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Comparative study of the impact of oil price shock on inflation with its impact on inflation determinants in Algeria

Merouane Bensenouci
Ph.D. student, LEPPESE laboratory, Maghnia University Center, Algeria
ORCID: 0009-0009-0400-5187
Email: merouane.bensenouci@gmail.com

Abdelkader Sahed
Professor, LEPPESE laboratory, Maghnia University Center, Algeria
ORCID ID: 0000-0003-2509-5707
Email: sahed14@yahoo.fr

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Abstract

This paper aims to compare and determine the impact of oil price shocks on inflation and on its determinants in Algeria during the period 1975-2021. By using the structural vector autoregression (SVAR) model. Our empirical results found that the oil price shock had a greater impact on the determinants of inflation, such as the exchange rate, money supply, and imported goods, than on inflation itself. Moreover, the response of exchange rate to the oil price shock was significant and negative in the short and long run. Nevertheless, the response of imported goods and money supply to the shock was positive. Whilst the response of inflation in Algeria to the oil price shock was weak and negative. In addition, the results of analysis variance showed that oil price shock has a weak contribution to explaining the changes in inflation rates, in contrast to its contribution to the observed changes in inflation determinants.

1. Introduction

It is well known that inflation represents one of the most important macro-economic factors in the world economy. Algeria as other countries have known contrasts in inflation rates during the last half century, as Algeria is largely dependent on exported oil that can be influenced strongly by its price, this effect can spread across the level of domestic prices. Algeria's inflation can be affected by several variables are assumed to be key factors namely the money supply, imported goods, exchange rates, and oil price shocks.

A rise in money supply can lead to increase in inflation, as more money is available to purchase goods and services (Karoui, 2014) (Umar & Lee, 2018). if the cost of production or transportation for imported goods increases, it can also lead to higher prices and contribute to inflation (Ahmed, Ghauri, Vveinhard, & Streimikiene, 2018) (Sheefeni & Munepapa, 2017). Additionally, a decrease in exchange rates cause an increase in inflation (Kim, 1998) (Ito & Sato, 2008). Also, oil price shocks can have a significant impact on the inflation (Hamilton, 1996) (Mork K. , 1989) (Mory, 1993) (Tang, Wu, & Zhang, 2010) (Lacheheb & Sirag, 2019). However, that the latter has fluctuations substantially influence in exchange rates, money supply and importations. A rise in oil prices can cause a country's currency to appreciate if it is a major oil exporting nation. This is because the increased demand for oil will lead to an inflow of foreign currency, which can cause the country's currency to strengthen (EryiĞit, 2012). An increase in oil prices can lead to an inflow of foreign currency which cause an increase in money supply (Siami & Fahimifar, 2010). Furthermore, a rise in oil prices can lead to higher prices in the cost of production and transportation of imported goods (AbdulRazaq & Hamoud, 2018).

This study aims to investigate the impacts of oil price shocks on inflation and compare them with the impacts of oil price shocks on specified determinants of inflation in Algeria (imported goods, money supply, and exchange rate) during the period 1975-2021. A structural vector autoregressive (SVAR) methodology introduced by (Olivier & Roberto, 2002) was employed to determine the response to shocks and dynamic interactions among the economic variables resulting from various structural disturbances. The remainder of the paper is structured as follows: Section 2 presents the review of the literature; Section 3 describes our methodology; Section 4 discusses empirical results, and finally, Section 5 concludes the paper.

