Social Public Spending Policy and Quality Of Life in Algeria: Econometric Study with ARDL Model during (1990-2018)

سياسة الإنفاق العام الاجتماعي وجودة الحياة في الجزائر: دراسة قياسية باستعمال نموذج الانحدار الذاتي للفجوات الزمنية الموزعة خلال (1990–2018)

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Received: 01/09/2020 ***Accepted: 14/11/2020*** ***Published:01/01/2021***

Abstract:

This study aims to explore the impact of public spending on education, health, transportation, wages on quality of life measured by household consumption index. Therefore, we conducted an econometric study (using ARDL model) over the period 1990-2018 to determine whether public social spending in Algeria is fundamental to improving the quality of life.

We found that spending on education; health and transport have a direct relationship with quality of life. While the mass of wages has an inverse relationship with it.

Keywords: Social Public Spending; Quality of Life; Econometric Study; Algeria.

JEL Classification Codes: H530, I310, C510.

ملخص:

تهدف هذه الدراسة إلى تحديد أثر الإنفاق العام على كل من التعليم، الصحة، النقل والأجور على جودة الحياة مقاسة بمؤشر الاستهلاك الأسري، ومن أجل ذلك قمنا بدراسة قياسية (باستعمال نموذج

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الانحدار الذاتي للفجوات الزمنية الموزعة) خلال الفترة 1990-2018 لتحديد ما إذا كان الإنفاق العام الاجتماعي في الجزائر يساهم في تحسين جودة الحياة.

لقد توصلنا إلى أن كل من الإنفاق على التعليم، الصحة والنقل له علاقة طردية بجودة الحياة بما يعني أنها تساهم بشكل إيجابي في تحسينها، ومن جهة أخرى بينت النتائج أن كتلة الأجور تربطها علاقة عكسية بجودة الحياة.

كلمات مفتاحية: الإنفاق العام الاجتماعي؛ جودة الحياة؛ دراسة قياسية؛ الجزائر.

تصنيفات JEL : H530، I310، C510.

1. INTRODUCTION

The emergence of the global crisis in 1929 (the Great Depression) led to profound changes in economic thought. It moved from the principles of monetary thought to the principles of financial thought expressed by Keynes which called for the intervention in economic activity through public spending. Due to the development of the state's concept and its contribution to economic and social life, therefore, public expenditure and public social expenditure particularly has paid great attention.

Public spending plays an important role in the national economy in terms of its ability to allocate resources to economic sectors. Therefore, it represents 30% of the total demand in the economy in many countries. The economists express the role of the state through a general law of finance. This law is implemented in the form of a rise in public expenditure, which aims to achieve economic and social development and stimulate economic growth.

Therefore, public spending is the most important economic policy that enables the state to implement its social objectives of raising the standard of living and well-being of the individual. We cannot discuss the effectiveness or success of fiscal policy unless it takes into account the social and economic dimensions.

Despite the material and moral gains of society from public spending, it faces the emergence of social, economic and regulatory problems. Among these problems which have been known in recent years by researchers - is related to the quality of life or living conditions. This means all the individual's dwelling, clothing, food, and drink. This is usually determined by the level of income, the environment in which they live, the social class to which they belong, and education, treatment, transport...

In this paper, we discuss the evolution of public expenditure in Algeria and its role in achieving social goals, through its impact on income, employment and the general level of prices. Through its expansionary policies, Algeria seeks to achieve economic and social development.

This study seeks to answer this problematic:

What is the impact of social public spending on quality of life in Algeria?

Based on the recent empirical studies we conduct an econometric study to determine the impact of social public spending variables (health sectors, education, transport, wages ...) on the proportion of household consumption spending to disposable income (approved by the World Bank as an index of the family's standard of living).

Before arriving to answer this problematic, we suggest the following hypothesis:

The social spending policy applied in Algeria has a positive impact on the quality of life through the household consumption index.

We aim through this research paper to know if the social policy applied in Algeria affects the quality of life through the household consumption index.

