

# A STUDY ON THE IMPACT OF THE SAUDI CITIZEN ACCOUNT AS A COMPENSATION PROGRAM TO ACHIEVE FOOD SECURITY FOR LOW-INCOME CITIZENS UNDER THE KINGDOM'S VISION 2030



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## ABSTRACT

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This research aims to assess Saudi Citizen Account's (CA) impact on low- and middle-income individuals by considering costs from increasing energy and water prices, and taxes imposed in Saudi Arabia. The minimum total household consumption expenditure was estimated (before and after the Saudi Vision 2030 economic reforms). The research covers all the expenditure groups in the Household Income and Expenditure Survey conducted by the General Authority for Statistics and estimates the linear expenditure system (LES) using the seemingly unrelated regressions (SUR) method. Results indicate variations in expenditure in 2013 and 2018. The minimum household consumption expenditure in 2018 exceeded that in 2013. Comparing the average (CA) value and the difference between minimum household expenditures in the two years on all groups in general, and on food, beverages, health, and education in specific shows that the financial support the Citizen Account provides, indeed covers financial burdens that the low-income individuals would bear due to increase in prices.

**Contribution/ Originality:** This study is probably one of the earliest studies in the Kingdom of Saudi Arabia that aims to evaluate the "Citizen's Account" program to help the low-income Saudi citizens to combat inflation resulting from economic reforms and to ensure the maintenance of their purchasing power and food security. It is one of the studies that reveals the potential impact resulting from the implementation of the monetary support policy for families with the lowest incomes during the period of economic reforms.

## 1. INTRODUCTION

Government support is one of the important measures taken by governments during the implementation of economic reforms in order to reduce the burden on low-income individuals by providing their consumption needs or increasing the availability of some goods and services without reducing their spending on other goods and services. Therefore, support programs aim to maintain the purchasing power of low-income families on one hand and to maintain food security on the other hand, where food is considered as an essential need and obtaining it amid the continuous and accelerating economic reforms, is a source of concern for low-income families (Elbushra & Ahmed, 2020).

