WHAT CAN SVAR MODELS TELL US ABOUT THE IMPACT OF PUBLIC EXPENDITURE SHOCKS ON MACROECONOMIC VARIABLES IN ALGERIA? A SLIGHT HINT TO THE COVID-19 PANDEMIC

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Abstract

Research background: Public spending is a generator of economic growth as well as its components; this reality is more depicted in the era of the COVID-19 world pandemic where a recession in economic activities has touched all countries.

Purpose: In this paper, we tried to study the impact of shocks in public expenditure on some macroeconomic variables in Algeria during the period (1970–2019).

Research methodology: The VAR Structural models were used to study the response of these variables to shocks in public spending in Algeria.

Results: The results of the modeling indicate a direct response of both exports and imports to a shock in the levels of public expenditure, but this response is relatively weak to the variable value of exports (especially in the short term), which is mainly due to the structure of the Algerian economy that is mainly dependent on the export of oil and gas, which in turn is mainly affected by international energy factors e.g. prices, supply, and demand. For the rate of inflation, there was an inverse response to shocks in the level of public spending. In the context of the global health and economic crisis, we will witness a further faltering of economic growth in Algeria.

Novelty: Our contribution is a new feature of the application of the SVAR model in the era of the COVID-19 pandemic that focused on analyzing the impacts of public expenditure on exports and imports

Keywords: Public Expenditure. SVAR. COVID-19. Algeria.

JEL classification: E62, C32

Introduction

The measures taken by countries to confront the COVID-19 pandemic have had serious repercussions on the global economy. Specifically, economic growth rates have fallen to low levels with negative values in many countries, and international trade has also been affected as a result of the restriction of transport movement, the disruption of supply chains, and unemployment rates have increased rapidly, especially in transport and tourism sectors (Bakar, Rosbi, 2020). The effects of the pandemic also extend to the stock exchanges and financial markets, causing them to collapse with huge losses, this especially happened in the global oil markets, where prices collapsed dramatically (Fernandes, 2020). In this context and given the peculiarity of the Algerian economy as a rentier economy based mainly on the revenues of exports of Oil, which has decreased significantly in recent years, on the one hand, and due to the political instability that Algeria has known since the outbreak of the popular movement in February 2019, on the other hand, the repercussions of the COVID-19 pandemic on the Algerian economy have doubled and are more severe.

The Algerian economy is facing stagnation in a context characterized by the difficulties associated with the strict containment measures adopted to contain the spread of the novel coronavirus (COVID-19) and the significant drop in hydrocarbon prices and exports in the first half of 2020. While containment measures made it possible to reduce contagion, on the other side, it generated disastrous consequences for labor-intensive sectors – that is, services and construction, two sectors of activity still largely in the informal economy – as a result of many temporary or permanent job cuts, and a greater number of jobs at risk; noted that this idea was analyzed by (Hansen, 2020) to check the impact of COVID-19 on construction contracts. However, in the side of public demand there is a reduction in the level of public expenditure for the year 2020 (and the following year) by 20% (APS, 2020). In addition to this reduction, a large part of public expenditures has been reallocated to fight the COVID-19 pandemic, which also greatly affected other economic sectors.

These recent economic and epidemiological conjunctures come on the heels of 2019 which was marked by social mobilization and political transition, during which the Algerian economy experienced a contraction in oil and gas production and a weaker contribution of the service sector, agriculture, and construction to economic growth. Algeria's real GDP grew by 0.8% in 2019, up from 1.2% in 2018, with a 2.4% expansion in the non-oil sectors largely overshadowed by a 4.9% decline in the energy sector. State accounts continued to show a large double deficit, dependent on revenues from hydrocarbons: the overall budget deficit widened

to reach 9.6% of GDP, under the influence of a decline in income from hydrocarbons and an increase in investment spending, while the current account deficit increased. The level of foreign exchange reserves gradually decreased, covering 13.6 months of imports by the end of 2019. All these sectoral crises led the government, as we mentioned, to adopt an austerity policy (rationalization of expenditure) which was announced by a significant reduction in the level of public expenditure. In the conjuncture of this inevitable reduction, the current study came to analyze and provide an answer to the following question: *What are the short-and long-term effects of shocks in public expenditure on the Algerian economy?* Four macroeconomic variables have been selected in this context which are public expenditure, total exports, total imports and the inflation rate, the empirical study covers the period (1970–2019), and the data source are the World Bank database.

