Estimating the consumption spending function in Algeria using the relative income theory for the period (1975/2018).

تقدير دالة الإنفاق الاستهلاكي في الجزائر بإستخدام نظرية الدخل النسبي للفترة (2018/1975).

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Abstract:

This study aims to estimate the consumption spending function using the theory of relative income in Algeria for the period (1975/2018), by focusing on the following variables: consumption spending, disposable personal income, the highest previous income. To complete this study, we should conduct Vector Autoregressive model VAR, Grange causality test, study response function and analyze variance components. The study concludes that the variables explain the consumption spending for the current year by 99.86%, and that creating any random shock in the disposable personal income affects consumption spending directly and positively and becomes negative starting from the fifth year, while causing a random shock at the highest previous income affects consumption spending directly and positively during the study period.

Key words: consumption spending, disposable income, Vector Autoregressive model, consumption function.

Jel Classification Codes : E01, E21, C52.

الملخص:

تهدف الدراسة إلى تقدير دالة الإنفاق الاستهلاكي بإستخدام نظرية الدخل النسبي في الجزائر للفترة (2018/1975)، وذلك بالتركيز على متغيرات الإنفاق الاستهلاكي، الدخل الشخصي المتاح، وأعلى دخل سابق، وعن طريق تقدير نموذج شعاع الانحدار الذاتي VAR، وإجراء اختبار السببية لغرانج، ودارسة دالة الاستجابة وتحليل مكونات التباين.

وتوصلت الدراسة إلى أن متغيرات كل من الإنفاق الاستهلاكي للسنة السابقة، والدخل الشخصي المتاح في السنة السابقة، وأعلى دخل في السابق للسنة السابقة تفسر الإنفاق الاستهلاكي للسنة الحالية بنسبة 99.86%، وأن إحداث أي صدمة عشوائية في الدخل الشخصي المتاح تؤثر على الإنفاق الاستهلاكي بشكل مباشر وموجب ويصبح سالب ابتداء من السنة الخامسة، بينما إحداث صدمة عشوائية في أعلى دخل سابق تؤثر على الإنفاق الاستهلاكي بشكل مباشر وموجب خلال فترة الدراسة.

الكلمات المفاتيح: الإنفاق الاستهلاكي، الدخل المتاح، نموذج شعاع الانحدار الذاتي، دالة الاستهلاك.

التصنيف JEL : **C52،E21،E01**.

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Introduction:

The study of consumption theories is extremely important in many aspects, perhaps the most important of which is the explanation of consumer behavior or factors affecting the volume of consumption in a way that helps decision makers and economic policy makers in understanding the nature of economic activity, consumption expenditure in addition to investment and government spending and net transactions with abroad are the most important components of aggregate demand when determining the level of income in short period, as the importance of these expenditures comes from their impact on domestic product and employment of national economy in short term, and that is why we see that when consumption, investment and government spending or exports increase, Domestic Product will increase.

Private consumption spending is also considered as one of the most important macroeconomic variables studied by many schools and classical or contemporary economic theories, as being the largest share of the Gross Domestic Product of many countries. In fact, many recent studies have begun to face the challenges of private consumption and enhance its role in advancing economic development, and there is no doubt that one of the most prominent theories interested in studying the factors affecting private consumption spending is the theory of relative income (**Duesenberry**), as it provides a scientific and logical interpretation related to private consumption and the factors affecting it, on top of which is the national income, as well as knowing the channels of its influence on economy.

This requires analyzing this variable in Algerian economy and knowing its dimensions, showing its motivation channels, the factors affecting it, and how to face its challenges; more importantly, attempting to estimate the private consumption function and its determinants according to what this theory proposes.

Statement of the problem:

This study was based on several ideas, the most prominent of which was the attempt to present a scientific and logical explanation for consumer spending function in Algerian economy, as the main question within this proposition is based on the following: **Does private consumption spending affect the relative income of families in Algerian economy in both short and long terms** ?.

Study Hypothesis:

The following hypothesis has been relied upon: The consumption expenditures of Algerian families are affected in short and long terms by their disposable income.

Study Objectives:

This study aims to:

- Define the most important factors and variables affecting private consumption spending.
- Detect the extent of the relationship between consumption expenditures and national disposable income to Algerian families in short and long terms.