2. Literature review

There are many studies in economics literature investigating the impact of oil prices on economic variables. Therefore, we have reviewed some of the relevant articles and classified literature into four parts. Many studies have advocated the impact of oil prices on inflation, including (Mork K. , 1989) (Mory, 1993) (Hamilton, 1996) (Mork K. , 1994)confirmed the inflationary effect of oil price changes on inflation. (Razmi, M. Azali, Chin, & Habibullah, 2016) explored the impact of oil prices on inflation by applying SVAR method to examine the vulnerability of domestic prices to price shocks in ASEAN-4 countries, the results showed that a positive shock to the oil price could reduce the CPI in Indonesia but would increase the CPI in the Philippines and Thailand, while in Malaysia, there would be no significant effect on the CPI. (LeBlanc & Chinn, Menzie David, 2004)estimate the transmission effects of oil price changes to inflation G5 countries. It was found that the oil price increases have moderate impacts on inflation in the US, Japan and Europe. (Lacheheb & Sirag, 2019) by using the nonlinear ARDL model suggest that oil price increases have a positive and significant effect on inflation in Algeria, but insignificant falling oil prices. (Choi, Furceri, Loungani, & Mishra, 2018)studied the impact of fluctuations in oil prices on the CPI. An unbalanced panel analysis was used for 72 advanced and developing countries, with annual data collected between 1970 and 2015, the results indicated that the oil price impacted positively on inflation, but its effect vanished after two years. (Mukhtarov, Mammadov, & Ahmadov, The Impact of Oil Prices on Inflation: The Case of Azerbaijan, 2019)studied the relationship between inflation, oil prices and exchange rates in Azerbaijan during 1995-2017, by using a vector error correction VECM modal. The results showed that the increases in oil prices and exchange rates leading to rise inflation. Some research asserts that the impact of global oil prices on domestic inflation seem to be limited or declining. (Hooker, 2002)studied the relationship between oil prices and inflation on the sample year 1962-1980 and 1981-2000. It was found that oil price had significance impact on inflation in the first sample period but not in the later sample period. Additionally, the strong relationship between oil price and inflation in the early 1970s has disappeared after mid-1980s. (De Gregorio, Landerretche, Neilson, Broda, & Rigobon, 2007)examined 34 developed and developing countries by using quarterly data from1965Q1 to 2005Q1. Found that the relationship between oil price and inflation was decreasing.

Some works have sought to explain the relationship between oil prices and exchange rates. (Brini, Jemmali, & Farroukh, 2016) studied the impact of oil price shocks on inflation and the real exchange rate of oil imports and exporters in Middle East and North Africa during the period 01/2000-06/2015. Using the structural Vector autoregressive SVAR model. It was found that oil prices have a significant impact on the real exchange rate of importing countries (Morocco, Tunisia). The variance analysis show that oil price volatility contributes to the

interpretation of the variance in the error of forecasting the real exchange rate, except for the real exchange rate in Algeria and Iran. (Mukhtarov, Aliyev, & Zeynalov, 2020)the study investigated the impact of oil prices on economic growth export, inflation, and exchange rates in Azerbaijan, using Johansen cointegration and VECM model during the period 01/2005-01/2019. The results confirm the presence of a long-run relationship among the variables. Estimation results reveal that there is a positive and significant impact of oil prices on economic growth, export and inflation. On the other hand, it was found that oil prices have a negative impact on exchange rate (Delgado, Delgado, & Saucedo, 2018). studied the relationship between oil price shocks and exchange rate in Mexico during the period 01/1992-06/2017 by Using the Vector autoregressive VAR model. The result showed that an increase in oil prices lead to higher the exchange rate. (Mohammed Suliman & Abid, 2020) studied the relationship between oil price and exchange rates in Saudi Arabia during the period 01/1986-03/2019. Using the autoregressive distributed lag ARDL model. In the short term the results confirm the existence of unidirectional causal relationship ranging from the oil price to the exchange rate. In the long term, the causal relationship is bidirectional between these two variables. An appreciation of the Saudi exchange rate generates an increase in the relative demand oil, which in turn creates upward pressure on its price. (Hussain, Zebende, Bashir, & Donghong, 2017) use a cross-correlation approach to study the parallel movement of oil prices and exchange rates in 12 Asian countries. Using daily data for the period 05/2006–05/2016. The authors found a low negative cross-correlation between the two variables for most countries. (EryiĞit, 2012) The dynamical relationship between oil price shocks and selected macroeconomic variables in Turkey, during the period 01/07/2005 – 10/31/2008 by using vector autoregressive (VAR) model. The results showed that oil price shocks explain a significant proportion of the Istanbul stock exchange market and interest rates and immediate negative effect on exchange rates.

