

The relationship between fiscal policy and economic cycle: A case study of Algeria

العلاقة بين السياسة المالية والدورة الاقتصادية : دراسة حالة الجزائر .

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Abstract

This study aims to explain relationship between fiscal policy and economic cycle in algeria .using yearly data from 1980to 2020 and ardl model (the autoregressive distributed lag) approach given by pesarsn et al (2001), the cointegration test indicates the existence of long –run relationship between fiscal policy and economic cycle in Algeria .the studay showed a positive effect of revenues and economic growth and expenses is negative wich means that there is a negative relationship between expense and economic cycle in Algeria during 1980-2020.

Keywords:: economic cycle.,expenses .revenues, fiscal policy . ARDL .Algeria.

JELClassificationCodes: E₃ . E₆. H₃. C₂₂.

ملخص:

تهدف هذه الدراسة لشرح العلاقة بين السياسة المالية والدورة الاقتصادية في الجزائر باستعمال بيانات سنوية ممتدة من 1980 إلى 2020 والإعتماد على منهج *ARDL* (نموذج الإنحدار الذاتي للإبطاء الموزع) المستمد من *pesarsn* وآخرون في سنة 2001. يشير اختبار التكامل بوجود علاقة طويلة الأجل بين السياسة المالية والدورة الاقتصادية في الجزائر. توصلت الدراسة إلى وجود أثر إيجابي بين الإيرادات والنمو الاقتصادي والنفقات تؤثر بالسلب وهذا يعني وجود علاقة بين النفقات والدورة الاقتصادية في الجزائر خلال الفترة 1980-2020. كلمات مفتاحية: دورة اقتصادية، نفقات، إيرادات، السياسة المالية، *ARDL* الجزائر.

تصنيفات JEL E₃ . E₆. H₃ . C₂₂

INTRODUCTION:

The economic cycle is referred to as the business cycle, They are economic fluctuations in the form of stages that may be expansionary or contractionary.

Fiscal policy is the most important macroeconomic policy that influences economic activity through alterations in government expenditure and/or taxation. Start the importance of fiscal policy since 1929 there are a growing number of research models that attempt to explain the relationship between the economic cycle and fiscal policy. (Nguyen, 2023).

This paper present an empirical analysis of relationship between the economic cycle and fiscal policy in Algeria during 1980 to 2020. The paper organized as follows. In continue and in second section, empirical literature are described. Third section of study attributed to introducing methodology. In fourth section, Research findings are presented and the final section is devoted to conclusions.

Affects the economic cycle of fiscal and monetary policies, so we will try in this research paper to clarify the impact of fiscal policy

The research tests two main hypotheses:

H1: There is a positive effect between fiscal policy and economic cycle in Algeria.

H2: There is no integration relationship between the variables.

2- literature Review

There are a number of empirical studies that show The relationship of fiscal policy and economic Cycle , For example . **Barro's (1979)** hypothesis states that tax rates must be maintained at constant levels throughout the business cycle. Keynesian economists have been urging low-income . Keynesian economists have been urging low-incom developing countries (LDCs) to raise their tax burdens and reduce their recurrent spending in order to boost their savings in the government budget. However, there are a number of problems with these policy recommendations, such as a lack of specificity in analyzing the relationship between macroeconomic variables and a disregard for fundamental features of fiscal policy, such as the efficient allocation of financial resources, equitable distribution, and long-term stability. (Nguyen, 2023). The following are some studies that study the subject :

- ✓ This paper (Creel, 2002) employs an open economy version of the Leith and WrenLewis (2000) model to conduct a detailed analysis of the relationship between fiscal and monetary policy is explained by integrating monetary variables with financial variables such as revenues and net wealth a comprehensive examination of the potential impacts of public debt on the inflation rate, eliminating the need to introduce seigniorage or an inflationary tax. The study also considers the specific case of an asymmetric fiscal framework to illustrate potential drawbacks of the Stability and Growth Pact (SGP). Specifically, it explores how the SGP may limit the ability of governments and the European Central Bank (ECB) to implement stabilization policies within the Euro area. An asymmetric fiscal framework among countries forming a monetary union can have significant feedback effects on the implementation of both fiscal and monetary policies. By incorporating these factors, the paper provides valuable insights into the complex interplay between monetary and fiscal policies,

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highlighting the potential implications for inflation, public debt, and the effectiveness of policy measures in a monetary union context.