Study significance:

The importance of estimating private consumption spending function and highlighting its relationship to disposable income comes from being a necessary condition for assessing and understanding the nature of national economy, especially since consumption spending is one of the most important components of Gross Domestic Income. In addition to that, this study is expected to contribute in identifying the imbalances and instabilities and to help in formulating successful reforms and initiatives that enhance the factors of economic growth in Algeria, in order to build a modern and stable economy based on a strong base characterized

by a high degree of internal integration among its various sectors and activities the thing that will guarantee the continuity and sustainability of economic growth.

Study limits:

The spatial limit of the study was limited to Algeria, while the temporal limit was chosen to be the period (1975/2018) as the fact that this field is sufficient and appropriate to use statistical and econometric methods in addition to the availability of data about the variables used during this period.

Study Approach:

This study relies on the analytical econometric approach to reveal the relationship between the most important macroeconomic variables affecting consumption spending for Algerian economy, and then analyze ,interpret and determine its trends using the relative income theory, the statistical method represented by Unit Root tests, and the econometric method Bonds or ARDL Testes in short and long terms.

Previous studies:

We can mention some economic studies that focused on the factors affecting private consumption, and discussed the topic of consumption spending, specifically private consumption, including:

- The study of (**Al-Hoshan, 2003**) entitled: "government spending and its impact on private consumption spending, the autoregressive trend method", a research published in the Journal of Economic Studies, the scientific series of the Saudi Economic Association, Volume IV, No. 07, Saudi Arabia. As this study discussed the impact of private consumption on local government spending in the Kingdom of Saudi Arabia in addition to some other variables, by analyzing the structural shocks of the variables under study using the vector automatic regression VAR during the period (1960/1997). The results were consistent with what was expected, especially with regard to the impact of local government spending, as the study confirmed that this variable plays the largest role in explaining private consumption behavior in the long term and that the policies aimed to stabilize this variable are of great importance. The study recommended working to stabilize local government spending as one of the most important policies.
- The study of (**Bechroul, 2011**) entitled: "Estimating family consumption spending function in Algeria using models of co-integration and error correction", which is a master study, Faculty of Economic and Management Sciences, Applied Economics and Statistics, University of Chlef, where the researcher conducted an econometric study aimed at building a model that explains family consumption in Algeria by relying on the application of co-integration methodology, and after studying the stationary of the model variables, it was found that they are all stable in the first differences, and this indicates the possibility of a trend to co-integration, and after testing Johansson he reached a trend to co-integration and this indicates the existence of a long-term balance correlation between consumption and its determinants (disposable income, interest rate), and this is confirmed by the "Angel-Granger" method, he also reached through the relationship of co-integration in both ways a direct correlation between family consumption and disposable income, and an inverse correlation with the real interest rate.
- The study of (**Al-Nuwaiser, Al-Bakr, 2018**) entitled: "The impact of private consumption on some macroeconomic variables in the Kingdom of Saudi Arabia", which is a paper for the Economic Research Department of the Saudi Arabian Monetary Agency, Saudi Arabia. The idea of this paper was launched from several data, the most prominent of which is an attempt to present a scientific and logical explanation that contributes in knowing the impact

of private consumption on the macroeconomic variables in the Kingdom of Saudi Arabia, and one of its most important goals is to examine the correlation between private consumption and some macroeconomic variables during the period (1980/2017), where the results from this paper indicated that there is a positive and statistically significant correlation between private consumption spending on one hand and the real GDP of the private sector, employment rates, non-oil government revenues, and price levels on the other hand. This may be due to the fact that the main driver of economic growth and employment rates, rates of prices and non-oil government revenues during the study period lies in private consumption spending.

I- Theoretical foundations of consumption spending function:

Consumption is one of the components of a country's total demand, it is also a welfare indicator of the society, and therefore, many researchers are working on consumer behavior with the various factors affecting it and the most important determinants of the private consumption function. (Al-Nuwaise & Al-Bakr, 2018, p. 4)

I-1- Definition of consumption spending:

Consumption means the access of individuals and families to various goods and services for their final use, i.e.it is the deductible part of the income that can be spent on purchasing goods and services to satisfy the needs and desires of the consumer (Al-Wadi & others, 2007, p. 225), It has been also defined by the economics dictionary as the process of destroying goods and services after satisfying people's needs for these goods and services (Cotta, 1975, p. 124).

