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THE DYNAMIC EFFECTS OF OIL PRICE SHOCKS ON BANK DEPOSITS AND CREDIT IN IRAQ: A STRUCTURAL VAR APPROACH

Kawthar Kareem Abdul Razzaq[1]
Corresponding author: Kawthar Kareem Abdul Razzaq
Email: kabdulrazak@uowasit.edu.iq

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Abstract:
The paper examines the dynamic behavior of oil price shocks with the bank deposits and the credit of Iraq with data coverage of 2004-2023 in a quarterly format. Based on a Structural Vector Autoregression (SVAR) machinery, the study observes the effects of the global oil prices dynamism on critical financial pointers in an oil-based economy. The findings indicate that positive oil shocks have short-term effect on bank deposits as more revenues through increased liquidity inflows are obtained by the government. But credit to the private sector reacts procyclicality, and shrinks after a shock in the short run, and then rebounds as fiscal spending is recycled through the economy. It is also revealed that the movement of oil price Granger-causes the movements in bank deposit and credit which supports the fact that they are predictive in financial sector in Iraq. The impulse response functions and the historical decomposition also show that oil shocks had a predominant role inducing financial activity especially in the moments when the price volatility was high. The paper ends with some policy proposals among which is stability in managements of oil revenue, bolstering of risk buffers in the banks and improved fiscal-monetary cooperation. These are the necessary steps to promoting financial strength and providing sustainable credit and deposit development in oil-dependent economies such as Iraq.

Keywords: Oil price shocks - Bank deposits - Credit to private sector - SVAR model - Iraq economy.

INTRODUCTION:

Oil shocks are among the factors that affect a country's economic activity and its banking systems, particularly in oil-exporting countries. Iraq provides an interesting case study for studying the relationship between oil shocks and the volume of bank deposits and loans. Oil is an international strategic commodity, and its prices are affected by supply and demand factors. Extreme fluctuations in these prices make it vulnerable to external shocks (Blundell & Bond, 1993). Since oil revenues are the primary source of funding for development programmers and investment spending in the country, it is noted that the development of oil prices has clear repercussions on the nature of the Iraqi economy. An increase in oil prices will lead to an increase in cash flows and, consequently, an increase in the financial authorities' ability to expand spending, which contributes to improving economic activity. The opposite occurs in the event of a decrease in oil prices. The banking sector in oil-producing countries is significantly affected by a decline in oil prices, which affects asset quality and increases non-performing loans (International Monetary Fund, 2015). The banking sector is a mirror that reflects the health of the macroeconomy, the dynamism of its components, and its ability to respond to external variables. It is the primary channel for liquidity flow and credit provision. Bank deposits and loans are directly and indirectly affected by oil shocks. When oil prices rise, huge revenues flow into the public treasury, increasing the liquidity available in the banking system and enhancing the ability of sources to grant credit. Meanwhile, government deposits increase and individual and corporate confidence improves. Conversely, a sharp decline in oil prices leads to a

[1] University of Wasit, College of Administration and Economics, Department of Financial and Banking Sciences, ORCID: 0009-0000-1614-3338, kabdulrazak@uowasit.edu.iq