In order to answer this question, Structural VAR (SVAR) models were used, which are the most suitable for analyzing such quantitative research problems in macroeconomics. The rest of the paper is organized as follows: section 1 presents an overview of the previous works on this topic, section 2 presented the SVAR models and the data used in the application, section 3 presents the results of estimation and discusses the main findings, and a conclusion that summarizes the findings of the paper.

1. A Brief Background of the topic

In a general overview, several preview studies were used with the SVAR models in the empirical application. In their study (Afonso, Gonçalves, 2020) used the SVAR models to analyze the effects of monetary and fiscal policies on the macroeconomics variables for the US and the Euro zone, the findings of the study were heterogeneous between the two regions, for example, they found clear evidence of the Keynesian monetary policy in the case of the US economy which was not the case in the Euro zone. Another work was carried out by (Akpan, Atan, 2015) to investigate the effects of fiscal policy on some macroeconomic variables in Nigeria, they used the SVAR approaches and the empirical results showed a positive response of private consumption and real output. In another empirical study (Afonso, Leal, 2019) conducted with SVAR modeling in the case of the Euro-zone countries over the period (2000Q1 to 2016Q4) to assess the impacts of government expenditure on the real outputs, the main findings revealed an annual accumulated multiplier of 0.44. However, (Bruneau, De Bandt, 2003), and with the same modeling approach (SVAR models) found that the macroeconomic impacts of fiscal and monetary policies in the Euro-zone were consistent with the Keynesian paradigm (especially the

ISLM model). With a different identification approach of the SVAR models, (Fragetta, Melina, 2011) revealed the consistence of the shocks of public expenditure on the real outputs in the US economy. By using a Panel Structural Vector Auto-Regressive, a recent study conducted by (Petrović et al, 2021) on Central and East European economies to estimate the impacts of public investment on the macroeconomic variables, the researchers found a strong positive effect on real outputs (consumption, wages and employment).

In a specific context, the subject of the transmission of the shocks of public expenditure is a fertile topic of research and analysis in all countries. In this part of the study, we presented a brief overview of certain studies that used the SVAR approach. Firstly, we cite the research conducted by (de Castro, Hernández, 2006), they focused on estimate the effects of exogenous fiscal policy shocks in Spain, the findings of their study revealed that an expansion of public expenditure can generate a positive effect on output (at least in the short-term) but this could be correlated with an increase of inflation rates and public deficits. Rodríguez, (2018) tried to estimate the dynamic aggregate effects of public expenditure (he divided them into two components: government income transfers and government spending) in the USA, the estimation resultants show that the shocks on these two components do not have the same effects on the macroeconomic variables. Inspired by the works of (Blanchard, Perotti, 2002) and (Auerbach, Gorodnichenko, 2012), the researchers (Deleidi, Lipsis, 2018) analyzed the effects of public expenditure and investigate the persistence of dynamic shocks on GDP in the USA, they showed that public investment generates a larger effect on GDP than public consumption. For the Pakistan economy (Munir, Riaz, 2020), used the SVAR approach to estimate the effects of fiscal policy shocks on some macroeconomic indicators in Pakistan. They showed empirically that an increase in public developmental expenditure can generate an increase in real GDP; in a general overview, they noticed that the findings support well the Keynesian paradigm of the benefits of fiscal policy to stabilize the economy and stimulate economic activities.