Therefore, analysis of consumption structure has become a significant tool for evaluating economic and social policies, especially with regard to social support and the impact of taxes on low-income families. This requires studying the expenditure and price elasticities, and estimating the minimum income to assess consumer reactions towards economic reforms and expansions considering their income and the current price levels. Through studying consumer behavior, we can identify consumption patterns and assess the effectiveness of policies by estimating demand systems on basic goods and services. For example, a study conducted by [Abdulmageed and Jabra \(2016\)](#) analyze the demand for white and red meat using the Almost Ideal Demand System (AIDS) model. The results of this study showed the actual behavior of Iraqi consumers towards white and red meat, where white meat was found to be an essential food for them, while red meat was found to be a luxury food. However, the linear expenditure system (LES), a demand system, has been widely used in economic literature by some researchers ([Sunaryati, 2012](#)), where there are several studies that assess changes in consumption patterns as a result of the impact of a particular policy using the linear expenditure system. Among these studies, the one conducted by [Al-Mutairi \(1994\)](#) analyzes the family expenditure behavior on a group of food products for all citizens and foreign residents in the State of Kuwait. The results showed that the price elasticity of demand is low for food products to Kuwaitis than foreign residents. Therefore, foreign residents are more responsive to changes in price levels than Kuwaiti nationals are. The income elasticity of demand showed that all food products are essential for all Kuwaiti and foreign residents' households. In addition, there is a higher chance of increasing demand for sugar, spices, and fish than some other products. Therefore, the study recommended that the government should take appropriate measures and effective decisions to increase the supplied quantity of fish, in particular, and that of other food products in general. The research conducted by [Washizu and Nakano \(2010\)](#) studied the impact of Japanese consumer behavior on the environment, by considering CO<sub>2</sub> emissions from two item types: increasingly eating outside rather than eating at home, increasing demand for recreational services. It also considered other items: (housing, light and water, fuel, furniture, clothes, transportation, education, medical care). The results showed that the increased demand for eating outside rather than eating at home generally contributes to reducing the impact on the environment, while the increasing demand for recreational services increases the environmental burden. [Weng, Fujiwara, and Matsuoka \(2011\)](#) studied the impact of consumer behavior on municipal solid waste in Taiwan using another model with the linear expenditure system (LES) model, which is the multinomial logit (MNL) model that develops a methodology for analyzing per capita consumption expenditure amid lifestyle changes. The model was designed in the form of a three-level pyramid: the first and second layers contain the consumer behavior model and the third layer contains the municipal solid waste (MSW) disposal model of converting goods to waste during the consumption period. This methodology was developed by estimating the per capita consumption expenditure according to the following categories: the per capita saving rate and the percentage of the population aged 65 and above using the linear expenditure system (LES) model. The outcomes of the LES model are used as an input to the MNL model to simulate consumption expenditures and this is called a consumer behavior model. Thus, a consumer behavior model is coupled to a municipal solid waste (MSW) disposal model, which estimates per capita solid waste. The results showed that the consumer behavior model can be linked with the models related to environmental pollutants. By analyzing the consumer behavior model, it is clear that the per capita consumption expenditures on housing and food are essential for life and affects housing, entertainment, education, medicine, and healthcare. [Sunaryati \(2012\)](#) studied the demand behavior on food and measured the regional poverty threshold in the provinces of Indonesia. The study aimed to understand how the surrounding conditions affect the household behavioral pattern so the effects of public policies and strategies can be easily assessed. The study was conducted on six food items (rice, meat, chicken, fish, cooking oil, kerosene). The results showed that Indonesian households have a maximum spending proportion on rice and a minimum on fish, whereas, the minimum average household expenditure was in the province of Nusa Tenggara Barat and the maximum average household expenditure was in the province of East Kalimantan. Moreover, the results show that the highest level of poverty is in the province of Benteng, and the

lowest level of poverty is in the province of East Kalimantan. Donna (2014) analyzed the pattern of household behavior in Indonesia for the following goods and services: (food, clothes, housing, medical care, education, household items, gas, electricity, telecommunications, fuel, and transportation). In general, the results indicated that food, clothes, housing, household items, gas, electricity, fuel, and transportation are considered to be essential commodities for Indonesian families. In addition, more than 50% of the minimum household expenditure is spent on food. It is also expected that if the family receives additional income, then the most important spending will be on housing, education, fuel and transportation, food, and medical care. Xu and Muller (2017) measured the effectiveness of the tradable credit scheme (TCS) system, as a compensation policy to reduce car travel. TCS is considered compensation paid for renouncing car travel. This system was adopted by the Beijing City Transportation Administration to curb air pollution resulting from traffic congestion. The results showed that the TCS system contributes to reducing car travel, but the regulatory authority must consider the credit price set by the market to adopt the TCS system accordingly. Burger, Coetzee, Kreuser, and Rankin (2017) researched the consumption expenditure patterns of the citizens of South Africa. The study considered the average income of different income groups and a large number of goods and services classified under the Central Product Classification (CPC). The overall results showed that individuals with higher income spend more on clothes than on food. Meanwhile, within the food group, it has been found that households in South Africa are more sensitive to the increase in prices of meat, oils, vegetables, dairy products, eggs, and beverages, in contrast to the increase in the prices of starch products and grains. In addition, it was found that personal care, food, and energy are among the essential and important products for the citizens and they are willing to spend more on medical and social services, education, financial services, and domestic labor services in proportion to the increase in income. The linear spending system can also be used to develop some methodologies, such as what Bhattacharjee (2017) did, where he tried to estimate consumer price indicators for a group of consumption expenditure items (including all goods and services) in India in the state of Andhra Pradesh. The study assumed that the linear expenditure system (LES) correctly describes the demand system of a specific community. The study took into account that this system eliminates the problem of insufficient data. The study concluded that consumer price indicators have wide and inconsistent differences, as expected. This result is likely to be due to differences and variations between villages in Andhra Pradesh in terms of geographical locations, size, disposable income, age, gender distribution, and sensitivity of the expenditure data to outliers that could disturb the linear expenditure system assumption. Mohamadiyan and Negahdari (2018) estimated the poverty threshold and identified poverty indicators in urban areas of the province of Hormozgan in Iran during the fourth and fifth development plans. The results showed that the condition of the poor has improved, but the number of individuals living below the poverty line increased during the period in which the study was conducted. In addition, it was found that the poverty line showed an increasing trend over the two periods due to the high inflation rates, which in turn led to a decrease in household purchasing power. Shahzad and Sarwar (2018) conducted a research on the demand patterns on food for urban and rural households in the province of Sindh in Pakistan. The results showed that households in rural or urban areas consume large quantities of eggs, milk, vegetables, sugar, salt, grains, and wheat. However, rural households are slightly different from urban households in terms of their preference for certain products such as fruits and vegetable oil. In addition, there is a difference in the marginal budget share and the classification of goods as a luxury, essential, substitute, or complementary for both household types. The study recommended that a separate policy be developed for the two regions. The study conducted by Al-Shuaibi and Al-Sebai (2016) aimed to examine the variation in food spending patterns between Saudi and non-Saudi families residing in the Kingdom of Saudi Arabia which showed reliable results that can be considered during the development of economic policies and setting of development plans related to food security in the Kingdom. The results indicated that all commodities are essential for Saudi and non-Saudi households, but Saudi households are more flexible than non-Saudi households. It was also found that the food expenditure patterns of Saudi households are different from those of non-Saudi households for bread and grains, oils

