# Impact of social transfers on growth: evidence from Algerian economy using ARDL approach

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*Abstract :*

*The aim of this paper is to study the relationship between social transfers in their various forms and the economic growth in Algeria during the period 1993-2017. In order to achieve this objective, we conducted an econometric study in which the ARDL approach was used.*

*The results concluded that there is a cointegration relationship based on the bound test, and that housing support and Mujahideen support have long-term and short-term effects, and only a long-term effect for families support. Health support has only a short-term effect, and no effect for retirees supports.*

*Keywords: Social transfers, ARDL methodology, Cointegration.*
*JEL classificationcodes: A13, C13, C52.*

*Résumé:*

*L'objectif de cet article est d'étudier la relation entre les transferts sociaux sous leurs différentes formes et la croissance économique en Algérie au cours de la période 1993-2017. Afin d'atteindre cet objectif, nous avons mené une étude économétrique dans laquelle l'approche ARDL a été utilisée.*

*Les résultats ont conclu qu'il existe une relation de cointégration basée sur le critère lié et que le soutien au logement et le soutien aux moudjahidines ont des effets à long terme et à court terme, et seulement un effet à long terme pour le soutien des familles. Le soutien à la santé n'a qu'un effet à court terme, et aucun effet pour les retraités.*

*Mots clés : Transferts sociaux, méthodologie ARDL, cointégration.*
*Codes de classification JEL: A13, C13, C52.*

## 1. Introduction

All the countries of the world are seeking to increase their economic growth rates; hence, a range of programs are constantly being developed, including public spending policies that allow for government intervention in the economic life in order to reach balance in different sectors. On the other hand, these policies focus on the social aspect by allocating a part of the expenditure in the form of social transfers as a mean of raising the standard of living of individuals in society, combating unemployment, poverty and diseases, and providing social welfare of individuals. This would ensure a reduction in the disparities between castes and a redistribution of income among members of society, thereby contributing to its development and to reaching higher levels of short- and long-term prosperity.

A distinction can be made between two types of social transfers: conditional social transfers, and unconditional ones. The former includes a range of benefits for vulnerable groups, such as the very poor, the needy, the elderly and the young, which includes public works and employment insurance programs for the poor and the unemployed (Samson, 2009,p.04); The latter (unconditional social transfers) is practically defined as regular non-contributory payments from the government or non-governmental organizations to individuals or families, with the aim of reducing chronic or traumatic poverty, addressing social risks and reducing economic vulnerability. Transfers can be unconditional to families that effectively fulfill human development responsibilities (education, health, nutrition, etc.) or others (Samson, Michael and others, 2006, p. 02). UNICEF also defines the

social transfers as predictable direct transfers to individuals or families, both in kind and in cash, to protect individuals and families from shocks and to support the accumulation of human, productive, and financial assets (Armando Barrientos and others, 2014, p. 02).

Algeria is a developing country with problems and imbalances in the overall development process, particularly in the social aspect, and it is striving to find ways to address or at least reduce them, by increasing the social benefits of individuals through the so-called social transfers (housing support, family support, and support for Mujahideen[1], support for retirees, health support, etc.).

From the previous argument, the problem could be formulated as follows:

**Do social transfers, with their various items, affect the economic growth in Algeria, and is this effect both in the short and long term?**

In the context of this question, it can be assumed that:

The support for families and housing support have a positive impact on the economic growth in Algeria in the short and long term, contrary to support for health, support for Mujahideen and support for retirees that have a negative significance effect on the growth in the short and long term.

In order to answer the above problem, which consists of measuring the impact of social support on the economic growth in Algeria during the period of 1993-2017, econometric modeling can be relied upon by estimating an econometric model according to the autoregressive distributed lag model (ARDL). This choice is based on the properties of time series representing the variables under consideration.