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decline in revenues, which puts pressure on bank liquidity, increases lending risks, negatively impacts deposit volume, and restricts credit growth. The Iraqi economy is characterized as rentier, as there is a close relationship between changes in oil prices and the volume of loans and deposits. When oil prices rise, government revenues increase significantly in oil-exporting countries, and a large portion of these revenues are deposited in domestic sources (through sovereign funds or government accounts). In oil rich countries, oil prices are the main economic booster, hence they directly affect the wellbeing of the banking system. Various ways in which deposits and loans are likely to increase and decrease with the increase and decrease in the price of oil involve government revenues, governmental spending, liquidity of the banks, the confidence of the investors and credit risk. Such interdependency makes the banking systems in such countries very vulnerable to the shocks in the world oil market. Oil has held the dominant position in the global economy despite the current advancement of renewable and other types of energy within the last few decades. It is the major source of government income and one of the major determinants of economic activity especially to oil exporting nations. The financing requirement of economic units is sensitive to oil price shocks and hence the oil revenues. A number of studies have dealt with this complicated association between oil price shocks and oil revenues, however not much has been done towards interpreting the effects of the variability of oil prices to the bank deposits and loans. Poghosyan and Hesse (2009) demonstrated in their scientific research, after in-depth analysis of the complex links between oil price fluctuations and oil revenue profitability (measured by return on assets), using the S-GMM model on a dataset of 145 banks in 11 oil-exporting countries in the Middle East and North Africa. This study covered the period from 1994 to 2008. The study concluded that oil prices did not directly affect oil revenue profitability but showed an indirect effect. Resulting from macroeconomic and institutional changes in each country, a team of researchers (XU and XIE, 2015) conducted a detailed analysis using the least squares (OLS) method on a sample of ten Canadian banks from 1995 to 2015. This study revealed a strong, positive association between oil prices and resource profitability in the period before the outbreak of the financial crisis in 2008. This relationship then diminished in the subsequent period, demonstrating the ability of Canadian banks to insulate themselves against oil price fluctuations. Closely related is a study by Al-Harthy et al. (2021). This study examined the relationship between oil prices and resource profitability using a random effects (RE) model on a larger sample of seven commercial banks in the Sultanate of Oman from 2013 to 2017. The results of the study showed no association between oil prices and resource profitability. In contrast, by evaluating the impact of oil price changes on the performance of 85 American banks using the FE and S-GMM models for the period from 2009 to 2020, Patrao (2021) found that oil price changes have a direct and significant impact on the performance of sources. Many studies have shown that the relationship between oil price fluctuations and banking performance may depend on the time context, regardless of whether these countries are oil exporters or importers. These countries must take precautionary measures to protect their economies from the dire consequences of oil price fluctuations. In this regard, Mhamah & Trablsi (2021) conducted a study on a sample of 92 banks in the Gulf Cooperation Council countries using the S-GMM model during the period from 2002 to 2017 to evaluate the factors affecting banking performance in light of oil price fluctuations. The researchers explained that banking performance is affected by changes in oil prices. Contrary to previous results, they confirmed that the business model makes traditional sources more vulnerable. Islamic sources mitigate these fluctuations by preserving and expanding the loan portfolio during periods of low prices.

In the recent literature, the priority has been on realizing the dynamic relative impact of oil price shocks on the financial industry particularly in the oil-based economies. The theoretical underpinnings of the econometric modeling of such relationships have their basis in the contributions of Stock and Watson (2020) who made significant contributions to time series analysis, providing the tools of VAR, and SVAR models. Since the investigation of oil-exporting regions, Maghyereh and Abdoh (2021) established that structural oil shocks have a marked increase in systemic risk among the GCC banking systems, whereas the latter showed that these shocks are propagated into sovereign credit risks through a time-varying parameter SVAR (Maghyereh, Ziadat, and Al Rababa a 2024). Ma, Zhang, and Ji (2021) established that Chinese bank risk is directly affected by oil shocks by means of volatility spillovers. The Indonesian case study adopted a structural VAR model by Baek (2021) when studying the macroeconomic effects of upheavals in oil prices and found out that extreme in crude oil price points towards a close correlation with the major indicators of economy. Likewise, Jiang, Liu, and Xie (2021) based their results on the evidence that oil price shocks considerably affect credit spreads that account for the alterations in the perceived credit risk. Literature related monitory policy relations with oil shocks such as Boukhatem and Djelassi (2022) stated that they have examined bank financing channel in a two-tiered banking system with the result that the oil-induced liquidity variation influences the credit transmission channels. Later on, in a Syrian setting, Alakkari, (2023) employed Bayesian Mixed Frequency VAR to nowcast GDP and (Alakkari et al., 2022)

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obtained the economic uncertainty in the form of stochastic volatility. These results show the topicality of structural oil shocks in the formation of financial and macroeconomic processes and confirm the methodology used in this research.

The research aims to analyses and understand the nature of the relationship between oil shocks and the volume of bank deposits and loans in the Iraqi economic environment, with a focus on how these shocks are transmitted from the global oil market to the core of the banking system. The research also seeks to determine the size and quality of the effects resulting from these shocks. A better understanding of how these impacts are passed on can help create suggestions to improve the stability of the banking sector and its ability to handle future changes in the global oil market using the structural value-added approach.

THEORETICAL FRAMEWORK

Over the past fifty years, the global oil market has witnessed multiple oil shocks. These shocks are essentially sharp and abnormal fluctuations in oil prices, whether significant increases or decreases, a sudden and severe shortage in supply, or a large surplus. Oil shocks are defined as a sudden imbalance in the oil market. This imbalance leads to a sharp rise or fall in prices that persists for a specific period of time. These shocks negatively impact the oil industry and the economies of consuming or producing countries.

These shocks can arise from oil market imbalances due to the simultaneous impact of supply and demand factors or both. This impact can be caused by:

• Internal factors: These are variables related to the oil industry itself. For example, this may occur due to insufficient supply to restore the market to equilibrium or as a result of the influence of monopolistic cartels in the market.