Consumption can be seen as the quantity of goods and services that allow to satisfy the immediate needs of economic agents, and that represents the primary goal of all economic activities (Al-Hadj, 2005, p. 206), In addition to the process that enables individuals to satisfy their desires and at the same time leads to eliminate its benefit and value, the individual who consumes something actually works to eliminate the value of that thing (Hussein, 2005, p. 327). Consumer spending is the expenditure of income on goods and services, which can be used in the short period, and the process of consumption is not limited to individuals, but to all economic agents (Khalaf, 2007, p. 124).

Consumption can also be viewed from several angles; on the macroeconomic side, national accounting can analyze the flows of available goods and services to the consumer during a certain period of time by using macro data. In terms of microeconomic side, the flows of consumed goods and services are taken on the basis of their priority in the household spending plan. In theory, some consider the behavior of individuals in the distribution of wealth between consumption and other uses. (Maouchi, 2007, p. 4)

I-2- Factors affecting the consumption amount:

Despite the strong relationship between income and consumption confirmed in the so-called aggregate consumption function, however, there are many factors that affect consumption rates and consequently, the consumption function moves to the left, and thus leading to an increase in consumption or a consumption function moving to the right, which leads to a decrease in consumption, we can mention among these factors:

I-2-1 Wealth:

Wealth is defined as all individual property of financial and real estate assets, and wealth is considered to have a positive impact on consumption, if we assume that an individual owns shares in the financial market, when the stock price increases, the individual feels that his wealth has increased if he sold those shares and this leads to an increase in his consumption rates even if his monthly income does not change, he does not depend on his income because

his wealth is a potential purchasing power that drives him towards increasing his consumption. (Al-Wazani & Al-Rifai, 2006, p. 166)

I-2-2 Price level:

Consumption rates are affected by the prevailing level of prices, when prices rise, the purchasing power decreases, and consequently consumption rates decrease. For example, if prices increase by 5%, the purchasing power of a government bond owned by any individual by 5% will decrease, and this will be reflected in purchasing less goods and services. If price rates decrease, the purchasing power of money will increase but there are some cases in which this rule cannot be applied, where the required quantity tends to increase with the increase in price and decrease with the decrease in price, this means that there is a direct relationship between the price and the required quantity, and from these exceptional cases luxury, necessary and most urgent goods. (Kazem & Al-Muallem, 2001, p. 5)

I-2-3 Interest rates:

Interest rates are returns motivate saving, when interest rates increase, the missed opportunity for consumption increases and this leads to an increase in the level of savings, that is to say, spending less money on goods and services, thus, increasing interest rates will encourage savings, including a decrease in the level of consumption, and this makes consumption a competitive concept of saving as it is a delay of consumption at the present time to the future and a reasonable balance must be achieved between the two to reach the required level of satisfaction. (Maouchi, 2007, p. 13)

I-2-4 Expectations:

Expectations and forecasts about income, prices and wealth affect consumption rates, if someone expects an increase of his income in the coming year, he will buy more quantities of goods and services in the present, considering what he will receive in the future, although in general the more optimistic expectations are about income and wealth, the greater the consumption of individuals, and vice versa.

I-2-5 Demographic effects:

The increase in population in general means an increase in demand for consumption; however, the population dimension of consumption does not stop at the factor of population increase but rather extends it to the age distribution of the population, the educational and cultural dimension, and others. Although the increase in population means increasing consumption in the absolute, the age distribution of the population and the educational and cultural dimension creates diverse and constantly renewing consumption types, which means an increase in the volume of consumption, as society's culture can be known through the lifestyles of individuals, their customs, their religion and their general ambitions, as their role is very important in determining consumer behavior. (Al-Ghadeer & Al-Saed, 1997, p. 247)

The study and interpretation of consumption spending behavior and surrounding factors affecting it, will add importance to the study of the main characteristics of the consumption function and determine whether the function is relative or non-relative, this was done through modern consumption functions theories, including the theory of relative income , where several improvements were made to the previous Keynesian aggregate consumption function, by taking into account a number of factors affecting the consumption relationship through which these functions attempt to give alternative explanations for the relationship between consumption and income.