To be familiar with our research variables, we present some previous studies: the first study, "Social Transfers and Growth, " by Juan M. Villa, an academic paper, at the World Institute for Development Economics Research, Manchester, Great Britain, 2014, and one of its most important findings is that most expectations are centered on the long-term effects of these interventions on growth, so that the short-term effects are at the local level. Previous findings have shown that the liquidity injections in the economy by families living in extreme poverty can benefit the none beneficiaries through increased income and consumption, from which the effects of social transfers on growth cannot be neglected;

The second study, "Social Transfers in Algerian Government Spending and their Impact on the Limited Income People", by Kamal Benmoussa and AbderrahmanAaya, is a paper published in the Journal of Economic Sciences, University of Algiers 3, Algeria, 2014, and one of its most important findings is that social transfers are characterized in Algeria by their constant rise, especially those aimed at subsidizing food prices, and by the fact that those who benefit not only the middle and weak income but also the rich, thus adversely affecting the economic and financial situation of the country;

The third study, "Social Transfers and Income Inequality," by**S.Mihaylova and S.Bratioeva**, a paper published in the Journal of South-Eastern Europe Economics and Business, Sarajevo School of Economics, Bosnia and Herzegovina, 2017. One of its most important findings is that social transfers reduce income inequality, but that impact varies by the type of conversion, since pensions are most effective because of their large share of total income, which also rises over time for families assistance that directly affects the income of the poor, but because of their limited share of the total income of beneficiaries, their impact on the overall inequality is much weaker.

## 2. Research methodology
### 2.1. Approach used

In order to answer the problem of our study, statistical tools, and appropriate econometrics modelling, will be relied upon, as these allow exploring the data of the study variables, to identify the problems, and to study their stability which requires the use of various programs, such as EViews-9 and Xlstat17.

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[1]Those who participated in the Algerian War of Independence against French.

### 2.2. Identifying the variables and their source

In order to study an economicphenomenon, the variables that affect it and control itsdevelopment must beidentified, as well as choosing the mostsuitable model for the presentedproblem, economically and mathematically.

**2.2.1 Data and variables identification:** the data used in this study were chosen according to the econometric model construction requirements. These data are the time series data for each of the study variables during the period 1993-2017, and to achieve accurate and near-real economic results, we must convert variables of significance values (at current prices) into real values (at fixed prices) by dividing them by the Consumer Price Index (CPI), which is taken directly from the National Statistics Bureau (base year 2001), noting that during the applied econometric study, the data will be extended to quarterly data during the same period. The following table summarize the variables that will be used:

**Table1.** Summary of the different independent and dependent variables of the study model
Source: Prepared by researchers according to the problem solving requirements

**2.2.2. Data sources:** the data used are taken from the World Bank for Data, collected from various departments of the Ministry of Finance and from the National Bureau of Statistics.

## 3. Data preparation

### 3.1. missing values and outliers, detecting and processing

| Variable's type | Name of the Series | The series' code |
|---|---|---|
| Dependent variable | Gross Domestic Product | (PIB) |
| Explanatory Variables | Housing Support | (SOU_HAB) |
| | Family Support | (SOU_FAM) |
| | Retirees Support/Assistance and Solidarity Expenditures | (SOU_ RET) |
| | Health Support | (SOU_SAN) |
| | Mujahideen' Support | (SOU_MOUD) |

The data series of different variables (dependent and independent) contain 25 views, which is the duration of the study period and therefore missing values do not exist. For outliers, their presence in data series is revealed by their box plotting. (Stephane, Tuffrey, 2012, p. 48)

Through the box plot of various study variables (see Appendix 01) during the study period (1993-2017), it is noted that there is one outlier in the housing support series, while both the anomalous and outliers are absent in all other study variables series, until this value is processed by replacing the nearest quartile value (Stephane, Tuffrey, 2012, p.49). In our case, the value of the third quartile is the closest value to the outlier in the series and it is valued at $\left(Q_3 = 1728.265\right)$ for the housing support series.

**3.2. Data series conversion:** the variables are converted by entering the decimal logarithm and then the data extension is performed to avoid the problem of data loss by obtaining additional data. Data series are extended by using the method (Chow-Lin) to extend the data series represented by the GDP, and the method (Cubic Spline) to extend the remaining series, from annual to quarterly data, where longer series of observations (from 25 to 100 observation) were obtained, (Jean Marie Cayemitte, 2010, p. 67).