- ✓ The aim of this study (EwaKarwowski, 2018) is to clarify the relationship between the state and the financial market leading to potential erosion of the state's responsibilities and accountability towards its citizens. This phenomenon is observed in both affluent and impoverished nations. Recognizing the potential adverse effects of state financialisation on economic growth, equality, and democratic accountability at both national and global levels, it becomes crucial to explore measures to reverse this trend. Consequently, the paper briefly examines two empirical instances of de-financialisation as potential models for action.
- ✓ (IrunguNg'Ang'A, 2019)This study investigates the coordination of fiscal and monetary policies and its implications for long-term sustainability in Kenya. The analysis utilizes annual time series data spanning from 1963 to 2014. This study is significant and negative, indicating an unsustainable fiscal balance due to increasing debt levels. Conversely, an active monetary policy regime is characterized by contractionary measures, as reflected by a positive response of real interest rates to inflationary pressures. Robust analysis using self-exciting threshold models confirms the nonlinear nature of both fiscal and monetary policy reaction functions. The findings reveal that a passive or unsustainable fiscal regime has been more prevalent over the study period. There is also evidence supporting coordination between fiscal and monetary policy, with monetary policy actively and prudently responding to unsustainable fiscal policies. Furthermore, monetary policy responds sequentially to fiscal policy. The study recommends the adoption of a systematic monetary response to periodic deviations of fiscal policy from a sustainable long-term path.
- ✓ (EfraimBenmelech and NitzanTzur-Ilan, 2020)This study examines the factors influencing fiscal and monetary policies implemented during the Covid-19 crisis. The results indicate that countries with higher income levels implemented more substantial fiscal measures compared to their lower-income counterparts. Additionally, the research highlights a country's credit rating as the most significant determinant of its fiscal expenditure during the pandemic. Notably, high-income countries, benefiting from historically low interest rates prior to the crisis, were more inclined to employ unconventional monetary policy instruments. These findings underscore the concern that nations with weaker credit histories, particularly lower-income countries with lower credit ratings, may face challenges in effectively implementing fiscal policy tools during economic downturns.
- ✓ The paper (Wang, 2023) examines the role of monetary and fiscal policies on economic growth in China during the period Covid 19. The result is that fiscal policy is the only solution to get rid of pollution, raise levels of economic growth, and provide well-being for the individual.

3- Methodology and Data

The study adopts an econometric model in determining relationship between fiscal policy and economic cycle in Algeria, the time series data established by World Bank, world development indicator (WDI 2021) and the annual time series 1980-2020 have been taken to analyze the relationship between variables. The following equation is then derived

$$GDP_t = \alpha_0 + \alpha_1 rev + \alpha_2 exp + \epsilon_t \dots\dots\dots$$

economic growth (GDP) reflecting the economic cycle expenses(exp) and revenues(rev) (representing fiscal policy).

Empirical results

✓ Unit Root : We tested **philip- perron** and obtained the following results

Table (1): philip- perron test (pp)

| | | <u>At Level</u> | | |
|--------------------------|--------------|----------------------------|---------------|---------------|
| | | GDP | EXP | REV |
| With Constant | t-Statistic | -4.6282 | 0.8192 | -0.5199 |
| | Prob. | 0.0006 | 0.9932 | 0.8768 |
| | | *** | n0 | n0 |
| With Constant & Trend | t-Statistic | -4.6443 | -1.9729 | -4.0024 |
| | Prob. | 0.0031 | 0.5983 | 0.0164 |
| | | *** | n0 | ** |
| Without Constant & Trend | t-Statistic | -2.6957 | 1.6808 | 0.1092 |
| | Prob. | 0.0083 | 0.9756 | 0.7118 |
| | | *** | n0 | n0 |
| | | <u>At First Difference</u> | | |
| | | d(GDP) | d(DEP) | d(REC) |
| With Constant | t-Statistic | -10.0571 | -9.0289 | -14.5911 |
| | Prob. | 0.0000 | 0.0000 | 0.0000 |
| | | *** | *** | *** |
| With Constant & Trend | t-Statistic | -9.8737 | -10.0033 | -16.3627 |
| | Prob. | 0.0000 | 0.0000 | 0.0000 |

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| | | | | |
|--------------------------------|--------------|---------------|--------------------|---------------|
| | | *** | *** | *** |
| Without Constant & Trend | t-Statistic | -10.1970 | - 7.480 4 | -12.7358 |
| | <i>Prob.</i> | <i>0.0000</i> | <i>0.00 00</i> | <i>0.0000</i> |
| | | *** | *** | *** |

Source; Author's estimation using Eview9.0

The above results i.e Philip-perron test show that ;GDP are stationary a level and EXP.REC at first difference. Model (ARDL) are appropriate technique to analyze The Relationship of Fiscal Policy and Economic Cycle in Algeria.

✓ Lag order selected by the criterio

The table below shows the different criteria used to determine the appropriate lag length of the ARDL model

Table (2): Lag order selected by the criterio

| Lag | LogL | LR | FPE | AIC | SC | HQ |
|---|-----------|-----------|-----------|-----------|-----------|-----------|
| 0 | -1338.801 | NA | 2.75e+25 | 67.09005 | 67.21672 | 67.13585 |
| 1 | -1273.742 | 117.1068 | 1.67e+24 | 64.28708 | 64.83375 | 64.47028 |
| 2 | -1257.670 | 26.51850* | 1.18e+24* | 63.93349* | 64.82015* | 64.25408* |
| * indicates lag order selected by the criterion | | | | | | |

Source; Author's estimation using Eview9.0

lag order selected by the criterion is two in this study.