In a general context, previous studies showed high and divergent patterns of positive, negative effects of public expenditures on macrocosmic variables. However, this study is going to fill the gap of this research topic in Algeria, where the SVAR models have been used, contrary to previously cited literature, we focused (*partially*) on the effects of public expenditure on Exports and Imports.

2. Methods and Data

2.1. Structural VAR models

In recent years, a growing interest in the structural VAR approach (SVAR) has been followed by the pioneering works of Blanchard and Watson (1986), Bernanke (1986) and Sims (1986), especially in the macroeconomic literature applied in the United States. The approach can be used in two different, partially overlapping directions: explaining business cycle fluctuations for a small number of important macroeconomic variables and identifying the effects of different policies. The SVAR literature shows a common feature: attempt to ‘organize’, in the ‘structural’ theoretical sense, and momentary correlations between relevant variables. In non-structural VAR modeling, instead, the correlations are usually hidden in the variance-covariance matrix of VAR model innovations. A VAR analysis attempts to isolate (“identify”) a set of independent shocks using several theoretical constraints of the economic problem under study. Shocks can be considered as the ultimate source of the random variation of a vector of variables which can all be considered endogenous. In this study, we will briefly discuss the theoretical aspects of building and estimating these models. Based on the general form of the VAR model, we can work on the formula of the SVAR model as follows:

$$Ay_t = A_1^s y_{t-1} + \dots + A_p^s y_{t-p} + C^s x_t + Bu_t \quad (1)$$

As each of the matrices A , A_p^s , as well as the matrix C^s , includes the structural parameters of the SVAR model, while u_t represents orthogonal and undefined shocks, and verified $E(u_t u_t') = I_k$, where the I_k is the identity matrix of rang k .

The relationship between the SVAR structural model formulation and the VAR short form can be observed, and assuming that the matrix A is invertible, we multiply both sides of the equation (1) by the inverse of the matrix A and we get

$$\begin{aligned} y_t &= A^{-1} A_1^s y_{t-1} + \dots + A^{-1} A_p^s y_{t-p} + A^{-1} C^s x_t + A^{-1} B u_t \\ &= A_1 y_{t-1} + \dots + A_p y_{t-p} + C x_t + \varepsilon_t \end{aligned} \quad (2)$$

Thus, the matrices in their reduced forms are given by: $A_t = A^{-1} A_t^s$; $C = A^{-1} C^s$ and the residuals component takes the new forms as:

$$\begin{aligned} \varepsilon_t &= A^{-1} B u_t = S u_t \\ E(\varepsilon_t \varepsilon_t') &= \Sigma_\varepsilon = A^{-1} B B' A^{-1'} = S S' \end{aligned} \quad (3)$$

where the S matrix is defined as: $S = A^{-1} B$.

2.2. Restrictions on SVAR Forms

One of the main problems with VAR is that the reduced form residuals are usually not the shocks of the greatest statistical significance, of course from an economic point of view. That is why the identification of shocks of economic significance is a major topic of Structural VAR Analysis (SVAR). In the standard literature, suggestions have been made on how to define shocks by placing constraints on impact parameters within model equations, long-term responses to variables, or signals and the direction of impulse responses functions. Add that using structural VAR models (SVAR) for additional definition constraints and then estimating structural matrices, the goal is to convert the residuals of VAR models into uncorrelated structural shocks, and the acquisition of structural shocks is central to a set of VAR analyses, including impulse response, decomposition Expected variance, and historical decomposition See, e.g. Amisano, Giannini (1997) and Martin et al (2013).