## 4. Unit root tests and stationarity study

### 4.1. The Graph

**Figure1. The curves representing the evolution of the series' study variables during 1993-2017**
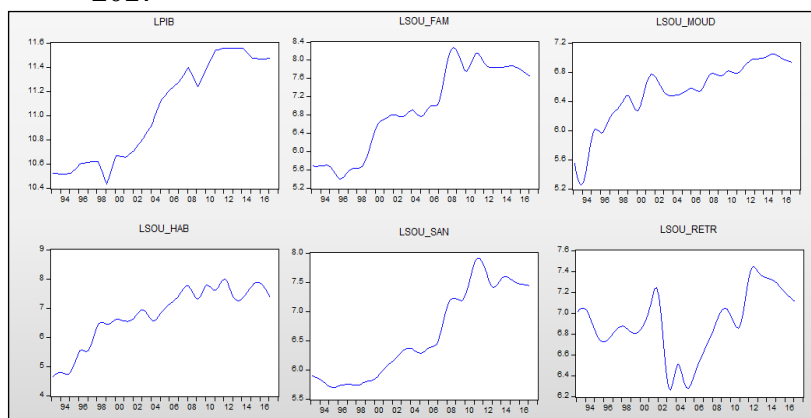


**Source:** Prepared by the researchers, using Eviews9 outputs.

Through Figure (1), which represents the graph curves of the evolution of the study variables series after introducing the decimal logarithm as well as the extension process from annual observations to quarterly ones, we note that all the study variables series are not stable as they should be, due to the high and low variations, which shows the non-stationarity of these series over time.

### 4.2. Unit root test

The results of the unit root test to study the series stationarity based on the Augmented Dickey-Fuller testare shown in the following table:

**Table2.** theAugmented Dickey-Fuller test results

**Null hypothesis: The series contains a unit root**

| Res -ult | lag | First differences test | | | At level test | | | Ser typ | variable |
|---|---|---|---|---|---|---|---|---|---|
| | | $\emptyset_1 = 1$ | c=0 | b=0 | $\emptyset_1 = 1$ | c=0 | b=0 | | |
| Augmented Dickey-Fuller test | | | | | | | | | |
| I(1) | 04 | No | yes | yes | yes | yes | yes | DS | (lPIB) |
| I(1) | 11 | No | yes | yes | No | No | No | TS | (lSOU_HAB) |
| I(1) | 01 | No | yes | yes | yes | No | yes | DS | (lSOU_RETR) |
| I(1) | 06 | No | yes | yes | No | No | No | TS | (lSOU_SAN) |
| I(1) | 08 | No | yes | yes | No | No | No | TS | (lSOU_MOUD) |
| I(1) | 11 | No | yes | yes | yes | No | yes | DS | (LSOU_FAM) |

**Source:** Prepared by the researchers, using Eviews9 outputs.

Through a readout study, the Augmented Dickey-Fuller test (Table 2) and the PP Test (Appendix 2), it can be concluded that all series settle after taking the first difference, i.e., they are first order integrated I (1).

## 5. Application of the ARDL methodology to study the impact of social transfers on the economic growth, case study of Algeria's economy (1993-2017)

The characteristics of time series representing our study variables (the level of stability, cointegration, and the existence of a balance relationship) were based on the most appropriate model and approach, thus the methodology of ARDL can be considered as the most appropriate for studying the impact of social transfers on economic growth in Algeria.

### 5.1. Testing the Cointegrationusing the ARDL Bounds Test and assessing the long-term balance relationship

Firstly, we have to test the cointegrationamong variables involved in the proposed model, and then we investigate the long-term relationship among them, if any.

#### 5.1.1. Model description

To study the long-term impact of social transfers on the economic growth, a standard model that explains economic growth will be assessed by the following independent variables: housing support, family support, retiree support/assistance and solidarity expenses, health support, and support for the Mujahideen sector. The model takes the form of a mathematical product, so that after introducing the logarithm, the model becomes linear and takes the following general form:

$$lPIB = \begin{pmatrix} lSOU\_FAM, & lSOU\_HAB, & lSOU\_RETR, \\ lSOU\_SAN, & lSOU\_MOUD \end{pmatrix}$$