Some studies have advocated the impact of oil prices on money supply. (Olomola & Adejumo, 2006) examined the effects of oil price shocks on output, inflation, real exchange rates and money supply in Nigeria using quarterly data from 1970 to 2003 Using VAR model. It was found that oil price shocks do not have any substantial effect on output and inflation. Oil price shocks significantly determine the real exchange rate and significantly affect the money supply in the long run. (Siami & Fahimifar, 2010) The Effects of Oil Price Shocks on Monetary policy in Iran over the period 01/1991-01/2008, by using a structural and generalized VAR models. The results showed that the shocks from oil price are in a positive relation with money aggregate (M1) variable and a negative relation with interest rate which in general terms in world be a fluctuation relation for M1. (Lui, Meng, & Wang, 2020) used a structural vector autoregressive (SVAR) model to investigate the effects of oil price shocks on macroeconomic fluctuations in China during the period 12/1999-07/2018. It was found that a positive oil price shock has negative effects on economic growth and the money supply. (Abderrezak, 2005) This study tested the causal relation between oil prices and Algeria's money supply during the period 1970–2002. simulation results showed that a negative and significant correlation has characterised the association between oil exports and the country's money supply. (Baroudi & Filali, 2021) studied the impact of changes in oil prices on Algeria's monetary over the period 1980 to 2019, based on the structural vector autoregression models (SVAR). It was found that the positive impact of oil price fluctuation on the exchange rate (Dinar against Dollar) and money supply. (Mokhtari & Benelbar, 2021) aimed to examine the effect of oil price changes on money supply, unemployment, government spending in Algeria during the period (1980-2018) by using causality tests and relying on the SVAR structural regression methodology. The results showed that there is a positive relationship between oil prices with government spending and the size of the money supply and an inverse relationship between oil prices and the rate of Unemployment.

Some works have sought to explain the relationship between oil prices and imported goods. (Farzanegan & Markwardt, 2009) studied the Effects of Oil Price Shocks on the Iranian Economy during the period1975Q02-2006Q04 using VAR model. it was found that the response of real imports and the real effective exchange rate to asymmetric oil price shocks are significant. Furthermore, the response of inflation to any kind of oil price shocks is significant and positive. Dikkaya, Doyar, & Kanbir, 2018 aims to investigate the effects of oil prices on Azerbaijan’s imports from Turkey during the period 2001Q01-2016Q04. Using a vector autoregressive VAR model. It was found that a shock to oil prices positively affects Azerbaijan’s imports from Turkey. (Kolli, 2021) studied the effects of oil price shocks on the macroeconomic performance of OPEC economies, during the period 1990-2018 by using PVAR and PVECM Models. the results showed a causal relationship with statistical significance to the effect of oil price shocks on both Gross capital formation and imports in short-term. (AbdulRazaq & Hamoud, 2018) aimed to analyze and measure the impact of fluctuations of oil prices on OAPEC on Iraq's foreign trade for the period 2000-2016, by adopting descriptive analytical methodology and standard methodology. The study concluded that increasing the price of crude oil in Iraq in one unit with the stability of other factors, this leads to an increase in the value of exports by (838.611) million dollars and increase the value of imports by (1.341) million dollars and increase in trade balance surplus by (588.479) million dollars of Iraq.

3. Methodology:

Structural Vector Autoregression (SVAR) models are widely considered as a practical and efficacious mechanism in comprehensive economic analysis due to their reliance on economic theory in establishing the relationship between forecasting errors and fundamental shocks. These models take into consideration the extant temporal effects among economic variables and are derived from Vector Autoregression (VAR) models. Therefore, a VAR model can be formulated as depicted in (Olivier & Roberto, 2002, p. 4):

$$X_{1T} = A_1^{'}(L)X_{1T-1} + u_{1t} \quad (1)$$

$$X_{2T} = A_2^{'}(L)X_{2T-1} + u_{2t} \quad (2)$$

$$X_{1T} = [LEX, LIM, LMS, LOP]$$

X_{1T} : Is the vector of the internal variables of the model 1: Exchange rates (LEX), imported goods (LIM), money supply (LMS), oil price (LOP).

$$X_{2T} = [LINF, LOP]$$

X_{2T} : Is the vector of the internal variables of the model 2: Inflation (LINF), oil price (LOP).

All variables in both models 1 and 2 were taken in logarithm to rectify the existence of multicollinearity between the variables.

u_t: Error terms of Standard VAR Model is assumed to be iid white noise with non-singular covariance matrix, $\sum$ u, such that $u_t \overset{iid}{\rightarrow} (0, \sum_u)$.

L: the lag operator.

T: time series.

A' : are (n × n) parameter matrices.