✓ The bounds test for the existence of a level relationship

Because variables in current study are stationary, it's easy to go to the next step which called bounds co-integration F-statistics test as proposed by Pesaran et al. (2001) to check the null hypothesis (H0) of no co-integration between the study variables.

Table (3): The bounds test

| Test Statistic | Value | K |
|-----------------------|----------|----------|
| F-statistic | 6.779794 | 2 |
| Critical Value Bounds | | |
| Significance | I0 Bound | I1 Bound |
| 10% | 3.17 | 4.14 |
| 5% | 3.79 | 4.85 |
| 2.5% | 4.41 | 5.52 |
| 1% | 5.15 | 6.36 |

Source; Author’s estimation using Eview9.0

From the above table f statistic =6.7797 is greater than the upper limit of the critical values at the level 5% and 10%. We reject the null hypothesis H0, and accepted H1, which means that there is a long-term equilibrium relationship at the following levels 5% and 10%.

✓ **Short and Long-Run relationship results**

present the results of short and long-run relationship

Table (4): Short and Long-Run relationship

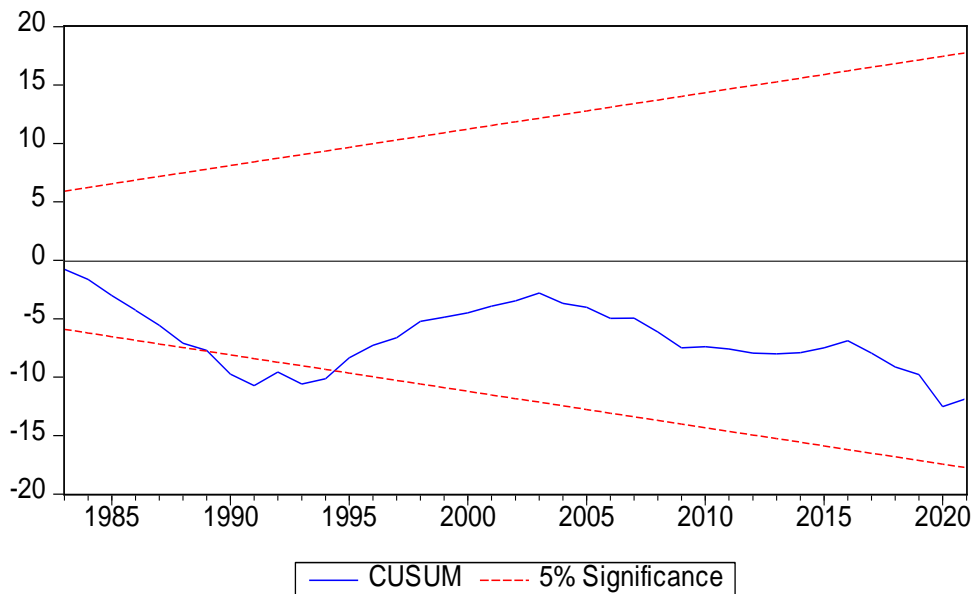
| Cointegrating Form | | | | |
|---|-------------|------------|-------------|--------|
| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
| D(EXP) | -0.105000 | 0.000001 | -0.356886 | 0.7232 |
| D(REV) | 0.056321 | 0.000001 | 0.217757 | 0.8288 |
| CointEq(-1) | -0.700844 | 0.162066 | -4.324442 | 0.0001 |
| Cointeq = GDP - (-10 5000*EXP + 0.056321*REV + 2.9510) | | | | |
| Long Run Coefficients | | | | |
| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
| EXP | -0.125647 | 0.000001 | -0.365012 | 0.7172 |
| REV | 0.569871 | 0.000001 | 0.220633 | 0.8266 |
| C | 2.951046 | 0.840729 | 3.510104 | 0.0012 |