II- Relative income theory and interpretation of consumption behavior:

The content of the theory of relative income is based on that consumption is a dependent function of current income and last higher income, in fact, there were many views

regarding this hypothesis, the most one that received great attention was the economist J. Duesenbery's theory in 1949, as a an explanation of individual consumption behavior. His hypothesis falls within the framework of reconciling short-term consumption functions (non-proportional function) with long-term consumption functions (proportional function), and according to this study, the consumption behavior of individuals is determined by the following assumptions: (Al-Afandi, 2014, p. 204)

- The social environment in which the consumer lives, as the imitation element of others makes the consumer affected by his environment and not independent of the consumption pattern of society, the consumption of an individual increases if he lives in the vicinity of rich families and his consumption decreases if he lives near poor families, meaning that this function assumes that the preferences of consumers are not independent.
- The effect of the highest level of income achieved in the last period on consumption, the importance of the peak income as a determinant of consumption lies in that it indicates the families' stuck to maintain the standard of living achieved in the last period, and the explanation for this is that current consumption spending (C) depends on the level of income in the current period (Yt) in addition to the income achieved during the past few periods (Y_0).

Also, one of the most important issues presented by the theory of relative income and related to the nature of the relationship between the average propensity to consume and the marginal propensity to consume is the following: (Eugene A, 1984, p. 77)

- If the income is constantly increasing and higher than the peak income, then the average propensity to consume is constant and equal to the marginal propensity to consume. (APc = MPc)
- If the current income falls below the peak income, then the current or consumption will be affected by the standard of living determined by the peak income, therefore, the average propensity to consume increases and exceeds the marginal propensity to consume (APc> MPc)
- If the current income returns to increase, but it is less than the peak income level, the average propensity to consume decreases, while the marginal propensity to consume increases. However, the marginal propensity to consume is less than the average propensity to consume (APc <MPc).

Based on the previous assumptions and according to the theory of relative income, the consumption function is not relative in the short term and relative in the long term, it also indicates that the present consumption is dependent to the higher income that individuals or families reached in the past and their income in the current period, The consumption dependent can be formulated mathematically as follows:

$$\mathbf{Ct = bY_0 + c' Yt}$$

Where:

$\mathbf{Y_0}$: the highest income that was reached in the past.

Yt: income of the current period.

b: marginal propensity to consume of the peak income.

C': marginal propensity to consume of the current income.

Ct: present consumption, which is dependent to the higher income (peak) that individuals have reached in the past and income in the current period.

Periodic changes in income generate the consumption function in the short term if there are no economic cycles, we will only notice the consumption function for the long term. (Abidjman, 1998, p. 144)

J. Duesenbery relative income theory, when explaining the consumption behavior of individuals, has denied the validity of the Keynesian consumer law, and this is achieved by affirming that the marginal propensity to consume is equal to the average propensity to consume, and the list does not decrease when income increases, In addition, there is no independent consumption in the long period (ca = 0).

III- Description and formulation of the consumption function econometric model for Algerian economy:

According to the economic theory and previous studies that dealt with the factors affecting the consumption spending function and discussed in this study, the econometric model for the study problem will be described and formulated according to the theory of relative income, as follows:

III-1- Model specification:

For the purpose of formulating the model, we must know the corelation between the linear or non-linear variables. Therefore, we will estimate the various models and summarize them according to the values of their differentiation criteria in the following table:

Table n°1: Values of differentiation criteria to select the best model.

Standard / Model	Linear Model	The first half logarithmic model	The second half logarithmic model	Logarithmic Model
AIC	15.28588	17.29396	2.804660	-0.699568
SC	15.40753	17.41561	2.926309	-0.577918
HQ	15.33099	17.33908	2.849773	-0.654454
R2	0.960991	0.709418	0.720106	0.991584

Source: Prepared by researchers based on Eviews 9.0 outputs.

This table shows that the fourth model has the lowest values in its combined criteria, in addition to that, the determination coefficient which represents the extent of the ability of the independent variables to interpret the dependent variable and holds the largest value by more than 99.15%. Therefore, the best mathematical formula is the logarithmic model, i.e. adding logarithm to all study variables, this formula that we will rely on in the different stages of this study.

$$\boldsymbol{lcons_t = f(ly0_t,\ ly1_t)}$$

$$\boldsymbol{lcons_t = a_0 + a_1 ly0_t + a_2 ly1_t + \varepsilon_t}$$

III-2- Unit roots test:

Several tests are used to clarify whether the series is stationary or not, but the most well-known is the Augmented Dickey-Fuller test (ADF) and the Phillips-Perron test (PP), and since the random process may include a fixed limit or time direction, there are three different variations of the two tests, as shown in the following table:

Table n°2: Unit Root Test Results.