The VAR (Vector Autoregression) model allows the transition from residuals of this model to structural shocks through the formation of the transition matrix S, which establishes the following relationship:

$$u_t = S \times e_t \quad (3)$$

(Perotti, 2004) utilized the following approach in determining the transition matrix S coefficients:

Can be reformulated the previous equation as follows: $Au_t = Be_t$ (4)

Where: $S = A^{-1} \times B$ (5)

A and B: Restriction matrices.

e_t: Error terms of Structural VAR Model.

The elements of matrices A and B are determined by assigning the diagonal elements a value of 1. Meanwhile, the other elements of the matrix are determined based on economic theory. For instance, we assume that one exogenous variable does not have an immediate effect on another by giving it a value of 0. Alternatively, if there is an effect, it must be measured in order to assign a value to the elements α_p^a, β_p^a (Economic Constraints).

4. Empirical Results:

As the first step of the empirical analysis, unit root tests are conducted on all the time series to avoid the problem of spurious regression in the models. Among the most notable of these tests are the Augmented Dickey-Fuller (ADF) test (Dickey & Fuller, 1981) and the Phillips-Perron (PP) test (PHILLIPS & PERRON, 1988).

Table 1. Unit Root Test Results

Variables	UNIT ROOT TEST TABLE (PP)				UNIT ROOT TEST TABLE (ADF)				Decision
	With Constant		With Constant & Trend		With Constant		With Constant & Trend		
	t-Stat	Prob.	t-Stat	Prob.	t-Stat	Prob.	t-Stat	Prob.	
LIM	-1.3378	0.6041	-1.6843	0.7423	-1.3047	0.6196	-4.0976	0.0131	-
LINF	-2.8948	0.0537	-3.4440	0.0580	-2.9108	0.0518	-3.3828	0.0662	-
LMS	-3.0540	0.0373	-0.8039	0.9578	-3.3746	0.0171	-0.5385	0.9780	-
LOP	-1.7845	0.3834	-1.8769	0.6502	-1.7466	0.4017	-1.8769	0.6502	-
LEX	-0.8004	0.8095	-1.3333	0.8668	-0.8717	0.7881	-2.1268	0.5167	-
d(LIM)	-5.6078	0.0000	-5.5640	0.0002	-5.5632	0.0000	-5.5111	0.0002	I(1)
d(LINF)	-9.1138	0.0000	-8.9916	0.0000	-8.9557	0.0000	-8.8410	0.0000	I(1)
d(LMS)	-4.8162	0.0003	-5.5229	0.0002	-4.8527	0.0003	-5.5229	0.0002	I(1)
d(LOP)	-5.9564	0.0000	-5.9417	0.0001	-6.0062	0.0000	-5.9919	0.0001	I(1)
d(LEX)	-4.2553	0.0015	-4.1476	0.0108	-4.1743	0.0019	-4.1532	0.0106	I(1)

Source: Author's calculations using Eviews12

The results of both tests agreed on the non-stationarity of the time series at the level, but in first differences all the series were stationary. After determining the degree of integration of the variables, the existence of a cointegration relationship is tested by using a Johansen test.

Table 2. Results of the cointegration test

Model 01					
Hypothes	**Eigenvalue**	**Statistic**	**Critical Value**	**Prob.****	**Decision**
None	0.441455	26.20893	27.58434	0.0742	**no cointegration**
At most 1	0.267356	13.99932	21.13162	0.3651	
At most 2	0.166813	8.212352	14.26460	0.3575	
At most 3	0.047172	2.174436	3.841465	0.1403	
Model 02					
Hypothes	**Eigenvalue**	**Statistic**	**Critical Value**	**Prob.****	**Decision**
None	0.130822	6.309307	14.26460	0.5739	**no cointegration**
At most 1	0.064175	2.984693	3.841465	0.0841	