In this study, we will work on the long-run structural constraints, or the so-called recursive long-run impulse response, an approach proposed by (Blanchard, Quah, 1989) which is based on imposing restrictions on some of the long-run properties of impulse response functions. Accumulated impulse responses and these long-term constraints can be written as follows

$$\begin{aligned} (I - A_1 - A_2 - \dots - A_p)^{-1} \varepsilon_t &= \varpi \varepsilon_t = F u_t \\ \Sigma_\varepsilon &= \varpi^{-1} F F' \varpi^{-1'} \end{aligned} \quad (4)$$

where: $\varpi = (I - A_1 - A_2 - \dots - A_p)^{-1}$ is the long-run multiplier, which can be estimated using the VAR coefficient estimates of the reduced model. For this, the long-term constraint, it is within the matrix F . For example, the constraint $F_{i,j} = 0$ indicates that the accumulated response of variable X_i to the shock in variable X_j is zero in the long run.

2.3. Data analysis

The study is based on four macroeconomic variables for the Algerian economy which are: public expenditure, the value of total exports, the value of total imports and the rate of the inflation rate, the dataset covers the period (1970 to 2019), the source of the data is from the World Bank database. The graphical representation below shows the evolution of these variables during the study period.

Figure 1. Trend of study variables during the period (1970–2019)

Source: author's compilation.

From Figure 1, the plot of the public expenditure showed a positive trend over the study period, however we can see a decline in this tendency over the decade (1985 to 1999) a period that hid a mixed economic and security crisis in the country, after that, the security and economic circumstances have greatly improved (especially with the improvement in oil prices; which is the main source of public income), so we can see an increase and an acceleration in the level of public expenditure, especially during the period (2000 to 2016). In the case of imports, we revealed three tendencies over the study period, firstly, an increase in the level of imports during the period (1970 to 1986), followed by a sharp decrease of imports (caused mainly by a crisis in the energy markets), this situation was maintained up to 2000 while we see a significant increase of imports (to satisfy the increasing national demand), however the last five years (from 2015 to 2020) imports have been decreasing significantly, nearly the same pattern can be seen for the exports values during the same period. However, we see a different dynamic of the inflation rates over the period (1970 to 2019), with relative stability of the rates during the years (1970 to 1990), but after that we see a strong increase in inflation rates caused mainly by the reforms contained in the monetary and loan law of 1990, but since the 2000s, we can notice an improvement and a decrease in the inflation rates.

Table 1. Results of the Augmented Dickey-Fuller Unit Roots Test

Variables	Level			First Difference		
	none	const	const & trend	none	const	const & trend
LExpenditure	1.00	0.043	0.065	<0.001	<0.001	<0.001
LExports	0.98	0.045	0.931	<0.001	<0.001	<0.001
LImports	0.95	0.277	0.514	<0.001	<0.001	<0.001
LIInflation	0.33	0.055	0.092	<0.001	<0.001	<0.001

Source: author's estimation.

After applying stationary tests to the time series of variables at the level, we found that all of these variables are not stationary, as all the p-values of the Dickey-Fuller test were greater than the 0.05 level of significance, which is also confirmed by the graphical representations of these variables. After transforming the series and calculating the first difference and doing the developed Dickey-Fuller stability test, we found that all the series are stable, which is confirmed by the probabilistic values of this test as they are all less than 0.05 but less than 0.001.

3. Estimated Results and Discussion

3.1. Fitting and estimates of the VAR model

After doing stability tests, which is a necessary condition for working on VAR models, the next step is to determine the optimum deceleration degree for this model, and several statistical parameters (such as the Schwarz information criterion. The Akaike information criterion) are used as shown in the table below.

Table 2. Results of the tests to determine the optimal degree of lag for the VAR model

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-61.82173	NA	0.000206	2.861814	3.020827	2.921381
1	141.45180	362.35710*	6.00e-08*	-5.280511*	-4.485450*	-4.982676*
2	154.50340	20.99607	6.94E-08	-5.152320	-3.72121	-4.616218
3	168.71510	20.39072	7.83E-08	-5.074569	-3.007409	-4.300198
4	186.42970	22.33584	7.90E-08	-5.149118	-2.445909	-4.13648

* Note: indicates the lag order selected by the criterion LR: sequentially modified LR test statistic (each test at the 5% level) FPE: Final prediction error AIC: Akaike information criterion SC: Schwarz information criterion HQ: Hannan-Quinn information criterion.