2. Literature Review:

2.1 Public Expenditure:

Public expenditure is ".... how much a monetary assessment can be ordered by a person of public law to satisfy a public need ..." (حامد، 2000، صفحة 378)

Or it is "... the use of a sum of money by a public person for the public good... " (صالح، 1988، صفحة 25)

It is also possible to say that" ... an amount of money paid by a public person to achieve public benefit ... " (السعيد، 1975، صفحة 57)

We can say it is "... a cash amount paid by a public treasury to satisfy a general need determined by its elements based on its character (monetary amount), the status of its existing (public body), and its purpose to satisfy the public need... " (يوسف، 1984، صفحة 173)

Among the most important objectives of the public expenditure or benefit that aims to achieve: (كمال، 1984، صفحة 42)

- Strengthening the allocation of resources in the economy.
- Income redistribution.
- Strengthening macroeconomic stability.
- Public expenditure can be divided according to its purpose: (عبد المطلب، 2000، صفحة 58)
- Administrative expenses: These are the expenses necessary to manage administrative affairs as user wages.
- Social expenditures: mainly aimed at achieving social development and solidarity.
- Economic expenditures: expenditures necessary to strengthen the industrial fabric, investment branches, infrastructure, such as roads.

2.2 Quality of Life:

The quality of life is "... the degree to which an individual enjoys the potential of his life in three life domains: family, work and health ... " (Mitchell, 1997)

And "…. satisfaction with self and a good life ..." (Andalamn, Attkisson, Zima, & Rosenblatt, 1999, p. 410)

Also, it is "... Enjoy the physical conditions in the external environment and the sense of good and satisfaction of needs and satisfaction with life, and the individual's perception of the strengths and content of his life and sense of life as well as positive physical health and the individual's sense of happiness and to live a harmonious life compatible between the essence of man and the values prevailing in his society.... " (فوقية و محمد، 2006، صفحة 204)

Through these definitions, we find it difficult to measure the quality of life. Although there are several indicators to measure it, most of it is not comprehensive. Among the measures of quality of life, we mention: (Torgerson & James, 1999, pp. 1413-1414)

- Qualitative measures: They are the measures associated with specific situations, conditions, samples, and objectives.
- General or comprehensive measures: These include questions about the general health of the individual and his different areas of life.
- Measures based on benefit and interest: These include the preferences of the individual in certain periods.

In general, "the researcher must rely on measuring the quality of life of a certain group in a simple, easy, clear and precise language. That cannot be tolerated more than a feeling or a situation ..." (إيمان، 2013، صفحة 75)

2.3 Previous Studies:

There are several economic studies on the relationship between public spending and living conditions (quality of life).

The UN universal declaration of Human Rights (UN, 1948) recognized that a person requires basic services such as nutrition, clothing, housing and medical care for his and his family's welfare and this will only be through the intervention of the state to meet these economic rights.

The World Bank's Development Report in 1999 (World bank, 1999) showed that the development of health, education spending and wages directly contributes to improving the quality of life. The report also pointed out that economic growth is not important unless accompanied by the real development of human capabilities reflected on an adequate standard of living.

(Alvarez-Diaz, Gonzalez, & Radcliff, 2010) Examine the effects of state-level political factors on quality of life, by using welfare spending as a dependent variable. They found that quality of life varies directly with the ideological complexion of public policies (the degree of liberal government).

(Bayraktar & Moreno-Dodson, 2015) Explore the relationship between public spending and growth in two sample countries (7 fast-growing developing countries and 7 other developing countries). They found that the impact of public spending on economic growth is different in the two groups. The public spending can be a significant determinant of growth if countries devote a part of these expenditures to the production.

(Makuta & O'Hare, 2015) Study the impact of the quality of governance and the public health spending on health by using the two-staged LS regression technique on panel data from 43 countries during 1996–2011. The authors found that public spending and quality of governance have a statistically significant impact on health.

(Dutu & Sicari, 2016) Use data envelopment analysis (DEA) to assess the efficiency of welfare spending in a sample of OECD countries around 2012, focusing on health care, secondary education and general public services. The authors had found dispersion in efficiency measures across OECD countries in terms of input efficiency regarding public spending.

(Fournier & Johansson, 2016) Investigate the effects of public spending on growth and inequality in a sample of OECD countries. The study concludes that the increase in the size of government, subsidies and education reform reduce inequality and benefit the poor.