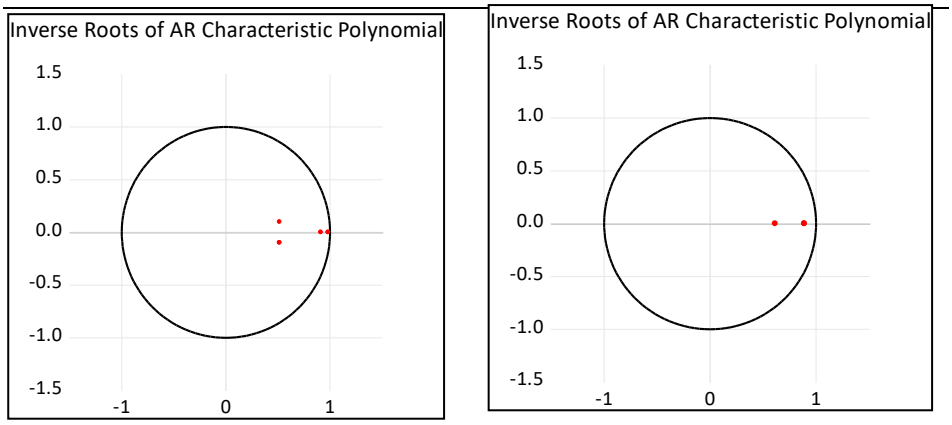
* Denotes rejection of the hypothesis at the 0.05 level, **MacKinnon-Haug-Michelis (1999) p-values.

Source: Author's calculations using Eviews12

The results of the test supported the null hypothesis of no cointegration relationship in the models, as indicated in table 2. As a result, the VAR methodology can be applied to estimate the models.

Before estimating the VAR model, an appropriate lag length of one (1) was determined for the models based on Akaike, Schwarz, and Hannan-Quinn criteria. Then, the VAR model was estimated and the stability of the models was tested through the unit cercle. The results indicate that all the processes in the models are within the unit circle.

Model 01 **Model 02**



Graph 1. Autoregressive root graph

Source: Author's calculations using Eviews12

The results of the autocorrelation tests for the errors in the models indicate that the probability values are greater than 5%, thereby indicating the absence of autocorrelation problems between the errors of both models, as indicated in the table 3.

Table 3. The VAR residual serial correlation LM

Model 01				**Model 02**			
Lag	**LRE* stat**	**df**	**Prob.**	**Lag**	**LRE* stat**	**df**	**Prob.**
1	24.11048	16	**0.0871**	1	3.759509	4	**0.4395**
2	9.333565	16	**0.8990**	2	4.119413	4	**0.3901**
3	13.66131	16	**0.6239**	3	2.838368	4	**0.5852**
4	8.174261	16	**0.9435**	4	1.656695	4	**0.7986**

Source: Author's calculations using Eviews12

The results of the heteroskedasticity test indicate that the models are devoid of the problem of heteroskedasticity, as the attached probabilities for both models are greater than 5% (Table 4).

Table 4. The VAR Residual Heteroskedasticity Tests

Model 01			**Model 02**		
Chi-sq	**df**	**Prob.**	**Chi-sq**	**df**	**Prob.**
91.89081	80	0.1712	13.44190	12	0.3378

Source: Author's calculations using Eviews12

Following the estimation of the autoregression for both VAR models and the implementation of various diagnostic tests that confirmed their validity, we can determine the structural shocks by constructing the

transition matrix S, relying on matrices A and B for each model. The following assumptions, which are consistent with economic theory and the Algerian economic situation:

Assumptions of the first model 01:

- The first equation assumes that the changes in exchange rates are primarily explained by fluctuations in oil prices, the money supply, and the structural shock to exchange rates.

$$\mu_t^{LEX} = \alpha_{LMS}^{LEX}\mu_t^{LMS} + \alpha_{LPO}^{LEX}\mu_t^{LPO} + e_t^{LEX} \quad (6)$$

- The second equation posits that the imported goods are influenced by changes in both oil prices and exchange rates, in addition to the structural shock to imported goods.

$$\mu_t^{LIM} = \alpha_{LPO}^{LIM}\mu_t^{LPO} + \alpha_{LEX}^{LIM}\mu_t^{LEX} + e_t^{LIM} \quad (7)$$

- The third equation asserts that changes in the money supply are affected by fluctuations in exchange rates, oil prices, and the structural shock to the money supply.

$$\mu_t^{LMS} = \alpha_{LEX}^{LMS}\mu_t^{LEX} + \alpha_{LPO}^{LMS}\mu_t^{LPO} + e_t^{LMS} \quad (8)$$

- The fourth equation presumes that oil prices are solely influenced by the structural shock to their prices.

$$\mu_t^{LOP} = e_t^{LOP} \quad (9)$$

Assumptions of the second model 02:

- The first equation assumes that oil prices are explained by their structural shock.