Source: author's estimation.

Table 3. Estimated results of the VAR (1) model

	LExpenditure	LExports	LImports	LInflation
Expenditure(-1)	0.837331	0.192864	0.005071	-0.151943
	(0.05314)	(0.06907)	(0.10102)	(0.601670)
	[15.75850]	[2.79247]	[0.05020]	[-0.252540]
LExports(-1)	0.135920	0.729179	-0.028556	-0.327604
	(0.06958)	(0.09045)	(0.13229)	(0.787920)
	[1.95332]	[8.06206]	[-0.21586]	[-0.415780]
LImports(-1)	0.079150	-0.134126	0.937817	0.165413
	(0.03689)	(0.04795)	(0.07013)	(0.41773)
	[2.14552]	[-2.79714]	[13.37170]	[0.39598]
LInflation(-1)	0.004034	-0.022086	-0.060959	0.631441
	(0.01130)	(0.01468)	(0.02148)	(0.127920)
	[0.35705]	[-1.50408]	[-2.83836]	[4.936300]
C	-1.391274	5.407726	2.223881	8.281771
	(1.25138)	(1.62656)	(2.37904)	(14.169800)
	[-1.11179]	[3.32463]	[0.93478]	[0.584470]
R-squared	0.989372	0.943605	0.950776	0.472425
Adj. R-squared	0.988406	0.938478	0.946301	0.424463
Sum sq. residuals	0.151375	0.255750	0.547111	19.408920
S.E. equation	0.058654	0.076240	0.111509	0.664162
F-statistic	1024.015000	184.051500	212.468700	9.850107
Log likelihood	72.077490	59.228740	40.597660	-46.838840
Akaike AIC	-2.737857	-2.213418	-1.452966	2.115871
Schwarz SC	-2.544814	-2.020375	-1.259923	2.308914
Mean dependent	23.465370	24.556120	24.078510	1.832414
S.D. dependent	0.544733	0.307373	0.481204	0.875463

Source: estimated by author. The values between () represent the standard deviation of the estimated parameters, while the values between [] represent the values of the Student test. So for the significance of the parameters, we compare the absolute values with 1.64.

Through the results of the tests, we note that the optimal degree of delay is only one degree. Which is consistent with the standard literature for aggregate variables (particularly those for annual data such as in this study). So we are going to model the VAR(1) model. Care should be taken in interpreting the parameters of the VAR model, in fact, the estimated coefficients are interpreted in terms of the direction and signal of the effect (positive or negative effect) dynamic (short-term and long-term) between endogenous variables taken together when modeling, and their statistical significance can be determined by Student's test. Not to mention

the examination of the signals obtained from the coefficients estimated by the model with those already known in the literature and economic theories.

Through the estimate coefficients of the four equations, the information criterion (the BIC and AIC values) were computed using the sample based on an optimal lag equal one, among the four equations, the expenditures equation recorded the lowest values of BIC (-2.54) and also the smallest AIC that equals -2.73 , whereas the Inflation equation has the maximum values of the two information criterion. As the main objective is to go forward a structural analysis of the VAR models, we did not work on the Granger causality tests, impulse responses functions and forecasting errors decomposition; noted that in a reduced or recursive VAR models “these statistics are more informative than are the estimated VAR regression coefficients or R^2 statistics” (Stock, Watson, 2001, p. 104).

3.2. Estimate of the SVAR (1) model with a Recursive long-run impulse response

The occurrence of a structural shock in the level of public expenditure directly affects the volume of public expenditure during the post-shock periods, as we note that in the long term (the cumulative effect) of each shock in public expenditure by 1%, it will constitute an accumulation of the impact of this shock on public expenditure (in the long-term) by 1.39% (see Table 4 coefficient C (1)), but in the short-term, we found that the response to this shock will be at the level of 0.058%, see Figure 4, part (a). If under the rate of decline (shock) that affected public expenditure, which was 20% during the year 2020, we expect that there will be a decrease in the level of public expenditures for the Algerian economy during the next two years (2021 and 2022) by 1.16% and 1.17%, respectively.