(Mafrolla & D'Amico, 2016) Examine the impact of public spending on the supply of leisure services on citizens' spare-time quality of life. They Used data from 103 Italian capital municipalities covering the period 2007–2010. The analysis revealed that public spending on leisure (tourism, sport, and culture) impacted the spare-time quality of life.

(Fiseha & Miguel, 2018) Investigate the question of whether government social spending has a causal effect on human development. They focused on three measures of aggregate welfare, the IHDI, child mortality and the conventional HDI using a panel of 55 low-income and middle-income countries over the period 1990–2009. Their study concludes that social spending is a strong predictor of improved aggregate welfare in

low-income and middle-income countries. They found that social spending has a significantly positive causal effect on the IHDI.

(Barhoumi, Vu, Towfighian, & Maino, 2018) This study Deals with public investment in sub-Saharan Africa. The authors found that public investment efficiency differs within the region. The public investment efficiency in oil exporters' countries tends to be lower than in non-resource-intensive countries. This study showed a positive correlation between public investment and the quality of institutions.

From the previous econometric studies, we observed that most of them were about the impact of public spending on quality life's spending or economic growth. Our study differs from others because we have studied empirically the impact of public social spending on the most important index of quality of life (Percentage of household consumption to disposable income). Our model is based on the World Bank Report mentioned above.

3. Econometric Study:

3.1 Formulation of the Model:

To develop an adequate econometric model, it must determine the necessary variables that have a direct relationship to the study. We'll work to determine the impact of the social spending variables and quality of life in Algeria over the period (1990-2018). The data are from the word Bank database (World bank, 2019), Bank of Algeria (bank of Algeria, 2019), and the National Office of Statistics (ONS, 2019) and we will apply the following model:

$$CONS_t = f(EDUC_t, SANT_t, TRAN_t, SALA_t)$$

Assuming the linear relationship between the variables and by entering the logarithm, the model is written as follows:

$$\text{Log CONS} = C + \beta_1 \text{LogEDUC} + \beta_2 \text{LogSANT} + \beta_3 \text{LogTRAN} + \beta_4 \text{LogSALA} + \varepsilon_i$$

Where:

- CONS: Percentage of household consumption to disposable income.
- EDUC: Percentage of expenditure on education to GDP.
- SANT: Percentage of expenditure on health to GDP.

- TRAN: Percentage of expenditure on transport to GDP.
- SALA: Percentage of wage mass to GDP.
- C: constant, β_i: parameters to be estimated, ε_i: random error.

3.2 Results:

Unit Root Test:

Before estimating the model, it is necessary to apply unit root test in order to know the degree of stationary of the time series. Therefore, we will apply the ADF stationary test which depends on the lag length. The lag length is defined automatically.

The following table shows the results of ADF test:

Table 1. Unit Root Test Results

Variables		5% Level	T-statistic	Prob	Decision
LogCONS	At level	-1.95	-1.10	0.23	I(1)
	First Difference	-1.95	-5.63	0.00	
LogEDUC	At level	-1.95	-0.84	0.46	I(1)
	First Difference	-1.95	-7.07	0.00	
LogSANT	At level	-1.95	-1.74	0.07	I(1)
	First Difference	-1.95	-4.39	0.00	
logSALA	At level	-1.95	0.44	0.80	I(1)
	First Difference	-1.95	-5.30	0.00	
LogTRAN	At level	-1.95	-4.22	0.00	I(0)

Source: Eviews 10 outputs

From the table 1, we showed that all the variables are stationary at the first difference I(1) except the expenditure on transport that is at level I(0). Therefore, we can estimate the model by using the ARDL model (Auto-Regressive Distributed Lag models) presented by (Pesaran, Shin, & Smith, 2001) which based on bound test.

Before applying bound test, we must determine the optimal lag length:

Table 2. Lag Length Test Criteria Results

Lag	LogL	LR	FPE	AIC	SC	HQ
0	66.42	NA	5^e-09	-4.91	-4.76	-4.84
1	130.91	98.025	2^e-10	-8.07	-6.61	-7.66
2	166.45	39.802*	1^e-10	-8.91	-6.23	-8.17
3	216.28	35.878	4^e-11*	-10.9*	-7.00*	-9.82*

Source: Eviews 10 outputs

We conclude from the table 2 that the optimal lag length is 3 according to the AIC, SC, and HQ test because they have the lowest value.