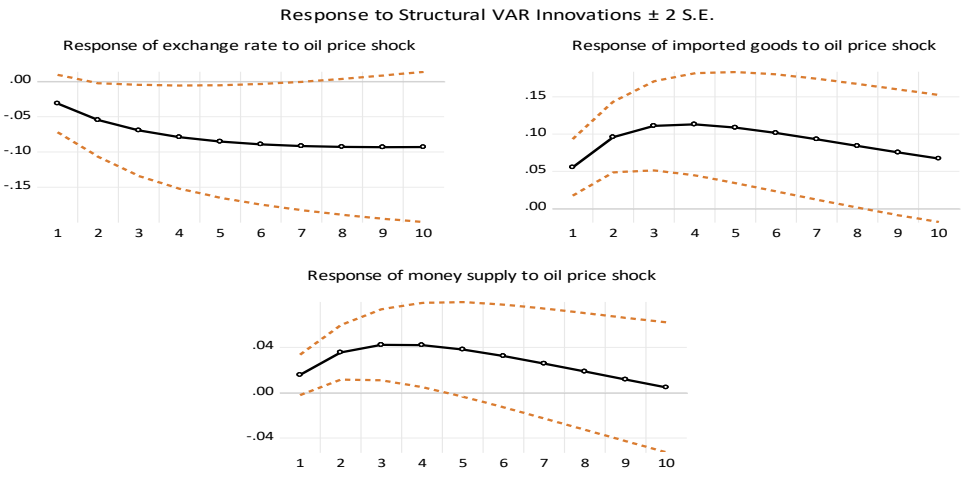
$$\mu_t^{LOP} = e_t^{LOP} \quad (10)$$

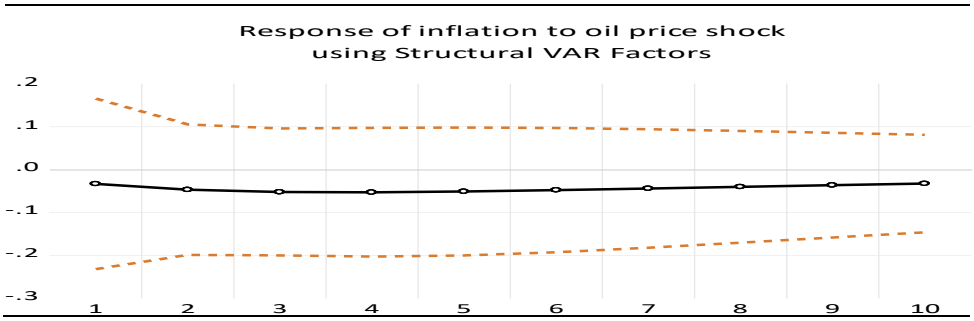
- The second equation assumes that the inflation rate is explained by the changes in oil prices and the structural shock in the inflation rate.

$$\mu_t^{LINF} = \alpha_{LPO}^{LINF}\mu_t^{LPO} + e_t^{LINF} \quad (11)$$

4.1. Impulse Response

After diagnosing and estimating the structural vector autoregression (SVAR) models, we can analyze the response of the studied variables in the models and determine the degree of responsiveness of each variable (exchange rates, money supply, imported goods, and inflation) to a shock in oil prices.





Graph 2. Impulse response with structural decomposition

Source: Author's calculations using Eviews12

With regards to Model 01, it clarifies:

The Effects of Oil Price Shocks on Exchange Rates: Through the analysis of response functions, it is observed that the occurrence of a 1% shock in oil prices will have a negative effect on exchange rates over response periods. In the first period, the response ratio to the shock was (-0.031%), and in the following years, this negative effect of the oil price shock continues to decrease. This is clearly seen in the ninth and tenth years, where it reaches its lowest value of (-0.093%). The negative impact shows that a rise in oil prices will lead to a decrease in the units of Algerian dinars that can be obtained for one dollar, which is in line with economic theory (merrad & kouidri, 2020, p. 119) and the results of studies (EryiĞit, 2012) (Hussain, Zebende, Bashir, & Donghong, 2017) (Mukhtarov, Aliyev, & Zeynalov, 2020). This result also reflects the important role that oil prices play in maintaining the stability of the Algerian dinar.