and ointments, meat and poultry, vegetables, fruits and nuts, mineral water, refreshments, and juices. Similar results are obtained for other items, including milk, dairy products and eggs, fish and seafood, unclassified food products, sugar, jam, honey, and sweets; coffee, tea, and cocoa. The economic literature discussed above shows that estimating both the linear expenditure system (LES) model and the expenditure and price elasticities helps researchers and decision-makers in providing future predictions on the effectiveness of actions taken by the government or a particular company.

The Kingdom of Saudi Arabia has pursued various support programs to enhance consumer welfare in the past and present. However, since the launch of Vision 2030, it has been keen not to compromise on access to food as one of the main pillars of Saudi food security, especially for those with low income. For this reason, a program called Citizen Account (CA) came into effect, as part of the Fiscal Balance Program under Vision 2030 for improving government support efficiency. The Citizen Account is financial compensation for economic expansions that might pose a threat to the Saudi citizen's living standards and food security (Arabia, 2020). Therefore, using the Linear Expenditure System, this research aims to assess the compliance of the Citizen Account program adopted in Saudi Arabia with the changes occurring in the purchasing power of low-income individuals resulting from economic reforms under Saudi Vision 2030. The analysis focused on the effect of Citizen Account on the ability of households to obtain goods and services, maintaining quantitative and qualitative food portions as one of the pillars of Saudi food security.

## 2. MATERIALS AND METHODS

The study is based on cross-sectional data issued by the General Authority for Statistics through the Household Income and Expenditure Survey over two years i.e. 2012-2013 (before the implementation of energy and water price correction plan and imposing taxes) & 2017-2018 (after the implementation of energy and water price correction plan and imposing taxes). The data covered the average spending and monthly income of Saudi households on the following main expenditure groups by administrative region in the Kingdom of Saudi Arabia: (food and beverages, apparel and footwear, housing, water, tobacco, electricity, gas, and other kinds of fuel, home furnishing, health, transportation, telecommunications, entertainment and culture, education, restaurants and hotel services, personal goods and services).