Co-integration Test (Bound Test):

The following table shows the results:

Table 3. Bound Test Results

Test statistic	value	Signification	I(0)	I(1)
F-statistic	4.151981	10%	2.2	3.9
k	5	5%	2.56	3.49
		1%	3.29	4.37

Source: Eviews 10 outputs

The F statistic value (4.15) is greater than I(1) values at 5 %, so we reject the null hypothesis and accept the alternative hypothesis, implying that there is a long-run relationship between the variables.

Estimation of the Model:

We estimated the model coefficients for the long and short-run. The results are shown in table 4:

Table 4. Short and Long-Run Estimation Results

variables	Coefficient	Std.Error	T- statistic	Prob
D(LogEDUC)	0.597612	0.091129	6.557862	0.0002
D(LogSANT)	0.090176	0.052182	1.728094	0.0971
D(LogSANT(-1))	0.130386	0.034876	3.738550	0.0057
D(LogTRAN)	0.027917	0.016816	1.660132	0.0987
D(LogTRAN(-1))	0.195148	0.036536	5.341282	0.0007
D(LogSALA)	-1.609395	0.593388	-2.712211	0.0266
D(LogSALA(-1))	-1.411055	0.501867	-2.811611	0.0228
CointEq(-1)*	-0.348004	0.073299	-4.747741	0.0014
LogEDUC	2.03555	0.66500	3.060977	0.0156
LogSANT	0.27034	0.14398	1.877621	0.0973
LogTRAN	0.48376	0.32200	1.502360	0.0989
LogSALA	-7.4688	5.31235	-1.405931	0.1974
C	25.8161	17.5872	1.467891	0.1803
R^2	0.880987	AIC	-3.414580	
R^2adj	0.795661	SC	-2.829520	
F pro	0.000000	HQ	-3.252309	
DW	2.003432			

Source: Eviews 10 outputs

From the table 4 of short and long-run estimation, we noticed that:

1. The error correction coefficient is negative and significant. This negative signal confirms the convergence from the short-run equilibrium to the long-run equilibrium by 34%.
2. The independent variables explain 79% of the dependent variable.
3. The calculated T-statistics show that all the parameters of the model have a statistical significance at 1%, 5% and 10%, except LogSALA in long-run and we can note that:
   - There is a significant positive effect of the education expenditure on household consumption in the short and long run. An increase in expenditure on education by 1% leads to an increase in household consumption by 0.59% and 2.03% respectively
   - There is a significant (at 10%) positive effect of health expenditure on household consumption in both the short and long run, a 1% increase in health spending leads to increase household consumption by 0.09% and 0.27%, respectively.
   - There is a significant (at 10%) positive impact of transport expenditure on household consumption in the short and long run. An increase in transport expenditure by 1% leads to an increase in household consumption by 0.02% and 0.48%, respectively.
   - There is a significant negative effect of the wage mass on household consumption in the short run. An increase of wage mass by 1% leads to a decrease in household consumption by 1.6%. In long-run there is no significant negative effect. An increase of wage mass by 1% leads to a decrease in household consumption by 7.46%.

Diagnostic Tests:

Table 5. The Diagnostic Tests Results

Tests	F-Statistique	Prob

B-GSC LM	0.52	0.34
Heteroskedasticity	0.62	0.43
Jarque-Bera	1.11	0.57
Ramsey Reset	0.20	0.65

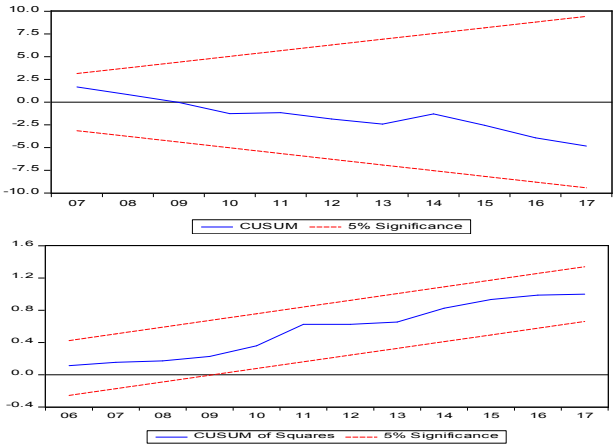
Source: Eviews 10 outputs

From this table and based on (prob>0.05), we denote:

- There is no autocorrelation of residuals.
- The variance is stable.
- The residuals are normally distributed.
- The model is correctly specified.