The impact of oil price shock on imported goods: A 1% oil price shock would have a positive effect on imported goods both in the short and long run. In the first year of the shock, imported goods would respond with a 0.055% increase, and this percentage would increase in the following years, reaching a maximum value of 0.11% in the third and fourth year. The impact of the shock would then decline in the long run, reaching 0.06% in the tenth year. This positive impact can be explained by the fact that a rise in oil price leads to an increase in the prices of manufactured goods, including necessities, consumer goods, equipment, and intermediate goods, which are considered essential. This result is in line with the findings of studies by (Dikkaya, Doyar, & Kanbir, 2018) (AbdulRazaq & Hamoud, 2018).

The impact of oil price shocks on money supply: In the event of a 1% oil price shock, there will be a positive impact on money supply over the response period. In the short term, the response to the shock is estimated to be at (0.01%) in the first year and will increase in subsequent years, reaching its highest value at (0.042%) during the third and fourth year. However, over the long term, its impact decreases to (0.004%) in the final year. The positive impact of the oil price shock on money supply is attributed to an increase in liquidity in the economy due to a rise in returns. These results are consistent with the findings of studies by (Siami & Fahimifar, 2010) (Baroudi & Filali, 2021) (Mokhtari & Benelbar, 2021).

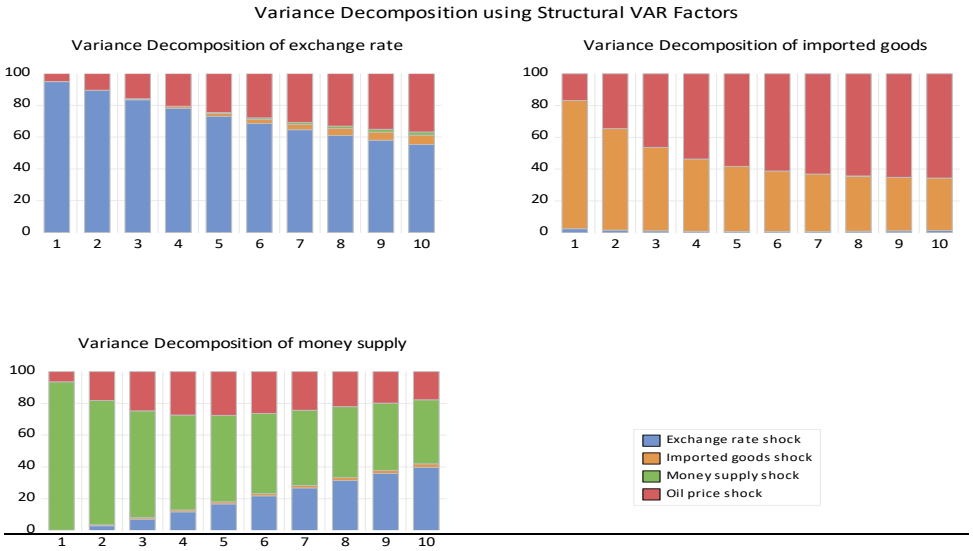
As for Model 2, it illustrates:

The Effects of Oil Price Shock on Inflation: Through the analysis of the impulse response function of Model 02, it was observed that the occurrence of a 1% oil price shock would have a week negative impact on inflation over the response period, with an initial value of (-0.033%) in the first year and decreasing to its minimum value of (-0.052%) in the fourth year. However, in the long run, the inflation response to the shock increases, reaching (-0.032%) in the tenth year. The weak impact of oil price on inflation in Algeria can be attributed to a combination of government policies and exchange rate stability. These results are consistent with studies by (De Gregorio, Landerretche, Neilson, Broda, & Rigobon, 2007) (Hooker, 2002), which indicated a weak inflation response to oil price shocks.

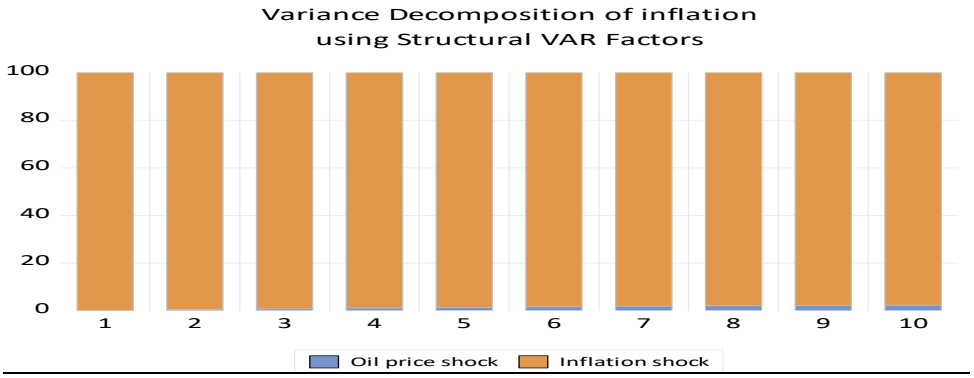
4.2. Variance Decomposition

To express the contribution of oil price shock in explaining the changes in inflation and its determinants, the results of variance decomposition were utilized.