After studying the stability of variables based on the unit root tests, it was found that all series settle in the first difference, which means that they are first-degree integrated I(1), thus the Autoregressive Distributed Lag (ARDL) would be the best to study the relationship among variables due to the fact that its estimated parameters will be more consistent than in other methods such as Angel and Granger (1987), Johansen (1988), as the Autoregressive Distributed Lag timelines are not affected by structural changes, in addition to allowing the relationship to be studied with delays (Dave Giles, 2017), (Mohammad Mafizir Rahman and Muhammad Salahuddin, 2010, p. 10)

$$LPIB_t = \alpha_0 + \alpha_1 lPIB_{t-1} + \alpha_2 lSOU_{HAB\,t-1} + \alpha_3 lSOU_{FAM\,t-1} + \alpha_4 lSOU_{RETR\,t-1} + \alpha_5 lSOU_{SAN\,t-1}$$

$$+\alpha_6 lSOU_{MOUD\,t-1} + \sum_{i=1}^{K_1}\beta_1 lPIB_{t-i} + \sum_{i=1}^{K_2}\beta_2 lSOU_{HAB\,t-i} + \sum_{i=1}^{K_3}\beta_3 lSOU_{FAM\,t-i}$$

$$+\sum_{i=1}^{K_4}\beta_4 lSOU_{RETR\,t-i} + \sum_{i=1}^{K_5}\beta_5 lSOU_{SAN\,t-i} + \sum_{i=1}^{K_6}\beta_6 lSOU_{MOUD\,t-i} + \mu_{1t}$$

#### 5.1.2. Testing the cointegrationusing bound test

The cointegrationis tested using the bound test based on Fisher's value to examine the meanings of the delay levels in the unconstrained error correction model, and compare it to critical tabular values divided into two groups: minimum values that require all variables to be integrated at level I(0), and higher values assuming that all variables are integral first-order I(1). The null hypothesis, or the no cointegration, is accepted, if it occurs below the minimum threshold, and rejected if it is greater than the upper critical values. And the third case is between the two values, in which case the test becomes inconclusive (Pesaran, 2001, p. 290); The results are shown in the following table:

Table3. The results of the ARDL Bound Test of the model

| Sample:1994$Q_1$ 2017$Q_1$ | Included observation: 93 | $H_0$ :No long-term relationship |
|---|---|---|
| Test Statistic | Value | K |
| F_statistic | 7.0529 | 5 |
| Critical Value Bounds | | |
| Significance | $I_0$ Bound | $I_1$ Bound |
| 10% | 2.26 | 3.35 |
| 5% | 2.62 | 3.79 |
| 1% | 3.41 | 4.68 |

**Source:** Prepared by researchers, using Eviews9 outputs.

In table (03), the calculated F statistic value of the model is 7.0529 and is greater than the upper threshold of critical tabular values (3.35, 3.79, 4.68) for significant degrees (5%, 10%, 1%), respectively, the null hypothesis must be rejected, which means that there is a long-term equilibrium

relationship that moves from the explanatory variables towards the dependent variable (Gross Domestic Product).

**Therefore**, since there is a long-term equilibrium and a cointegration relationship in the model, Error Correction testing can be performed, and the model that incorporates social transfer variables (1SOU_HAB, 1SOU_FAM, 1SOU_RETR, 1SOU_SAN, 1SOU_MOUD) explains the long and short-term economic growth (1PIB).