Based on (CUSUM and CUSUM^2 test), the model is structurally stable.

Fig 1. CUSUM and CUSUM^2 Tests



4. Discussion:

This study aimed to identify the impact of social public spending (education, health, transport, wage mass) on quality of life as measured by the household consumption index. The results indicate that there are some variables have a positive impact on the quality of life while other variables have a negative impact. We will discuss the results as follows:

The expenditure on education has a positive impact on consumer spending; this result is consistent with the previous economic studies. Since independence, Algeria has paid great importance to education by increasing

the public expenditure on this sector and boosting its productivity. The figures confirm that public expenditure on education has a positive effect on the number of students, teachers, and educational institutions. The improvement of wages leads to an improvement in the standard of living of the members of this sector which leads to an increase in household consumption.

The expenditure on health has a positive impact on the level of household consumption. Health is the major social goal of all countries. Several empirical studies have shown that countries with health problems are experiencing very slow growth rates. Algeria has made great efforts to develop this sector by raising the number of doctors and hospitals and materials. The positive effect of health expenditure on household consumption was the result of the increase in the number of employees, the improvement of their wages and the decrease in the number of deaths. Nevertheless, the health sector remains below the expectations of citizens because of the health inequality and the disparity in the distribution of health services among the citizens and the geographical regions which are mainly concentrated in the major areas. Therefore, it is necessary to work on the equitable distribution of the services of this sector to contribute more to growth rates

The expenditure on transport is positively related to household consumption. This result is agreed with economic studies. The demand for transport is necessary to facilitate the mobility of people and goods. Despite the rising of public spending in this sector, it contributes little to the gross domestic product (GDP). Because a large proportion of this spending goes to the re-evaluation of projects or maintenance of roads and bridges, as is the case in the East-West Highway.

The mass of wages is linked negatively to household consumption. This result is not consistent with the economic theory because the wage stimulates consumption. Since the majority of consumer goods in Algeria are imported at higher prices, this discouraged consumption. In the case of the consumption of domestic goods, the increase in wages leads to increase

demand and thus increases production which contributes to economic growth.

5. CONCLUSION

Due to the pioneering role played by the state in the economy (improving economic indicators as the rate of economic growth), there is necessary to give great attention to the social aspect. The modern economic theories have proved that human capital is among the most important determinants of economic growth.

In this regard, public expenditure must be dealt with seriously, especially social public spending. Increasing spending on health, education, transport and the level of wages improves human capital which is the source of development. The state must ensure also an adequate, rational and stable level of social spending.

Through our study, we can accept the hypothesis that social spending positively affects the quality of life in our country. Algeria, like other developing countries, seeks to provide adequate spending on the social sector. Health services and education are free but it is not available for all populations for reasons of mismanagement and waste. The majority of the population especially the poor and the minorities do not access public services as health care in particular. This poses a great challenge to the government, which should be taken seriously.

Among the problems of the transport sector, which made it not contribute much to the economic growth and affected the standard of living of the population is the re-evaluation of projects. It is, therefore, necessary to develop serious studies by experts who can reduce this problem.

For the wages, Algeria is one of the least-paid countries in the world (the average wage is 293 dollars per month). In this case, wages have an inverse relationship to the standard of living. Despite the little increase in wages in many sectors, it is accompanied by a significant increase in the prices of goods and services and the depreciation of the local currency. The state must control prices, impose strict control over monopolists and establish a flexible wage scale through insertion a grant that changes with

the rate of inflation. In this case, the wages will have a positive role in achieving the well-being of the individual.

Public spending on health and education increases the growth of human capital, which is the engine of development. Therefore, the authorities focus on the social aspect by paying more attention to education, health, and communication. In order to ensure the effectiveness of this policy and to achieve the objectives, it is necessary to ensure that this expenditure goes to the intended purpose. Providing the basic conditions for a living is the first incentive for the individual to carry out his economic duty. Therefore, the state must periodically evaluate the implementation of the objectives in the social expenditure programs by using real economic indicators that reflect the reality of living

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