At First Difference			At Level			Test	Variables
Non	Trend and Intercept	Intercept	Non	Trend and Intercept	Intercept		
-1.041488 (0.2633)	-4.490662 (0.0046)	-3.847895 (0.0051)	2.097043 (0.9903)	-0.862131 (0.9509)	-2.190461 (0.2126)	ADF	LCONS
-1.457143 (0.1336)	-4.691138 (0.0026)	-4.042407 (0.0030)	4.213970 (1.0000)	-0.814564 (0.9562)	-2.189854 (0.2128)	PP	
-2.565197 (0.0116)	-4.879730 (0.0016)	-4.506681 (0.0008)	2.565082 (0.9969)	-0.015032 (0.9948)	-2.301349 (0.1762)	ADF	LY_0
-2.319587 (0.0213)	-4.818067 (0.0019)	-4.506681 (0.0008)	4.229590 (1.0000)	-0.015032 (0.9948)	-2.092738 (0.2485)	PP	
-6.239028 (0.0000)	-8.140353 (0.0000)	-8.149453 (0.0000)	3.270902 (0.9996)	-1.984450 (0.5930)	-1.462239 (0.5429)	ADF	LY_1
-6.251160 (0.0000)	-9.042486 (0.0000)	-8.426366 (0.0000)	3.789671 (0.9999)	1.837000 (0.6692)	-2.482336 (0.1267)	PP	

At Second Difference				
Non	Trend and Intercept	Intercept	Test	Variable
-8.257580 (0.0000)	-8.071926 (0.0000)	-8.176579 (0.0000)	ADF	LCONS
-11.36490 (0.0000)	-11.09551 (0.0000)	-11.27174 (0.0000)	PP	

Source: Prepared by researchers based on Eviews 9.0 outputs.

After applying the ADF, Phillips and Perron PP tests, we found that LCONS chain is stationary at the second difference, it is integrated of order 2 (I2), and that the time- series for the variables LY_0 and LY_1 are stationary at the first difference, and they are integrated at the first level (I1).

III-3- Determination of the Vector Autoregressive model (VAR):

III-3-1- Determination of the optimal lag period:

To determine the length of distributed lags, we use several criteria as shown in the following table:

Table n°3: Results of determining the optimal lag period.

Lag	LogL	LR	FPE	A/C	SC	HQ
0	- 26.101882	NA	0.000929	1.531675	1.660958	1.577673
1	162.9168	338.2438*	7.14e-08*	- 7.942988*	- 7.425856*	- 7.758997*
2	165.9243	4.906936	9.90e-08	- 7.627592	- 6.722611	- 7.305607
3	169.6932	5.554172	1.34e-07	- 7.352271	- 6.059440	- 6.892292
4	177.2767	9.978334	1.51e-07	- 7.277721	- 5.597040	- 6.679747
5	183.0937	6.735500	1.94e-07	- 7.110196	- 5.041666	- 6.374228
6	196.1577	13.06402	1.78e-07	- 7.324092	- 4.867712	- 6.450131

Source: Prepared by researchers based on Eviews 9.0 outputs.

Through the results of Table No.(3), and according to the criterion for selecting the optimum lag period, it became clear to us that the period 1 (Lag = 1) is the optimum lag period for the estimation of the Vector Autoregressive model.

III-3-2- Results of estimating the Vector Autoregressive model:

$$lcons_t = 0.199 + 1.063 * lcons_{t-1} - 0.295 * ly0_{t-1} + 0.223 * ly1_{t-1}$$

(16.9632) (-2.7414) (2.6799) (4.2069)

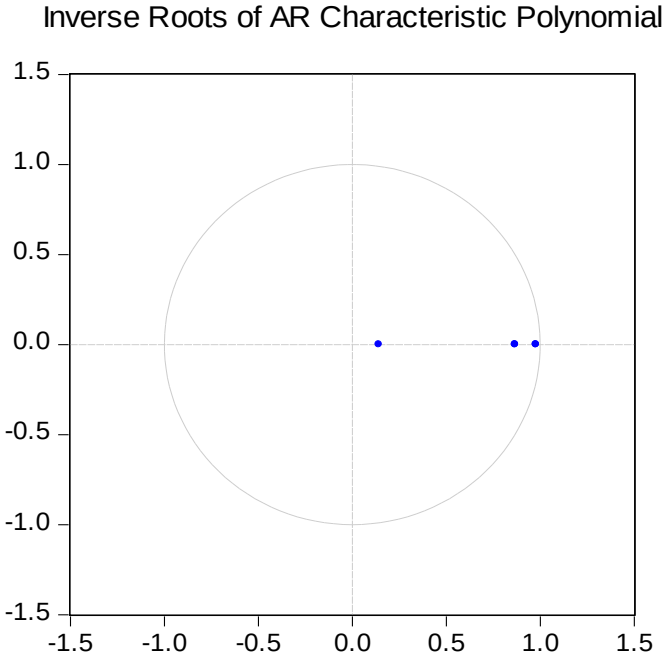
$R^2 = 0.9986$ $F_{STAT} = 9483..91$ $(.): t - student$ $n = 43$