**5.2. The estimation of short-and-long-term parameters and error correction parameter**

**Table4.**the results of the estimation of short- and-long-term parameters and error correction parameter of the model

| ARDL Cointegration And Long Run Form | | Sample: 1993Q1 2017Q4 | | |
|---|---|---|---|---|
| Dependent Variable: LPIB/Selected Model: ARDL(2, 4, 4, 2, 0, 1) | | | | |
| Variable | Coefficient | Std. Er | t-Statistic | Prob. |
| D(LPIB(-1)) | 0.392742 | 0.092385 | 4.251167 | 0.0001 |
| D(LSOU_FAM) | 0.190024 | 0.192083 | 0.989283 | 0.3257 |
| D(LSOU_FAM(-1)) | -0.843433 | 0.853932 | -0.987705 | 0.3265 |
| D(LSOU_FAM(-2)) | 0.891708 | 0.604524 | 1.475059 | 0.1444 |
| D(LSOU_FAM(-3)) | -0.404158 | 0.183371 | -2.204042 | 0.0306 |
| D(LSOU_HAB) | 0.232825 | 0.117574 | 1.980248 | 0.0514 |
| D(LSOU_HAB(-1)) | -0.890225 | 0.546121 | -1.630087 | 0.1073 |
| D(LSOU_HAB(-2)) | 0.759165 | 0.394363 | 1.925041 | 0.0581 |
| D(LSOU_HAB(-3)) | -0.307140 | 0.124928 | -2.458529 | 0.0163 |
| D(LSOU_MOUD) | -0.238862 | 0.081661 | -2.925033 | 0.0046 |
| D(LSOU_MOUD(-1)) | 0.162639 | 0.071256 | 2.282458 | 0.0253 |
| D(LSOU_RETR) | -0.012202 | 0.008452 | -1.443693 | 0.1530 |
| D(LSOU_SAN) | -0.077307 | 0.044639 | -1.731838 | 0.0875 |
| CointEq(-1) | -0.060211 | 0.015103 | -3.986714 | 0.0002 |
| Cointeq = LPIB - (0.3484*LSOU_FAM + 0.4794*LSOU_HAB -1.0195 *LSOU_MOUD -0.2026*LSOU_RETR+ 0.0274*LSOU_SAN +13.4635) | | | | |
| Long Run Coefficients | | | | |
| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
| LSOU_FAM | 0.348371 | 0.164382 | 2.119271 | 0.0374 |
| LSOU_HAB | 0.479410 | 0.213085 | 2.249856 | 0.0274 |
| LSOU_MOUD | -1.019473 | 0.395408 | -2.578277 | 0.0119 |
| LSOU_RETR | -0.202646 | 0.133905 | -1.513359 | 0.1344 |
| LSOU_SAN | 0.027375 | 0.172057 | 0.159105 | 0.8740 |
| C | 13.463466 | 1.723239 | 7.812886 | 0.0000 |

**Source:** Prepared by the researchers, using Eviews9 outputs.

Having ascertained that there is a long-term equilibrium relationship according to the bounds test methodology, we estimate the short and long term parameters and the error correction model (ECM), and from table (04), there is a long-term, linear, and significant positive response to both family support (LSou_Fam) and housing support (LSou_HAB) from the dependent variable (LPIB) as well as a long-term, reverse and significant response to housing support (LSou_HAB) from the same dependent variable (LPIB. As for the rest of the parameters, the statistical significance is weak in the long term, these are the retirees support (LSou_Retr), and health support (LSou_Sant).

In a such  models, the coefficient of the variable $e_{t-1}$ called the error correction coefficient because it determines the adjustment speed and measures the amount of change in raw internal Gross

Domestic Product as a result of the deviation of all independent variables (conversion branches) in one unit in the short term from its long-term balance value. This coefficient must be statistically significant and negative in order for the model to be statistically acceptable and the closer its value to one, the speed at which short-term imbalances are adapted to long-term equilibrium is faster, and through the table 4, the error correction coefficient value is -0.0602, which is negative and significance at an indication level of 5%. This means that 0.06 of the short-term errors are automatically corrected over time and the long-term equilibrium is achieved after about 16.66 quarters.

## 6. Statistical, econometric and economic assessment

### 6.1. Statistical assessment of the model

**Table5. The model's statistical indexes**

| R-squared | Adjusted R-squared | S.E. of regression | Sum squared resid |
|---|---|---|---|
| 0.998952 | 0.999157 | 0.012992 | 0.012491 |
| F-statistic | Prob(F-statistic) | | |
| 4874.948 | 0.000000 | | |

**Source**: Prepared by the researchers, using Eviews9 outputs.

Based on the statistics in table 5, it is noted that the model is statistically sound, where the value of the determinant coefficient ($R^2 = 0.99$) is close to one, i.e. the estimated model explains 99% of the changes in the dependent variable (Gross Domestic Product), as the value F is large and estimated at 4874.948.

### 6.2. econometricassessment of the model

Before determining the long-term correctability of the model, and adopting it in the short-term impact study, the quality of its performance should be ascertained, using diagnostic tests, and through the appendix 3, it is observed that Breusch-Goldfrey's test with a pvalue=0.3003 is greater than 0.05, i.e. the null hypothesis is accepted, which means that the model does not have a problem of autocorrelation of the residuals, and the Breusch-Pagan-Godfrey test has a greater probability of error than (0.05), i.e., accepting the null hypothesis that is, the variance is constant, and also the **the J-B statistic is** estimated at (Prob=0.4168), which is greater than 5%, which means that the residuals are normally distributed. Also, based on the matrix of correlations that shows the square of the largest value of the simple correlation coefficient between any two independent variables in the estimated model has a value of 0.8836, which is less than the value of the threshold coefficient ($R^2$), which indicates that the model is free from the problem of linear multicollinearity (Damodar Gujarati Dawn C.Porter, 2009, p750). Finally, the Ramsey test comes to confirm the validity of the model designed in terms of the function figure where the probability value of the calculated statistical (Prob.F=0.2866) is greater than (0.05), thus our model does not suffer from any equation misspecification.