### 2.1. Estimation of the Linear Expenditure System (LES)

British economist (Stone, 1954) proposed the linear expenditure system (LES) model which was derived from maximizing the Stone - Geary Utility Function, subject to the linear budget constraint using the Lagrange Method. Equation 1 presents the Linear Expenditure System according to the studies conducted by some researchers Ali (2018) and Sunaryati (2012):

$$C_i = P_i Q_i = P_i \gamma_i + \sigma_i (I - \sum_k P_k \gamma_k) \quad (1)$$

Subject to:

$$I = \sum_k P_k Q_k \quad \text{budget constraint.}$$

$$\sum_{i=1}^k \sigma_i = 1 \quad \text{adding up constraint.}$$

Where:

$C_i$  = Average per capita expenditure on expenditure group  $i$  (Riyals/year).

$P_i$  = Price of the expenditure group  $i$ .

$Q_i$  = Average per capita consumption by expenditure group  $i$ .

$\gamma_i$  = Minimum household expenditure on expenditure group  $i$  (Intercept), and the sum of these intercepts for all system equations  $\sum P_i \gamma_i$  is equal to the lowest household consumption expenditure on the various main expenditure groups, which is known as Subsistence Expenditure, which we aim to estimate in this study.

$\sigma_i$  = A positive parameter representing the marginal propensity to consume on good  $i$ , and the sum of the marginal propensities of all system equations must be equal to one according to the Sum Law.

$I$  = Total per capita household consumption expenditure on all expenditure groups  $k$ .

$\sum_k P_k \gamma_k$  Total minimum household expenditure on all expenditure groups  $k$ . The difference  $(I - \sum_k P_k \gamma_k)$  is known as Supernumerary Expenditure.

Based on the fact that the prices for all households are constant, Equation 2 argues the final formula of the linear expenditure system model that is as follows:

$$C_i = \alpha_i + \sigma_i I + e_i \quad (2)$$

Where  $\alpha_i = P_i \gamma_i - \sigma_i \sum_k P_k \gamma_k$ ,  $(\alpha_i, \sigma_i)$  are the parameters to be estimated in the above model, and  $e_i$  represents the random error and is normally distributed.

After estimating the (LES) model, the expenditure elasticity and price elasticity of products in the study are estimated in order to assess the effects of the changes in price and income that occur and directly affect consumption, and thus the Expenditure elasticity and price elasticity are calculated using the following mathematical equations (Moosavi, Hamid, & Alboali, 2013):

Expenditure elasticity is calculated as follows:

$$\eta_{ci} = \sigma_i \left( \frac{I}{C_i} \right)$$

Whereas, price elasticity is calculated as follows:

$$\eta_{ii} = (1 - \sigma_i) \frac{P_i \gamma_i}{C_i} - 1$$

The LES model is estimated using the seemingly unrelated regression (SUR) method, proposed by Zellner (1962), which yields more efficient estimations than the ordinary least squares (OLS) method by applying the generalized least squares (GLS) technique. Therefore, in order to apply SUR, some conditions must be met, which can be explained as follows (Sumer, 2012):

1. Estimating several regression equations.
2. The error terms are correlated in the estimated regression equations.
3. The regression equations should not be simultaneous, which means that there should not be between the regression equations seeming relations.

Equation 3 shows the system equations for  $n$  groups of products that are to be estimated in this study will be as follows (Sunaryati, 2012):

$$C_1 = P_1 Q_1 = P_1 \gamma_1 + \sigma_1 \left( I - \sum_k P_k \gamma_k \right)$$

$$C_2 = P_2 Q_2 = P_2 \gamma_2 + \sigma_1 \left( I - \sum_k P_k \gamma_k \right)$$

$$C_n = P_n Q_n = P_n \gamma_n + \sigma_n (I - \sum_k P_k \gamma_k) \quad (3)$$

On the other hand, the study relies on a simplified methodology suggested by El-Eraky (1998) for estimating the total consumption function to calculate the minimum total household expenditure on all expenditure groups  $(\sum_k P_k \gamma_k)$ , which is used in many studies as (Hadidi, Elmulthum, & Morci, 2019). This methodology includes three steps and explains in equations demonstrated as follows:

- (1) Equation 4 presents estimating the household consumption function, which is as follows:

$$C_i = \alpha + \beta I_i + e \quad (4)$$

Where:

$C_i$  = Total average monthly household expenditure on the whole expenditure group k (average household monthly consumption expenditure).