Model 01



Model 02



Graph 3. Variance decomposition results

Source: Author's calculations using Eviews12

In regards to Model 01, the oil price shock played a significant role in explaining the changes in exchange rates. The initial estimated impact of the shock was 5% and increased annually to reach 36.7% in the tenth year. This suggests that the oil price is the most explanatory factor for the changes in exchange rates, after taking into account its own impact. Analysis of exchange rate variability shows that oil prices have a substantial impact on the value of the local currency (Algerian Dinar). As For imported goods, the impact of the oil price shock was 16.8% in the first period and increased to 58.2% in the fifth period and reached 65.65% in the tenth year, indicating that the oil price shock has a greater contribution to changes in imported goods. The analysis of the money supply shows that the impact of the oil price shock has a role in explaining the amount of money offered, as in the first period, its contribution to explanation was 6.4%, which increased over the next four years to reach 27.5% in the fifth year. After that, it started to decline and reached 17.77% in the tenth year. Thus, the oil price shock explains the changes in money supply in the first six years after the shock and is the second most influential factor after exchange rates in the last four years.

The results of the variance decomposition for Model 02 indicate that the oil price shock has a weak contribution to explaining the changes in inflation rates (Hooker, 2002) (De Gregorio, Landerretche, Neilson, Broda, & Rigobon, 2007). During the initial period, it explained 0.24% of the inflation changes and this percentage increased slightly over time, reaching its highest contribution of 2.36% in the tenth period. The weak contribution of oil prices in explaining inflation variability can be attributed to the fact that inflation in Algeria is

a result of the increase in import prices due to the re-exportation of inflation by industrialized countries by raising the prices of manufactured products that are sourced to Algeria (Karoui, 2014, p. 86).

The results of the variance decomposition indicated that shocks in oil prices play a significant role in explaining the changes in foreign exchange and imported commodity prices, in addition to the money supply, in Model 1. Conversely, the explanation of oil shocks on inflation in Model 2 was very weak.

5. Conclusion

The primary objective of this research paper is to determine the response of inflation determinants (exchange rate, money supply, and imported goods) in Algeria to an oil price shock and to compare it to the response of inflation rate to the shock, during the period of 1975-2021. This is achieved by employing structural vector autoregression (SVAR) models. The results indicated that the oil price shock had a greater impact on the determinants of inflation, such as the exchange rate, money supply, and imported goods, than on inflation itself. This finding is consistent with our hypothesis. The analysis variance showed that oil price shock has a weak contribution to explaining the changes in inflation rates, in contrast to its contribution to the observed changes in inflation determinants. Moreover, this paper illustrated the impacts of oil price shock on inflation and exchange rate, imported goods and money supply by using impulse response function. The response of exchange rate to the oil price shock was significant and negative in the short and long run. This highlights the important role that oil prices play in maintaining the stability of the Algerian dinar. Furthermore, the response of imported goods to the shock was significant and positive. This positive effect can be accounted for by the correlation between an increase in oil prices and the subsequent rise in the cost of manufactured goods which are considered essential. Additionally, the response of money supply to the shock was positive which means a rise in oil price led to increase the money supply through the process of monetary expansion. When oil prices go up oil exporting countries typically earn more revenue, which they then use to the purchase goods and service, from other countries. This leads to an inflow of foreign currency, which increase the money supply. Whilst the response of inflation in Algeria to the oil price shock was weak and negative, and this is attributed to the utilization of monetary policy by central bank, whereby employ various measures to counteract the effect of oil price fluctuations on inflation by adjusting interest rates. The results of this study underscore the importance of considering the role of oil prices in inflation dynamics and highlight the need for policymakers to take into account the potential impact of oil price shocks on the economy when making decision.

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