### 6.3. Economic assessment of the model

#### 6.3.1. The Evaluation and interpretation of the estimated model parameters in the short and long term

Through the results shown in table 4, family support in all its forms shows no impact on short-term Gross Domestic Product, while having a statistically significant impact in the long term, so that the partial flexibility of the Gross Domestic Product for family support is at 0.3483. In other words, increasing family support by 1% increases Gross Domestic Product by 0.3483% in the long term, and no effect in the short-term, which corresponds to the economic theory, because family support in all its forms (education support, support for some foodstuffs, energy materials support, etc.) has no

implications for the economy in general and economic growth in particular in the short term, but these effects are evident in the medium and long term. As the economic theory shows, equitable income distribution and support for the vulnerable poor will boost the economic growth by protecting these groups and encouraging them to activate the pace of productive movement.

The housing support factor indicates that the model has both a progressive and a significance response to the Gross Domestic Product in the short and long term, with a partial flexibility of Gross Domestic Product reaching 0.2328 on the housing support in the short term. Thus, the increase in housing support by 1% increases the Gross Domestic Product by 0.2328% in the short term, while the partial flexibility of the Gross Domestic Product reaching 0.4794 on the housing support in the long term. Thus, an increase in housing support of 1% would increase Gross Domestic Product by 0.4794% in the long term; This result is consistent with the economic theory, and as noted, the impact of housing support on the Gross Domestic Product was initially low in the short term and then increased in the long term. The result appears rapidly in the short term and improves in the long term. Thus, the provision of housing protects vulnerable groups and the poor, which may encourage them to raise production, and the outcome appears rapidly in the short term and improves in the long term.

As for the support for Mujahideen, there is a negative and significance response in the model on the Gross Domestic Product in both short and long terms, with partial flexibility of the Gross Domestic Product reaching -0.2388 on the support for Mujahideen in the short term, which means that increasing the support of Mujahideen by 1% leads to a decrease in the Gross Domestic Product by 0.2388% and vice versa, while the partial flexibility of the Gross Domestic Product was -1.0194 on the support for Mujahideen in the long term, i.e. the increase in the support for Mujahideen by 1% leads to a decrease in the Gross Domestic Product by 1.0194%. This result is also in line with the economic logic in the sense that the Mujahideen or veterans, are not a class of people that would improve the country's economic growth, and thus their support may have some adverse effects.

Health support also indicates an inverse and significance response to the GDP in the short term only, and it is acceptable at a significant degree of 10%. Hence, any increase in health support by 1% necessarily leads to a decrease in the Gross Domestic Product by 0.07%, and vice versa. Yet in the long term, health support has no impact on the Gross Domestic Product. Economically, the health sector is an unproductive sector and therefore the support directed to is with no economic benefit in both short and long terms.

As for the retirees' support, we notice that the probability of error is greater than 5%, whether in the short or long term, and this indicates the absence of any effect of the retirees' support on the Gross Domestic Product.

### 6.3.2. Assessment of the capabilities of the unrestricted error correction model (ARDL – ECM)

As aforementioned, the error correction factor value is (-0.0602) which is negative and statistically significant, which means that (0.06) of short-term errors are automatically corrected over time to achieve long-term equilibrium. In other words, when the economic growth in the short term period (t-1) deviates from the long-term balance value, (6.02%) of this deviation is corrected in time unit, and this policy needs about (H=1/0.0602=16.6113), (16) quarters, i.e. within (5) years, which is a medium response to its long-term balance value.