$I_i$  = Average household income by administrative regions.

$e$  = Limit of error.

$\alpha, \beta$  = Equation coefficients

- (2) Equation 5 shows deriving the household saving function from the total consumption function estimated (in the first step) is given below:

$$S_i = -\alpha + (1 - \beta)I_i + e \quad (5)$$

Where:

$S_i$  = Saudi household monthly saving.

$I_i$  = Average household income by administrative region.

$e$  = Limit of error.

$\alpha, \beta$  = Equation coefficients.

- (3) The break-even level of income is calculated as the level of income that meets the basic consumption needs of a household. In other words, it is the level of income at which saving is equal to zero, therefore, a household with an income below this level cannot meet all of its needs from the different expenditure groups. From the estimated saving function (in the second step), the value of saving is substituted by zero; and the income value is calculated through the following equation:  $I_i = \frac{\alpha}{1-\beta}$  which is the break-even level of income.

**Table 1.** Shows the results of estimating the consumption function using the ordinary least squares (OLS) method for the years 2013 and 2018.

Functions	2013	2018
Consumption function	$C_i = 1297.679 + 0.799 I_i$ (0.34) (2.94) $R^2=0.44$ , $F=8.66$ , $N=13$	$C_i = 284.636 + 0.964 I_i$ (0.75) (18.02) $R^2= 0.98$ , $F=915.24$ , $N= 13$
Saving function	$S_i = - 1297.679 + 0.201 I_i$	$S_i = - 284.636 + 0.036 I_i$
Break-even level of income (Income level at saving = 0)	$I_i = \frac{\alpha}{1 - \beta} = \frac{1297.679}{0.201} = 6442$	$I_i = \frac{\alpha}{1 - \beta} = \frac{284.636}{0.036} = 7799$

Note: Numbers in parentheses are t-statistics.

Source: Survey data.

### 3. RESULTS AND DISCUSSION

#### 3.1. Estimating the Consumption Function for the Years 2013 and 2018

Table 1 shows the results of estimating the total consumption function of Saudi households in all administrative regions in the Kingdom of Saudi Arabia, the calculation of the saving function using the results of the consumption function, and the calculation of the break-even level of income during the years 2013 and 2018. Results indicate that in both years, the model is significant at a significance level of 0.05, and the parameters of the model are significant for the marginal propensity to consume (MPC).

It is also evident that in 2013, the marginal propensity to consume for Saudi households in all administrative regions in the Kingdom was about 0.80, which indicates that if the monthly income increases by 100 Riyals, the consumption expenditure of these households on the various expenditure groups will increase by around 80 Riyals/month, and they will save about 20 Riyals/month of their remaining income. In addition, we notice that in 2013 when saving is equal to zero, the level of income is 6,442 Riyals/month, which is the minimum expenditure level. This implies that a Saudi household, in all regions, will need an income of at least 6,442 Riyals/month to meet its consumption needs, and will not be able to save at a level of income below that.

As for 2018, the marginal propensity to consume was about 0.96, which indicates that if the monthly income of a Saudi household in all administrative regions of the Kingdom increases by 100 Riyals, its consumption expenditure will increase by around 96 Riyals/month and it will save the remaining (4 Riyals/month). Therefore, when saving is equal to zero, the level of income is 7,799 Riyals/month, which is the minimum expenditure level. This implies that a Saudi household will not save if its income is equal to 7,799 Riyals/month and at an income below that level, it will not be able to meet its needs from various expenditure groups.