Table 4. The SVAR model estimation results

	Coefficient	Std. error	z-Statistic	Prob.
C(1)	1.390222	0.140434	9.899480	0.0000
C(2)	0.576482	0.128947	4.470677	0.0000
C(3)	1.310482	0.239536	5.470919	0.0000
C(4)	-0.972668	0.218030	-4.461170	0.0000
C(5)	0.805343	0.081352	9.899493	0.0000
C(6)	-1.322882	0.148310	-8.919683	0.0000
C(7)	-0.318679	0.191955	-1.660175	0.0969
C(8)	-0.450328	0.045490	-9.899493	0.0000
C(9)	0.603836	0.179137	3.370815	0.0007
C(10)	1.179023	0.119099	9.899493	0.0000

Source: author's estimation.

Table 5. Results of matrix estimation S & F

	Public expenditures	Exports	Imports	Inflation
Estimated S matrix				
Public expenditures	0.047989	-0.003470	0.033208	-0.004756
Exports	0.042288	0.033632	-0.047065	0.026039
Imports	0.031609	-0.078690	0.008806	0.071872
Inflation	-0.175162	0.365203	0.297039	0.434539
Estimated F matrix				
Public expenditures	1.390222	0.000000	0.000000	0.000000
Exports	0.576482	0.805343	0.000000	0.000000
Imports	1.310482	-1.322882	-0.450328	0.000000
Inflation	-0.972668	-0.318679	0.603836	1.179023

Source: author's estimation.

3.3. Effects of Structural Shocks in Public Expenditures

Effects on the value of total exports

Through the estimation results for this function, the occurrence of a structural shock in public expenditure of 1 by 1% will constitute an accumulation of the impact of this shock on total exports (in the long run) by 0.576% (see Table 4 coefficient C(2), but in the short term we found that the amount of response to this shock will be at the level of 0.003%, see Figure 4, part (b), which is almost non-existent, and it is very compatible with the nature of the Algerian economy in general and the structure of Algerian exports, which is estimated at 98% of hydrocarbons, so the value of exports is greatly affected by the shocks. The composition of global oil markets in terms of prices, supply and demand(%). If under the rate of decline (shock) that affected public expenditure, which was 20% during the year 2020, we expect that there will be a decrease in the value of total exports of the Algerian economy during the next two years (2021 and 2022) by 0.058% and 0.059%, respectively.

Effects on the value of total imports

Concerning this function for this variable (total imports), we note in the figure and the table that a shock in public spending by 1% will lead to a change (response) in the level of imports by 0.029% in the short term, but in the long term (according to the results of these functions and under the conditions of the model, especially depending on the study period) We note that the amount of response accumulation will be within 1.31% for each shock in

public expenditure of 1%. If under the rate of decline (shock) that affected public expenditure, which was 20% during the year 2020, we expect that there will be a decrease in the value of the total imports of the Algerian economy during the next two years (2021 and 2022) by 0.58% and 0.59%, respectively. As a comparison with the previous works that analyzed the impacts (or the relationships) of public expenditure on the imports, the study of (Konstantakopoulou, 2018) in the euro-area countries revealed an increase in public spending leads to a significant increase in imports. The findings are in concordance with the economic facts that an increase in public demand (*especially for a developing country like Algeria*) leads to a direct increase in import levels due to the weakness and shortages of the local production engines.

Figure 2. Structural impulse response functions of the SVAR model

Source: author's compilation.

