq	0.547	4179	0.372	9139
Jarash	0.516	3994	0.398	9078
Ajlon	0.547	3818	0.361	10051
Karak	0.576	4805	0.408	11755
Tafeela	0.529	3901	0.457	10133
Maan	0.498	3991	0.361	9575
Aqaba	0.515	5053	0.332	10303
Jordan	0.443	4812	0.327	11242

Source: Jordanian Department of Statistics (DOS), Households Expenditures and Income Surveys in 1997 and 2017 (<http://dosweb.dos.gov.jo/ar/economic/expenditures-income/>).

4. RESEARCH METHODOLOGY

In this study, the classification of the Jordanian Department of Statistics for commodity groups was adopted. These are food, clothing and shoes, housing, education, health, transportation and communication, culture and entertainment, and others.

To estimate income elasticities of demand for the 8 commodities group, Engel's model will be adopted. This model has been widely used by researchers (Kalwij & Salverda, 2004; Blow, 2003; Selim, 2014; Banks et al., 1997). Nine (9) functional forms have been developed by researchers to apply Engel's law in their previous applied studies (Table 2).

Table 2. Functional forms to estimate the elasticity

No.	Functional forms	Elasticity
1.	$Y = \beta_0 + \beta_1 X$	$E = \beta_1 (X / Y)$
2.	$Y = \beta_0 + \beta_1 \ln X$	$E = \beta_1 (1 / Y)$
3.	$Y = \beta_0 - \beta_1 (1 / X)$	$E = \beta_1 (1 / XY)$
4.	$\ln Y = \beta_0 + \beta_1 X$	$E = \beta_1 X$
5.	$\ln Y = \beta_0 + \beta_1 \ln X$	$E = \beta_1$
6.	$\ln Y = \beta_0 + \beta_1 (1 / X)$	$E = \beta_1 (1 / X)$
7.	$Y / X = \beta_0 + \beta_1 X$	$E = 1 + \beta_1 X (X / Y)$
8.	$Y / X = \beta_0 + \beta_1 \ln X$	$E = 1 + \beta_1 (X / Y)$
9.	$Y / X = \beta_0 - \beta_1 (1 / X)$	$E = \beta_0 (X / Y)$

Sources: Selim (2014).

Choosing one of these mathematical equations depends on the results of statistical tests that confirm the suitability of the model used or not.

In this study, we adopted the double-log function for estimating elasticities.

This model was reformulated in a way that fits with the historical and cross-sectional data available for this study.

The panel data used in this research is the annual data from 12 regions and for the national level during 1997-2017. The data are based on the HIES. These surveys were conducted by the Jordanian Department of Statistics (DOS). The DOS classified the commodities into 9 groups (food, clothes and footwear, housing, transportation communication, education, health, personal care, cultural and recreation, and others), and used the same methodology in all conducted surveys.

To estimate the Engel curve, household expenditures are used as a proxy of household income. The reason behind this is that expenditure reflects the permanent income of the household better than income and the false reporting of the income levels by the households is a common situation in the surveys (Selim, 2014).

In light of this, the mathematical model used can be formulated as follows:

$$\ln E_{ij} = \beta_0 + \beta_{ij} \ln Y_j + D_j \quad (1)$$

where,
 E_{ij} : average of household expenditure in commodity group i in the region j ;
 β_0 : intercept;
 β_j : parameters;
 Y_j : average of households expenditure (total) in the region j ;
 D_j : dummy variable according to the region j .

There are 11 dummy variables identified (e.g., Region 1, is = 1 and another region is = 0).

To estimate the effect of household income on the percentage spent on each commodity group, the model takes the following formula.

$$S_{ij} = a_i + \beta_i \text{Log}(EXP_j) + \varepsilon_i \quad (2)$$

where,

S_{ij} : the expenditure share on commodity group i in region j (%);

EXP : log of total household expenditures in the region j ;

ε_i : an error term distributed normally.

5. RESULTS

Enabling new researchers to access more data related to the economic and social characteristics of the family by publishing it electronically is essential.

Statistical tests (such as the F-test and the Durbin-Watson (DW) test) and t-statistic values indicate the good fitness and validity of the model used in this study (double log form). The adjusted R^2 values showed also the ability of the independent variable to explain all the variance in the dependent variable (Table 3).