Through the results of estimating the VAR model, we note:

- The model parameters for $\boldsymbol{lcons_{t-1}}$ ،$\boldsymbol{ly0_{t-1}}$ و ،$\boldsymbol{ly1_{t-1}}$ in addition to the fixed limit, has a statistical significance of 5%, because the calculated values for Student's absolute value are completely greater than the scheduled value of 1.96 at the level of 5%. This indicates that:
- Consumption spending for the previous year $\boldsymbol{lcons_{t-1}}$, affects the current consumption spending $\boldsymbol{lcons_t}$ positively.
- Personal income for the previous year $\boldsymbol{ly0_{t-1}}$affects the current consumption spending $\boldsymbol{lcons_t}$ inversely.
- The highest previous income for the previous year $\boldsymbol{ly1_{t-1}}$affects the current consumption spending $\boldsymbol{lcons_t}$ directly.
- There is a high quality of correlation because $R^2 = 0.9986$ i.e. the consumption spending for the previous year $\boldsymbol{lcons_{t-1}}$, personal income in the previous period $\boldsymbol{ly0_{t-1}}$, and the highest previous income $\boldsymbol{ly1_{t-1}}$, explain the current consumption spending $\boldsymbol{lcons_t}$ with 99.86 %.
- The model has overall statistical significance because the Fisher statistic which equals $F_{STAT} = 9483.91$ is completely greater than the value of the Fischer distribution F= (0.05،39،3), and thus the model as a whole is statistically acceptable.

III-3-3- Dynamic Stationary Test:

Figure n°1: Auto-regression Roots.



Source: Prepared by researchers based on Eviews 9.0 outputs.

Through Figure 1, we note that all the roots are within the unit circle which indicates that the VAR model is dynamically stable and strong.

III-3-4- Granger causality test:

To investigate for the short-run and the long-run dynamic interactions between the variables, we conduct Granger causality analysis and we found that:

Table n°4: Granger causality test.

VAR Granger Causality/Block Exogeneity Wald Tests
Date: 02/01/20 Time: 23:43
Sample: 1975 2018
Included observations: 43

Dependent variable: LCONS

Excluded	Chi-sq	df	Prob.
LY0	7.515770	1	0.0061
LY1	7.182214	1	0.0074
All	7.980867	2	0.0185

Dependent variable: LY0

Excluded	Chi-sq	df	Prob.
LCONS	5.343394	1	0.0208
LY1	4.156888	1	0.0415
All	8.181909	2	0.0167

Dependent variable: LY1

Excluded	Chi-sq	df	Prob.
LCONS	2.597558	1	0.1070
LY0	0.675274	1	0.4112
All	8.999864	2	0.0111

Source: Prepared by researchers based on Eviews 9.0 outputs.

- Concerning consumer spending, it was found that disposable personal income causes consumption spending because the value of chi-square Prob = 0.0061 is less than 0.05, and