### 7. the structural stability test on the data of the ARDL UECM model

The structural stability of the model is tested using the Cumulative Sum (CUSUM), and the Cumulative Sum of Squares (CUSUM of squares). The following figure is a graph of the results of the two tests for the model:

**Figure 2: A graph representing the results of the two tests (CUSUM and CUSUM for squares) of the model**
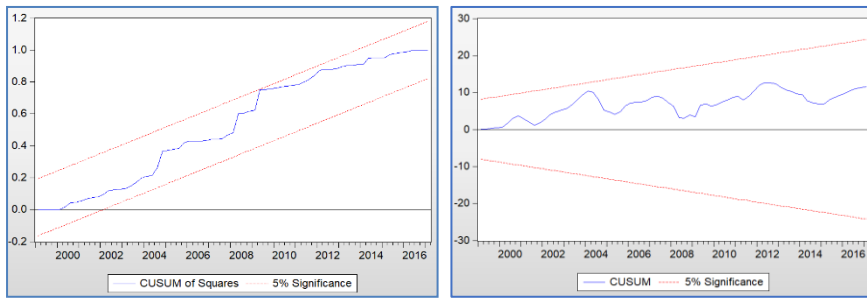


**Source**: Prepared by the researchers, using EVIEWS9 outputs.

Figure (02) shows the crossing of a linear medium within the critical area limits, indicating a type of stability in the model between long-term and short-term results, at a significant level of (5%).

## 8. Conclusion

In this study, we have examined the impact of social transfers on the economic growth in Algeria during the period (1993-2017), according to the Auto-Regressive Distributed Lag model (ARDL), whereas we first checked that the time series of study variables values are not missing, and while outliers are found, they were replaced with lower statistical values–nearest quartile–each time. And while using the Auto-Regressive Distributed Lag model (ARDL), the recursion of time series involved in the modeling was studied and all series were shown to be first-class integrated. We then went on to test the methodology of bound test which showed a complementary relationship between the variables in the short and long term, and thus a balanced relationship in the long term, which makes it compulsory to estimate the unrestricted error correction model.

The study reached some interesting results, the most important of which are:

- By examining the stability of the series of the study variables, it was found that they are stable at the first differences, allowing the application of the ARDL model, to examine the impact of social transfers on the economic growth in Algeria, which led to finding a common complementary relationship, and after the assessment of the unrestricted error correction model, which confirmed that this social policy would take about (5) years to demonstrate its long-term viability;

- The existence of a progressive effect of families support on the long-term economic growth only: for housing support, there is a significant developmental impact on the short- and long-term economic growth. With regards to the support of the Mujahideen and the support of retirees, they have a statistically significant negative impact on short- and long-term economic growth;

   While health support had negative short-term effects at a 90% confidence interval but no long-term impacts.

   For the validity of the search assumptions, The assumption regarding the positive short- and long-term impact of both family support and housing support on the economic growth in Algeria was accepted, and the assumption that there is a negative significance impact of health support, Mujahideen support, and retirees' support on the short- and long-term growth, was accepted as well.

   Considering the results of the study and a comprehensive view of the Algerian economy, we propose the following:

- Although some items of transfers have explicitly no positive effects on the economic growth, yet implicitly they have impacts on income redistribution, addressing poverty and improving education and health. It is therefore necessary to give more attention to the aspect of social transfers and subsidies and to direct them to those who deserve them;

- The social policy adopted by Algeria is a policy designed to reduce some social problems but it is not based on economic case studies, which would raise Algeria's economy to the status of developed countries. We recommend that the division of social transfer items should be based on case studies rather than lump-sum division, so that the impact would be more effective.

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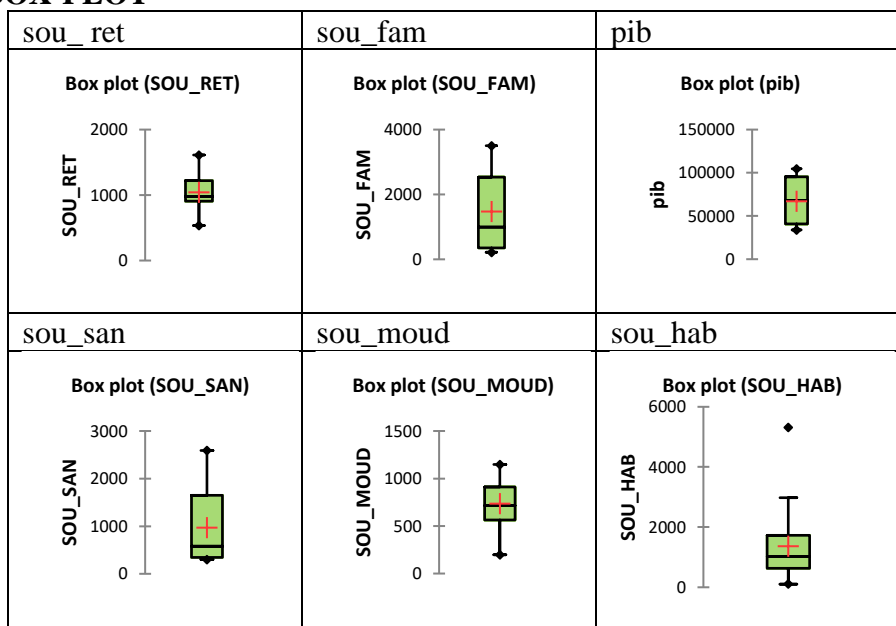
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## 10. Appendix:
## Appendix1. BOX-PLOT