### 3.2. Estimation of the Linear Expenditure System (LES)

Before discussing the results of the linear expenditure system for the two years, it must be made clear that the number of expenditure groups in the Household Income and Expenditure Survey was about 12 expenditure groups, namely: food and beverages, tobacco, textiles, clothes, and shoes, housing, electricity, water, gas and other types of fuels, home furnishing and equipment, health, transportation, telecommunications, entertainment and culture, education, restaurants and hotels, personal goods and services. We noticed through estimating each of the twelve expenditure groups separately in the Linear Expenditure System (LES), the values of the determination coefficients  $R^2$  in some groups are low compared to others. Therefore, several groups are merged to overcome this problem. The system is estimated for four expenditure groups that cover all the expenditure groups in the Household Income and Expenditure Survey. Table 2 and Table 3 include the results of this estimate, where the outcomes show that all t-values indicate the significance of the coefficients at a significance level of 5%, with the exception of the last expenditure group coefficient in Table 2. Moreover, the values of the coefficient of determination  $R^2$  for different expenditure groups are shown in Table 2 and Table 3.

Table 2. Shows the results of estimating LES using SUR for the year 2013.

Expenditure Group	At the level of the household in 2013				
	$p\gamma_i$	$\sigma_i$	$R^2$	$n_{c_i}$	$\eta_{it}$
Food and beverages; health; education	1705.302 (4.06)	0.237 (3.41)	0.45	0.45	-0.58
Clothes and footwear; home furnishing and equipment; transportation	1558.471 (2.29)	0.340 (3.04)	0.42	0.56	-0.71
Housing, water, electricity, gas and other fuels; entertainment and culture	1994.862 (4.52)	0.257 (3.53)	0.45	0.43	-0.58
Restaurant and hotel services; telecommunications; tobacco; personal goods and services	3440.134 (5.37)	0.166 (0.73)	0.100	0.22	-0.35
Total	8698.769	1			

Note: Numbers in parentheses are t-statistics.

Source: Survey data.

Table 2 shows that the additional expenditure in 2013, which is the remaining part of the household income after purchasing the basic and necessary requirements from the expenditure groups, is redistributed to all expenditure groups in different proportions  $\sigma_i$ . Around 34% of this additional expenditure is spent on clothes and footwear, home furnishing and equipment, and transportation group, followed by the housing, water, electricity, gas and other fuels, and entertainment and culture group by 26% approximately. The proportion of expenditure to food and beverages, health, and education group is about 24%, followed by the restaurant and hotel services, telecommunications, tobacco and personal goods and services group about 17%. This shows the importance of these expenditure groups to the Saudi household and we can, therefore, say that the marginal propensity to consume shows the degree of preference of the various expenditure groups to the Saudi consumer.

Table 2 also shows that the expenditure elasticity coefficients  $n_{c_i}$  in 2013 for all groups were positive, ranging between 0.22 and 0.56. Thus, we notice that these values are less than one, which tells that all these groups are essential goods for the Saudi consumer. This indicates that an increase in income for the Saudi household will lead to an increase in demand on these expenditure groups but not by the same percentage increase in income. Moreover, in 2013, 1% increase in total expenditure was observed due to an increase in spending on the clothes and footwear; home furnishing and equipment; and transportation group by 0.56% while food and beverages; health and education group showed an increase by 0.45%. As for housing, water, electricity, gas and other fuels; and entertainment and culture group a 1% increase in total expenditure was observed due to an increase in spending by 0.43%, and finally the restaurant and hotel services; telecommunications; tobacco; and personal goods and services group expenditure increased by 0.22%.