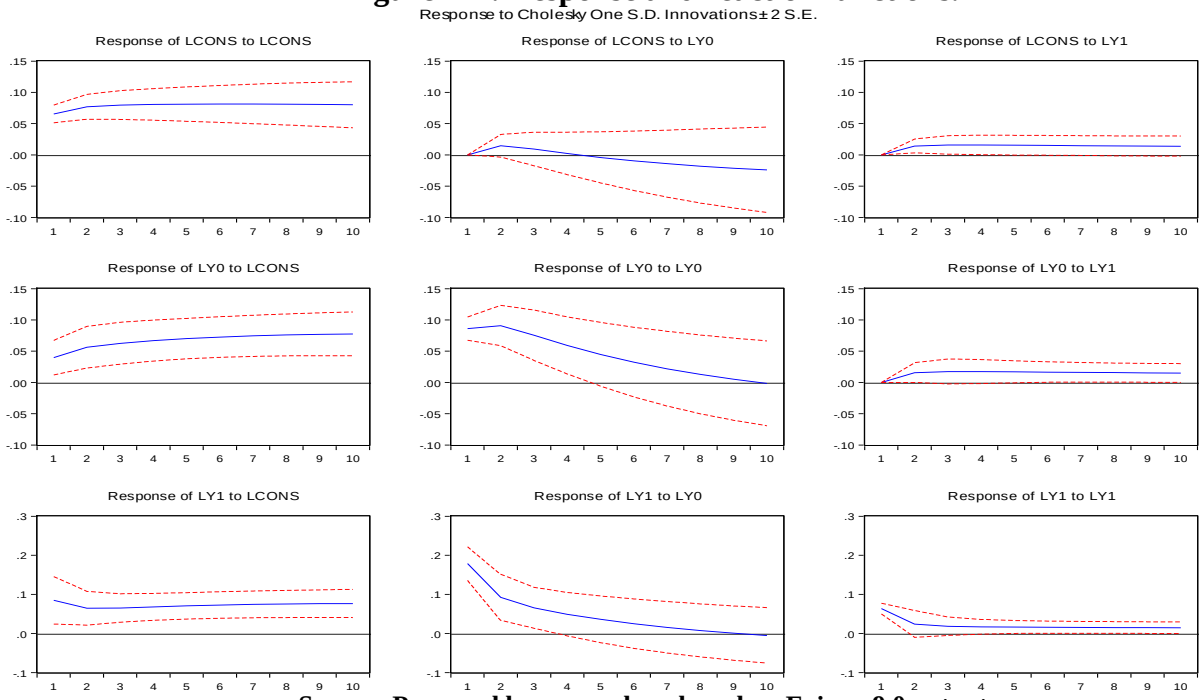
that the highest previous income causes consumption spending because the value of chi-square Prob = 0.0074 is less than 0.05 at 5% level of significance.

- Concerning personal income, it was found that consumer spending causes disposable personal income because the value of chi-square Prob = 0.1070 is less than 0.05, and that the highest previous income causes personal income because the value of chi-square Prob = 0.4112 is less than 0.05 at 5% level of significance.
- About the highest previous income, it was found that consumption spending does not cause the highest previous income because the value of chi-square Prob = 0.0208 is less than 0.05, and that the disposable personal income does not cause a higher previous income because the value of chi-square Prob = 0.0415 is less than 0.05 at 5 %.level of significance.

III-3-5- Response and reaction function:

Figure (2) below shows the response of the consumption spending to a random shock of one standard deviation in the disposable personal income, as its effect was null in the first year and then rises positively until it reaches 1.45% in the second year, then this effect begins to decline positively until the fourth year where it reaches 0.2%, then the gradual negative decline begins from the fifth year to the tenth year, and this means that any random shock in the disposable personal income affects consumption spending directly and becomes negative starting from the fifth year.

Figure n°2: Response and reaction functions.



Source: Prepared by researchers based on Eviews 9.0 outputs.

We also note that the response of consumption spending to the impact of a random shock of one standard deviation in the highest previous income was non-existent in the first year and then rises rapidly until it reaches 14% in the second year and then slowly goes up to reach 16% in the third year, after that, this effect begins to decrease gradually to reach 13.8% in the tenth year, meaning that any random shock at the highest previous income affects directly consumption spending during the study period.

We also conclude that the reaction response to consumption spending for a random shock effect of one standard deviation in consumption spending starts from the first year by 6.5% and then rises rapidly in the second year to 7.5% and after that gradually increases to the third

year and then this effect stabilizes positively from the fourth year. This means that any random shock in consumption spending affects consumption spending positively and directly during the study period.

III-3-6- Analysis of Variance component:

Table n°5: Variance Decomposition.

Period	S.E.	LCONS	LYO	LY1
1	0.065483	100.0000	0.000000	0.000000
2	0.102996	96.08808	2.008100	1.903818
3	0.131441	95.63367	1.733886	2.632449
4	0.155033	95.79962	1.267601	3.932777
5	0.175743	95.90077	1.040472	3.058762
6	0.194516	95.80928	1.088544	3.102180
7	0.211848	95.53638	1.360988	3.102635
8	0.228024	95.12475	1.795450	3.079802
9	0.243219	94.61820	2.337384	3.044419
10	0.257549	94.05340	2.943899	3.002698

Source: Prepared by researchers based on Eviews 9.0 outputs.