Effects on the rate of inflation

We note that the reversal effect of the shock in public spending on the inflation rate (while other factors remain constant), as a 1% change in the volume of public expenditure will lead to a change in the inflation rate by -0.031% , but this parameter is not significant (see Table 4). However, in the long term, the response functions indicate the significance of this parameter. The amount of accumulation of the inflation rate response to a shock in public expenditure by 1% will be in the long term by -0.972% . If under the rate of decline (shock) that affected public expenditure, which was 20% during the year 2020, we expect that there will be a rise in the inflation rate during the next two years (2021 and 2022) by 0.062% and 0.063%, respectively,

noted that it could be but in the long run. Furthermore, the estimate parameter in the short run is significant as shown in Table 4 (see parameter C(4)). In a general framework, recent studies confirmed the significance of public expenditure on inflation rates (Asandului et al., 2021), studied a set of post-communist European countries and showed the existence of asymmetric effects of public expenditure (generally fiscal policy) on inflation. In another set of countries, (Nguyen, 2019) analyzed the co-integration between public spending and inflation in China, India and Indonesia, the empirical findings showed a positive effect of public expenditure on inflation in India and Indonesia and a negative effect in China. Consequently, we can see divergent results (for different reasons) about the impact of the public on inflation. In the specific context of our study, we expect, in the long term an increasing response of the inflation rate to a shock in public expenditure in Algeria, noted that the empirical findings of the (Akpan, Atan, 2015) were in concordance with our findings when the authors depicted that the effects of public expenditure could generate higher inflation in the short term.

Figure 3. Graphical representation of the variance segmentation of the SVAR model. Here in order: Shock1... Shock4 refers to a shock to public expenditure, a shock to exports, a shock to imports, and a shock to the rate of inflation

Source: author's compilation.

Figure 4. Historical decomposition of the impact of public expenditure on study variables

Source: author's compilation.

In terms of sources of cycles in the economy during the study period, and through the historical decomposition of the total stochastic errors in Figure 4, we see a natural contribution of public expenditure in the fluctuations (and levels) of Imports in Algeria, this is well depicted in Figure 4 – Panel C. In contrast, there is a slight contribution of the shocks in public expenditure in Algeria to the total shocks or fluctuation in Exports values during the study period, which is an economic reality in the case of Algeria where it is only oil prices that affect total exports. In the case of the inflation rate, we see different cycles of responses to the shocks in public expenditure (see Figure 4 – Panel D), for example over the period 1970 to 1985 we do not see a clear contribution of public expenditure to the inflation rates, in contrast, from 1986 to 1999 this effect is well shown, this period was characterized by a recession in the economy and also by a civil war which blocked more the economic activity (especially the production sectors), a situation which generated a period of increasing inflation.

Conclusions

In this article the SVAR models were used to investigate the impact of shocks in public expenditure on some macroeconomic variables in Algeria during the period (1970–2019). The empirical results showed a direct response of both exports and imports to a shock in the levels of public expenditure, but this response is relatively weak regarding exports (especially in the short term), which is mainly due to the structure of the Algerian economy that is mainly dependent on the export of oil and gas. However, there was an inverse response of the inflation rates to the shocks in public expenditure.

As a general result, and in light of the austerity policies and the rationalization of public expenditure (which is the engine of the Algerian economy through the so-called public demand), we expect a faltering of economic growth in Algeria in the long term, all this in a context characterized by the decline and deterioration of the performance of the energy sector, a certain fact is that the Algerian economy is currently suffering from skeletal deterioration. Algeria, like other oil-exporting countries in the Middle East and North Africa region, will need to move toward a more diversified economic model to accelerate growth and job creation. Given the depletion of oil revenues, the country is no longer able to maintain its current level of spending. Policies aimed at diversifying the economy and increasing fiscal revenues must be accompanied by measures to improve the efficiency and equity of public spending to protect the most vulnerable segments of the population. The success of the national economic stimulus plan, which is currently being prepared, will be based on its ability to restore macroeconomic stability, and on adopting resolute policies to support the development of the private sector while continuing to ensure the provision of basic services.

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