Table 3. The income elasticities of commodity groups for Jordanian household (National level)

Commodity group	B	T-statistic	Adjusted R ²	Prob.	F-statistic	DW test
Food	0.828*	24.735	0.899	0.000	59.05	1.93
Non-food	1.152	43.323	0.970	0.000	193.5	2.41
Clothes and footwear	0.717*	10.256	0.445	0.000	5.744	2.89
Housing	0.971*	7.051	0.657	0.000	12.31	2.01
Transportation and communications	1.573*	11.891	0.610	0.000	10.26	1.69
Education	1.218*	18.123	0.851	0.000	34.68	2.53
Health	1.199*	7.760	0.489	0.000	6.67	1.72
Recreation and cultural	0.491**	1.809	0.017	0.076	1.11	1.93
Personal care	0.491*	3.566	0.176	0.001	2.267	1.99

Note: * are statistically significant at 5%; ** are spastically significant at 10%

The estimated value of elasticity was less than one for the following commodity groups: food (0.828), clothing and footwear (0.717), housing (0.971), entertainment and culture (0.490), and personal care (0.491). At the same time, the value of elasticity was greater than one for the following commodity groups: transportation and communication (1.573), education (1.218), and health (1.199) (Table 3).

Values of statistical tests indicate that the used semi-logarithm functions are highly reliable and appropriate. It is significant at a probability level less than 0.05 for the following commodities: food, clothing and footwear, housing, transportation and communications, and education. It is different for the following commodity groups: health, recreation, and cultural and personal care (Table 4). Also, Table 4 shows the following findings:

1. The share of food in the household expenditure decreased by 0.17 with the increase in its income by 1% over time.

2. At the same time, the share of non-food commodities in household spending increased by -0.17 with an increase in household income by 1% over time.

3. The largest share of the increase was in the share of household spending on transportation and communication during the same period. It was estimated at +0.158. It is noticeable that there is a significant increase in the demand for the use of private vehicles, due to the weakness of public transportation in Jordan over time.

4. The rest of the increase in the share of household expenditure went to the following commodity groups: education (+0.018) and health (+0.013) and personal care (+0.001).

Table 4. Estimated impact of Jordanian household expenditure on the share of household spending on commodity group

Commodity group	B	T-statistic	Adjusted R ²	Prob.	F-statistic	DW test
Food	-0.178	-5.879	0.486	0.000	6.596	2.39
Non-food	+0.178	+5.879	0.486	0.000	6.596	2.39
Clothes and footwear	-0.032	-4.373	0.197	0.001	2.455	1.63
Housing	+0.036	1.972	0.453	0.053	5.907	1.98
Transportation and communications	+0.158	5.775	0.291	0.000	3.432	2.17
Education	+0.018	2.845	0.496	0.006	6.823	2.36
Health	+0.013	0.703	0.010	0.485*	1.061	2.35
Recreation and cultural	-0.004	-0.701	0.017	0.485*	1.174	1.18
Personal care	+0.001	1.425	0.072	0.159*	1.457	1.89

Note: * are statically NOT significant at 5%.

Table 5 shows the differences in household consumption patterns among the Jordanian regions. The income elasticity of food demand was less than one (0.828). This means that food is a necessary commodity for the family in all regions. The difference

in the values of the intersection (C) across the regions means that the household consumption pattern differs from one region to another. This is confirmed by the data presented in Table 1.

Table 5. Estimated elasticity by region

Variable	Coefficient	T-statistic	Prob.
C	0.243253	1.871257	0.0662
LOG_EXP	0.827996	24.73445	0.0000
D2	0.048270	2.109919	0.0390
D3	0.049831	2.178152	0.0333
D4	0.065049	2.842695	0.0061
D6	0.066181	2.888629	0.0054
D7	0.089073	3.893092	0.0003
D8	0.069508	3.038247	0.0035
D9	0.088066	3.845415	0.0003
D10	0.089501	3.900051	0.0002
D11	0.060599	2.646376	0.0104
D12	0.051306	2.241682	0.0287

Note: Dependent variable: Log. Food. Adj. R²: 0.899, F-statistic: 59.054, DW test: 1.927.