Table No. (5) shows the results of variance Decomposition of the consumption spending that comes from shocks of the model variables, where we note that the consumption spending explains 100% of the expected error variance in the first year when a shock occurs by one standard deviation in the same variable, and then it takes a gradual decline to reach 94.05% after ten years, and that the disposable personal income explains 2.94% after ten years, while the highest previous income explains 3% after ten years. These results confirm the importance of the variables: consumption spending, disposable personal income, the highest previous income in explaining consumption spending for different periods.

Conclusion:

The econometric study of estimating the consumption spending function in Algeria revealed a set of results, which can be summarized in the following points:

- The existence of a positive correlation between the highest previous income and current consumption spending related to the national economy.
- The estimation of the model showed that consumption spending and the highest income for the previous year affect positively the consumption spending for the current year, also the disposable personal income for the previous year affects consumption spending for the current year but in the opposite way, and that the variables: consumption spending for the previous year, disposable personal income in the previous year, and the highest previous income explain the consumption spending for the current year by 99.86%.

- The results of applying the Granger Causality test showed that there is a causal correlation between disposable personal income and consumption spending, and that this relationship is reciprocal as both variables affect each other, while the correlation between the highest previous income and consumer spending was a unidirectional one, as the highest previous income causes consumption spending, while the latter does not cause the highest previous income.
- The response and reaction function shows that the occurrence of any random shock in the disposable personal income affects consumption spending directly and positively and becomes negative starting from the fifth year, while the creation of a random shock in the highest previous income affects positively consumption spending, also it was found that causing any random shock in consumption spending affects consumption spending directly and positively during the study period.
- When analyzing the components of the variance of consumption spending, it becomes clear that these variables: consumption spending, disposable personal income and the highest previous income are important in explaining consumption spending during different periods.

In addition to these results, the following recommendations can be presented for this study:

- Algerian government should follow the policy of motivating private consumption and directing it towards local goods and services;
- Working to increase the contribution of private consumption expenditures to economic development, by directing consumer behavior and raising the level of domestic production, which leads to reducing financial flows abroad for imports;
- Directing the state's economic policies towards a fair distribution of income and wealth, in a way that gives more opportunities for people with limited incomes to increase the size of their financial savings and contribute to supporting private investment.

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Appendices:

Appendix No. 1: Time Series Data for the Study Variables for the period (1975/2018).

(**Unit**: one billion dinars)

Year	Cons	Y0	Y1	year	Cons	Y0	Y1
1975	29,5	49,0	54,2	1997	1411,7	2232,9	1939,8
1976	34,0	58,7	101,3	1998	1531,5	2214,7	2196,6
1977	42,6	68,7	80,4	1999	1642,3	2515,1	2856,2
1978	48,8	82,5	99,1	2000	1684,9	3340,7	4437,3
1979	56,2	99,1	119,0	2001	1817,3	3463,4	3590,6
1980	67,8	125,9	159,9	2002	1955,2	3695,6	3943,4
1981	84,6	149,7	178,0	2003	2090,6	4365,0	5155,6
1982	92,6	158,2	167,2	2004	2333,2	5137,6	6046,9
1983	103,0	177,3	198,7	2005	2510,4	6366,9	7890,3
1984	122,4	202,1	230,4	2006	2647,0	7195,1	8131,0
1985	136,4	220,3	240,1	2007	2908,9	8082,4	9079,1
1986	152,2	216,6	212,9	2008	3274,3	9516,3	11204,6
1987	149,9	224,7	233,1	2009	3677,6	8259,5	7168,7
1988	208,9	278,5	345,2	2010	4043,1	9951,7	11611,0
1989	257,2	362,2	471.1	2011	4475,5	11440,6	13152,2
1990	305,0	464,3	595,2	2012	5123,9	12822,1	14370.4
1991	410,0	705,8	1072,9	2013	5674,4	13045,3	13590,4
1992	538,8	870,2	1072,8	2014	6162,7	13235,3	13428,1
1993	639,0	925,8	984,9	2015	6745,3	12044,8	10961,4
1994	826,7	1201,2	1558,5	2016	7330,5	13306,5	14700,4
1995	1103,0	1620,2	2185,3	2017	7913,2	14101,3	14943,6
1996	1319,4	2040,7	2570,3	2018	8441,5	15597,4	17252,2

Source: National Bureau of Statistics data from the website: http://www.ons.dz