As for price elasticity  $\eta_{ii}$ , Table 2 shows that price elasticity values for all groups were negative, where their absolute values range between 0.35 and 0.71, means that all coefficients are less than one. This indicates that demand on these expenditure groups is inelastic towards changes in price. Based on the result, when prices of the food and beverages; health; and education group, clothes and footwear; home furnishing and equipment; and transportation group, the housing, water, electricity, gas and other fuels; entertainment and culture group; the hotel services; telecommunications; tobacco and personal goods and services group increase by 1%, spending on these groups decreases by 0.58%, 0.71%, 0.58%, 0.35% respectively.

Finally, we notice that expenditure elasticity and price elasticity coefficients for the clothes and footwear; home furnishing and equipment; and transportation group are the highest among all other expenditure groups which indicates that this group, during the year 2013, was to some extent sensitive to changes in income and prices.

Table 3. Shows the results of estimating LES using SUR for the year 2018.

Expenditure Group	At the level of the household in 2018				
	$pY_i$	$\sigma_i$	$R^2$	$n_{c_i}$	$\eta_{ii}$
Food and beverages; health; education	2339.886 (9.11)	0.126 (2.92)	0.42	0.23	-0.33
Clothes and footwear; home furnishing and equipment; transportation	1622.737 (5.70)	0.289 (6.02)	0.72	0.50	-0.64
Housing, water, electricity, gas and other fuels; entertainment and culture	2824.662 (8.38)	0.165 (2.91)	0.42	0.25	-0.37
Restaurant and hotel services; telecommunications; tobacco; personal goods and services	2313.562 (6.63)	0.420 (5.26)	0.75	0.50	-0.71
Total	9100.847	1			

Note: Numbers in parentheses are t-statistics.

Source: Survey data.

Estimates of the marginal propensity to consume in Table 3 show that the major part of the increase in the Saudi consumer's budget in 2018 is spent first on the restaurant and hotel services; telecommunications; tobacco; and personal goods and services group at around 42%, followed by the clothes and footwear; home furnishing and equipment; and transportation group by about 29%. Third comes housing, water, electricity, gas and other fuels; and entertainment and culture group around 16%, and 13% is spent on the food and beverages; health; and education group.

Moreover, Table 3 shows that all expenditure groups are essential commodities for the Saudi consumer because the values of expenditure elasticity  $n_{c_i}$  for all groups are less than one, where they range between 0.23 and 0.50, which shows they are in the inelastic demand range. It is also evident that with an increase in total expenditure by about 1%, a 0.50% increase is indicated in expenditure on both the clothes and footwear; home furnishing and equipment; and transportation group, and the restaurant and hotel services; telecommunications; tobacco; and personal goods and services group. Second, comes the housing, water, electricity, gas and other fuels; and



entertainment and culture group that shows an increase by 0.25% followed by the food and beverages; health; and education group that indicates an increase in expenditure by 0.23%.

On the other hand, we notice that price elasticity  $\eta_{ii}$ , which measures the effect of price change in a particular item under budget constraints for all expenditure groups in 2018, has a negative value and its absolute value is less than one. This indicates that when the prices of the food and beverages; health; and education group, the clothes and footwear; home furnishing and equipment; and transportation group, the housing, water, electricity, gas and other fuels; and entertainment and culture group, and the hotel services; telecommunications; tobacco; and personal goods and services group, increases by 1%, the expenditure on these groups decreases by 0.33%, 0.64%, 0.37%, and 0.71% respectively. This means that all expenditure groups are not largely affected by changes in prices, which means that the demand on them is inelastic to changes in price.

Furthermore, expenditure elasticity and price elasticity coefficients show that the hotel services; telecommunications; tobacco; and personal goods and services group, and the clothes and footwear; home furnishing and equipment; and transportation group have the highest values, indicating that consumption of these two groups in 2018 was to a certain extent sensitive to changes in price and income.