Source; Author’s estimation using Eview9.0

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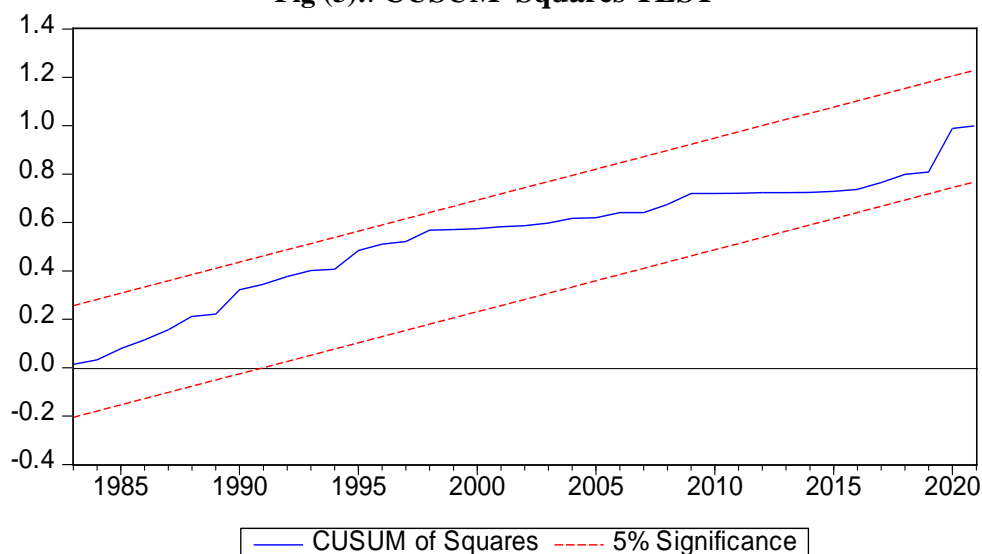
shows that the GDP model has a positive relationship with REV(revenues ., While, GDP model is negatively associated with exp (expense . and The error correction results also is negative sign the convergence of the model in the short term and also confirms the existence of a co-integration relationship. A positive relationship between gdp andREV , which we interpreted as the increase in petroleum taxation, and the positive impact of tax revenues and the increase in tax revenues, which positively affected in economic cycle .

- ✓ **CUSUM and CUSUMSQ tests indicate stable parameters for the model.**
Fig (2):. CUSUM TEST



Source; Author's estimation using Eview9.0

Fig (3):. CUSUM Squares TEST



Source; Author's estimation using Eview9.0

4-Conclusions and Recommendations

economic equilibrium (equilibrium in the economic cycle) is linked to economic factors, indicators and economic policies (monetary and fiscal) .we analyzed the relationship between fiscal policy and economic cycle in algeria using yearly data from 1980-2020 .and using the autoregressive distributed lag approach ARDL . we found :

- ✓ The existence of long-run relationship between fiscal policy and economic cycle.
- ✓ A positive effect of revenues and economic growth
- ✓ Expenditures negatively affect economic growth.

We suggest the following:

- ✓ Algeria must control and rationalize its public expenditures, in line with the new requirements imposed by international organizations.(word bank imf)
- ✓ Revenue diversification in Algeria
- ✓ Review the crises affecting the economic cycle in Algeria

➤ **Bibliography List:**

- THE DETERMINANTS OF FISCAL AND MONETARY .(2020) .Efraim Benmelech and Nitzan Tzur-Ilan . NATIONAL BUREAU OF ECONOMIC RESEARCH, Cambridge . CRISIS 9 1- POLICIES DURING THE COVID The Relationship of Fiscal Policy and Economic " .(2023) .Dung Xuan, and Trung Duc Nguyen. Nguyen. . *Journal of Risk and Financial Management* 16.5 .(?Cycle: Is Vietnam Different
- European* .,Fiscal and Monetary Policy of Economic Development .(2021) .Igor Chugunov et al . *Journal of Sustainable Development*
- Strategic Interactions between Monetary and Fiscal Policies: A Case Study for .(2002) .Jerome Creel .,hal-00972776v1 .the European Stability Pact
- .Economic cycles: Investing through boom and bust .(2021) .Karl Montevirgen
- Financialising the state : recent developments in .(2018) .Marcos Centurion-Vicencio, Ewa Karwowski .,halshs-01713028 .,fiscal and monetary policy
- .Economic Cycle: Definition and 4 Stages of the Business Cycle .(2023) .THE INVESTOPEDIA
- Investigating Fiscal and Monetary Policies Coordination and Public .(2019) .A'Ang'William Irungu Ng .Debt in Kenya: Evidence from regime-switching and self-exciting threshold autoregressive models . *halshs-02156495f*
- .".Role of fiscal and monetary policies for economic recovery in China" .(2023) .Yunxian, et al. Wang .63-51 : ‹ *Economic Analysis and Policy* 77
- Jonathan. . Millar" .(1997) .The Effects of budget rules on fiscal performance and macroeconomic stabilization.
- Smaili Nabila. Khelassi Abdel-illah Relationship between Public Expenditures and the GDP-Growth in Algeria: an Empirical Study Using the ARDModel. <https://www.asjp.cerist.dz/en/article/179580>
- Martijn RE, Henri LF De Groot, and Peter Nijkamp. ." Brons" .(2000) .Growth Effects of Governmental Policies: A Comparative Analysis in a Multi-Country Context .*Growth and Change* 31.4.1 ‹