| sou_ ret | sou_fam | pib |
|---|---|---|
| Box plot (SOU_RET) | Box plot (SOU_FAM) | Box plot (pib) |
| sou_san | sou_moud | sou_hab |
| Box plot (SOU_SAN) | Box plot (SOU_MOUD) | Box plot (SOU_HAB) |

**Source**: Prepared by the researchers, using XLSTAT17 outputs.

## Appendix2.Phillips-Perron tes

| Res-ult | lag | First differences | | | In the level | | | Seri type | variable |
|---|---|---|---|---|---|---|---|---|---|
| | | test $\emptyset_1 = 1$ | C=0 | B=0 | test $\emptyset_1 = 1$ | C=0 | B=0 | | |
| | | (Phillips-Perron test) | | | | | | | |
| I(1) | 04 | No | yes | yes | yes | yes | yes | DS | (lPIB) |
| I(1) | 11 | No | yes | yes | No | No | No | TS | (lSOU_HAB) |
| I(1) | 01 | No | yes | yes | yes | No | yes | DS | (lSOU_RETR) |
| I(1) | 06 | No | yes | yes | No | No | No | TS | (lSOU_SANT) |
| I(1) | 08 | No | yes | yes | No | No | No | TS | lSOU_MOUD) |
| I(1) | 11 | No | yes | yes | yes | No | yes | DS | ( LSOU_FAM) |

**Source:** Prepared by the researchers, using Eviews9 outputs.

## Appendix4.Results of assessment tests

### Firstly:(LM test-BG)

| Significance $(\alpha)$ | (F-Statistic) | | (LM=Obs*R-squared) | |
|---|---|---|---|---|
| | prob | Statistic | prob | Statistic |
| 5% | 0.3892 | 0.9560 | 0.3003 | 2.4059 |

### Second:(Breusch-Pagan-Goldfreytest)

| Significance$(\alpha)$ | (F-Statistic) | | (Obs*R-squared) | |
|---|---|---|---|---|
| | (Prob) | Statistic | (Prob) | Statistic |
| 5% | 0.0964 | 1.3068 | 0.1291 | 8.4277 |

### Third:(Ramsey test)

| Significance $(\alpha)$ | (F-Statistic) | (Prob.F) |
|---|---|---|
| 5% | 1.1522 | 0.2866 |

### Fourthly:Mulicollinearity

| LSOU_SAN | LSOU_RETR | LSOU_MOUD | LSOU_HAB | LSOU_FAM | variables |
|---|---|---|---|---|---|
| 0,94 | 0,38 | 0,84 | 0,90 | 1,00 | LSOU_FAM |
| 0,83 | 0,23 | 0,93 | 1,00 | 0,90 | LSOU_HAB |
| 0,78 | 0,34 | 1,00 | 0,93 | 0,84 | LSOU_MOU |
| 0,51 | 1,00 | 0,34 | 0,23 | 0,38 | LSOU_RET |
| 1,00 | 0,51 | 0,78 | 0,83 | 0,94 | LSOU_SAN |

### Jarque-BerratestFifth :

| Observations | Skewness | Kurtosis | Jarque-Bera | Prob |
|---|---|---|---|---|
| 93 | 0 ,274038 | 3,388863 | 1.749954 | 0,416872 |

**Source:** Prepared by the researchers, using Eviews9 outputs.