**Table 4.** Results of LES estimation of the minimum household consumption expenditure for the years 2013 and 2018.

<b>Expenditure Group</b>	<b><math>p_i y_i 2013</math></b>	<b><math>p_i y_i 2018</math></b>
Food and beverages; health; education	1705.302	2339.886
Clothes and footwear; home furnishing and equipment; transportation	1558.471	1622.737
Housing, water, electricity, gas and other fuels; entertainment and culture	1994.862	2824.662
Restaurant and hotel services; telecommunications; tobacco; personal goods and services	3440.134	2313.562
Total	8698.769	9100.847
$\sum p_i y_i 2018 > \sum p_i y_i 2013 = 9100.847 > 8698.769$		
$9100.847 - 8698.769 = 402.078$		

Through [Table 4](#), we notice that the Saudi household in all administrative regions in the Kingdom of Saudi Arabia had a minimum amount of 8,698 Saudi Riyals to spend on all expenditure groups in 2013; and if the Saudi household's income is less than 8,698 Riyals/month, it will not be able to meet its needs from some different expenditure groups. We also notice that the minimum consumption expenditure in 2018 is higher than 2013, as the minimum in 2018 was estimated at 9,100 Saudi Riyals. This expenditure comparison indicates that if the household income is less than 9,100 Riyals/month, it will not be able to meet some of its needs from the different expenditure groups. The difference between the minimum household consumption expenditure for the two years is approximately 402 Saudi Riyals. The Citizen account is applied to fill in this gap. However, before comparing, we see that the value of the Citizen Account varies according to the family's size and income.

The minimum eligibility for the Citizen Account for a family of two (for example, the family head + a dependent aged less or more than 18 years) ranges between 542 - 626 Saudi Riyals ([Account, 2020](#)), the maximum payment made through the Citizen Account is 3,336 Saudi Riyals, and the average value that the Citizen Account pays is 1,960.033 Saudi Riyals. Thus, the results show that all these values are higher than the difference between the minimum household consumption expenditure for the two years. Therefore, the Citizen Account has covered the real burden that would be borne by low-income individuals as a result of increasing prices. In addition, the Citizen Account has contributed to maintaining the purchasing power of low- and middle-income Saudi households and guaranteeing them a good nutritional level, a fair standard of living, and good health status. Regarding the ability to obtain adequate food in the needed quality and quantity, which in turn keeps households healthy, active, and energetic, the difference between the minimum Saudi household expenditure on food, beverages, health, and education in 2013, estimated at 1,705 Saudi Riyals, and in 2018, estimated at 2,339 Saudi Riyals, was equal to 634 Saudi Riyals. This difference is greater than the average value of the Citizen Account ( $1960.033 > 634.584$ ). Based

on the above results, the Citizen Account contributed to making a change in the household budget by covering the extra costs resulting from the increase in prices and the imposition of taxes.

In addition, it contributed to maintaining the purchasing power of low-income families by securing adequate food for them and not always compromising the quantity or quality of their food portions. This contributes to accomplish the second pillar of achieving food security, which is the ability to obtain food, and stipulates the following: The ability of an individual or a family to bear the costs of purchasing food products is determined by livelihood, food prices, disposable income, social support, and accessibility (Nations, 2020). Therefore, we notice that the Citizen Account is sufficient in order to enable low-income families to obtain food at affordable price. That means the prices of food products are within reach of all individuals in case of the economic reforms that are expected to affect their spending on food products, in particular, and on the various expenditure groups, in general.

#### 4. CONCLUSION AND RECOMMENDATIONS

The results show the positive effect of the Citizen Account towards protecting low-income families and maintaining their purchasing power and food security, from the implications of the costs incurred from reforms. In addition, all expenditure groups in the two years are considered as essential commodities for the Saudi consumer, based on the results of the expenditure and price elasticities. The study recommends continuous support to low- and middle-income families and updating the Citizen Account according to the economic changes taking place and relevant research results. Moreover, it recommends that more studies be conducted on a regular basis to measure elasticity and consumption patterns to pursue the latest updates on demand as an indicator for guiding and planning consumption by the parties concerned with consumer welfare.

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