To measure the change in the elasticity of different commodity groups over time, the model was estimated by using a dummy variable (1997 = 1 and 2017 = 0). The model estimation results presented in Table 6 indicate the following:

1. Variation in the values of elasticity for all commodity groups over time.

2. The elasticity of demand for the food group is less than 1 in both years (1997 and 2017). This means that food is an essential commodity for the Jordanian family.

3. The housing elasticity of demand is approximately equal to 1 in both years (1997 and 2017).

4. The elasticity of demand for each of the following groups (transport and communication, education, and health) was greater than 1 in 1997 and 2017. They are therefore viewed by Jordanian households as luxury goods.

5. The value of the estimated elasticity of demand increased over time for the following commodities groups: education, transportation and communications, and health.

Table 6. Estimated demand elasticities for commodity groups in the years 1997 and 2017

Commodity group	1997		2017	
	C	β	C	β
Food	0.1447	0.877	-0.0265	0.898
Housing	-0.1037	1.021	-0.822	1.056
Transportation and communications	-1.484	1.157	-2.527	1.454
Education	-1.709	1.062	-2.189	1.218
Health	-2.280	1.160	-2.070	1.295

Note: Significant at less than 0.05 level.

To measure the changes in household spending patterns over time, the model was estimated by using a dummy variable (1997 = 1 and 2017 = 0). The model estimation results presented in Table 7 indicate the following:

1. The decrease in the share of food in the total expenditure of the household as its income

increases. It was estimated at -0.1105 in 1997 and -0.105 in 2017.

2. On the other hand, increasing the proportion of what is allocated from the household budget for spending on commodity groups, such as housing, transportation and communications, education, and health.

Table 7. Estimated share of spending on the commodity in the years 1997 and 2017

Commodity group	1997		2017	
	C	β	C	β
Food	0.1447	-0.1105	-0.0265	-0.1050
Housing	-0.1037	+0.014	-0.822	0.028
Transportation and communications	-0.140	+0.061	-0.351	0.121
Education	0.021	+0.004	-0.019	0.017
Health	0.038	+0.003	0.015	0.004

Note: Significant at less than 0.05 level.

6. DISCUSSION

Looking at R² estimated values in Table 3, the explanatory power of the income effect is very high for the food group and the education group, very low for the culture and entertainment group and for the personal care group, and medium for the rest of the commodity groups. This means that it is necessary to think about other factors that affect the consumption decision of households. Therefore, the researcher recommends conducting new studies, especially in the case of the availability of statistical data on these variables.

The results show that the Jordanian household (at the national and governorate levels) increased the share of its spending on transportation and communications by 10% during the study period. The estimated elasticity value also indicates that they are considered luxury goods. It was found that the income factor explains 0.610 of the household spending behavior on transportation and communications only. This is confirmed by the Jordanian family's interest in owning a private car. The number of registered cars has increased dramatically in Jordan during the past period. This growing demand can be explained by

the deterioration of the public transport sector and the credit facilities granted by financial institutions to own a car. The family also believes that owning a private car enhances its social and cultural value in society. At the same time, this situation created financial pressures on the family, especially with the rise in energy prices and the recent rise in interest rates. It also negatively affected the transportation infrastructure in Jordan, which resulted in more traffic congestion and the lack of sufficient parking spaces. Therefore, the researcher believes that it is necessary to conduct future studies to determine the influencing factors and make the necessary recommendations for the development of the public transport sector, road networks, and parking lots.

The results of the study showed the stability of the percentage of what the Jordanian family allocates to education during the last period, as it was estimated at 5%. The Jordanian family still believes that education is important an investment in human resources. She sacrifices financially in order to educate her children for a better financial future. The value means that the income factor explains 0.496 its spending behavior on education only. This means that there are other social and cultural factors that influence this behavior. This requires future researchers to determine the factors affecting the educational spending behavior of the family.

7. CONCLUSION

There was a significant difference in household consumption patterns at the national level during 1997-2017. This is represented in the decrease in the percentage of household expenditure on food from 44.3% to 32.7%, and the increase from 55.7% to 67.3% in the group of non-food commodities such as transportation and communications. This change coincided with the increase in average household income in that time period.

A clear discrepancy in household consumption patterns existed between regions. The household allocates a lower proportion of its total expenditure to the purchase of food commodities in the high-income region compared to households in the low-income region.

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