• External factors: These are factors not directly related to the oil industry, such as global capital movements or geopolitical changes (political events with a broad geographical impact) (Magen & Khalel, 2022). Fluctuations in oil prices, whether rising or falling, have positive or negative effects on the oil market and, consequently, on the economies of oil-exporting and oil-importing countries, as follows:

A- The economic effects of oil shocks on bank deposits and loans during high oil prices:

When oil prices rise, oil-exporting countries generate financial surpluses, which prompts them to increase their production activities and attract labour. This also increases government spending, which leads to a rise in people's living standards and enhances their confidence in the economy. This encourages them to deposit their money in banks instead of hoarding it. In 2004, oil prices rose, reaching $40-$50 per barrel. This led to an increase in oil revenues in Iraq, which in turn increased the volume of bank deposits in government and private banks. This increased bank liquidity, which encouraged banks to grant loans to individuals. In 2011, oil prices rebounded to exceed $100 per barrel and then peaked in 2012, reaching $100-$100. $109.45 is the highest level at which global oil prices rose during the research period. Bank deposits and loans are also on the rise in the Iraqi economy. B- The economic effects of oil shocks on bank deposits and loans during the oil price decline:

The decline in oil prices causes significant damage to the economies of both producing and non-producing countries, but it affects producing countries to a greater degree. It leads to a decline in financial revenues, a decrease in the gross domestic product (GDP), a reduction in public spending, and the emergence of a deficit in the state's general budget. The structure of investment and credit expenditures for oil-exporting countries reflects this deficit. Oil prices surged to surpass $100 per barrel in 2008, only to see a swift decline. Prices fell in the last quarter of 2008 to $52.5. This significant decline is due to the severity of the global crisis, the worst of its kind since the Great Depression of 1929. Its effects extended from the United States to Asian and European countries, and many American banks collapsed as a result. This led to a decline in global oil prices. After oil prices recovered following the 2008 crisis and peaked in 2012, they fell. The oil price crash began suddenly in mid-2014 and escalated after OPEC decided in November 2014 to maintain its production ceiling at 30 million barrels of oil. The price of a barrel of oil reached $49.49 and continued to fall in 2016, reaching $40.76, which led to a decline in the performance of banks in Iraq and a decrease in the volume of bank deposits and loans. In 2020, oil prices experienced another shock due to the Corona pandemic, which caused them to plummet; however, this decline did not significantly affect the volume of bank deposits and loans because of the precautionary measures that banks implemented.

DATA, TOOLS AND ECONOMETRICS METHODS:

The data used in this study, covering the period of 2004Q1 to 2023Q4, allows examination of how shocking changes in oil prices have affected financial indicators in Iraq. The World Bank supplied the dataset. The analysis covers three variables: global oil prices, Iraqi bank deposits and credit to the private sector. They are selected to capture the primary

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ways in which changes in oil prices affect Iraq's financial sector. The table included in this chapter highlights the variables and the codes used in our study:

Table (1): Variable Descriptions and Codes

Code	Variable Description
OILO	Global Oil Prices
OIL	Percentage Change in Oil Prices (%)
DEPO	Bank Deposits in Iraq
DEP	Percentage Change in Bank Deposits (%)
CCRO	Credit to the Private Sector (Nominal Terms) in Iraq
CCR	Percentage Change in Credit to Private Sector (%)

Determining whether a variable is stationary relies a lot on tests for unit roots in time series research. Stationary time series have mean, variance and autocovariance that don't change with time, but these measures deviate with time in a non-stationary series where the variability depends on the passing time. Doing unit root tests helps to check the results of regression analysis and guides decision-making on the suitable model for describing the main data trend. The Augmented Dickey-Fuller (ADF) test is the most widely used unit root test, while (Dickey & Fuller, 1979) introduced the basic autoregressive (AR) approach for checking stationarity:

$$Y_t = \rho Y_{t-1} + \epsilon_t$$

Where ϵ_t is a white noise error term. The null hypothesis H0 is that $\rho = 1$ (i.e., the series has a unit root and is non-stationary), against the alternative hypothesis H1: $\rho < 1$ (the series is stationary). To account for serial correlation in the residuals, the Augmented Dickey-Fuller (ADF) test extends the model by including lagged differences of the dependent variable:

$$\Delta Y_t = \alpha + \beta t + \gamma Y_{t-1} + \sum_{i=1}^{p} \delta_i \Delta Y_{t-i} + \nu_t$$

where: Δ is the first difference operator, t is a time trend, a is the constant term, and γ assesses the existence of a unit root, p indicates number of lagged difference terms. What ADF methodology tests are the following hypotheses:

$$H_0 \gamma = 0, H_1 \gamma < 0$$

Depending on the characteristics of the data, three different models are commonly tested:

- Without a constant or trend (none)
- With a constant (intercept only)
- With a constant and a trend (intercept and trend)

It is the significance of the constant and trend variables that guide the choice among the three types of models. A significant finding of a high p-value for the trend term implies the model with include intercept and trend may be considered overfit and so inappropriate. The better choice here might be a model that has either no predictors or just an intercept. In the same way, if the intercept is not statistically significant, the model without constant or trend is chosen. The aim of the decision is to find a balance between having a good model and ensuring that only really needed features are included. So, depending on if the p-values for the intercept and trend are significant, you select the full model, constant-only model or a model without either. Following this strategy leads to accurate recognition of stationarity.

After identifying the integration properties, the Granger causality test is used to assess predictive causal relationships. The model tests whether past values of a variable X improve the prediction of another variable Y:

$$Y_t = \alpha + \sum_{i=1}^{p} \beta_i Y_{t-i} + \sum_{j=1}^{q} \gamma_j X_{t-j} + \varepsilon_t$$

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The null hypothesis is that all $\gamma_j = 0$ indicating no Granger causality from X to Y (Stock & Watson, 2020; Lütkepohl, 2005). For multivariate dynamic modeling, a Vector Autoregressive (VAR) model is estimated:

$$Z_t = A_1 Z_{t-1} + A_2 Z_{t-2} + \cdots + A_p Z_{t-p} + u_t$$

Where Z_t is a vector containing GDP, INV, and BCR, and u_t is a vector of reduced-form disturbances (Sims, 1980). This framework allows endogenous interactions without imposing theoretical restrictions. To recover economically meaningful shocks, the Structural VAR (SVAR) model is formulated:

$$A_0 Z_t = A_1 Z_{t-1} + \cdots + A_p Z_{t-p} + \varepsilon_t$$

which can be rewritten as:

$$Z_t = A_0^{-1}\left(A_1 Z_{t-1} + \cdots + A_p Z_{t-p}\right) + A_0^{-1}\varepsilon_t$$

with structural innovations ε_t assumed to satisfy:

$$E[\varepsilon_t \varepsilon_t'] = I$$

This approach allows identification of orthogonal structural shocks using a recursive Cholesky ordering (Kilian & Lütkepohl, 2017; Canova, 2007).

To evaluate the system's stability, the roots of the autoregressive polynomial are examined. A VAR model is considered dynamically stable if all inverse roots lie within the unit circle (Hamilton, 1994; Lütkepohl, 2005). Next, Impulse Response Functions (IRFs) are computed to measure the time path of the variables following structural shocks. This study uses IRFs, which are defined as:

$$\text{IRF}_h = \sum_{i=1}^{h} \psi_i \varepsilon$$

Where ψ_i represents the impulse response at horizon i and ε is the structural disturbance (Pesaran & Shin, 1998). And Historical Decomposition (HD) is applied to quantify the contribution of each identified structural shock to the historical movement of the variables over time. This decomposition supports the interpretation of past dynamics in the context of identified shocks (Breitung & Eickmeier, 2011; EViews, 2022). This complete econometric setup provides a statistically valid and theoretically grounded methodology to assess the causal mechanisms and dynamic effects.

RESULTS AND DISCUSSION:

Initially, a statistical description of the data, covering both the original variables and their transformations, is provided for the time period 2004Q1 to 2023Q4. Values for main statistics of global oil prices (OILO), their growth rate (OIL), deposits held by banks (DEPO), the growth rate of these deposits (DEP), credit issued to the private sector (CCRO) and its growth rate (CCR) are available in Table (2). The statistics give us an initial overview of the main points, how data are spread and its form, before tackling formal econometric work:

Table (2): Descriptive Statistics for Original and Growth Variables (OIL, DEP, CCR)

2004Q1-2023Q4	OILO	OIL	DEPO	DEP	CCRO	CCR
Mean	72.63098	1.330695	64588.91	3.773404	26545000	19.68826
Median	69.20242	2.092029	64156.55	2.794957	30662233	3.631703
Maximum	110.2788	14.53327	143455.4	12.59267	71287744	1296.378
Minimum	36.05000	-17.77048	8115.000	-4.168187	-342186.5	-162.9835
Std. Dev.	21.75518	7.716601	34708.70	3.878794	21834966	151.3260
Skewness	0.209544	-0.520157	0.420894	0.582405	0.305656	7.731474
Kurtosis	1.896332	2.580607	2.788902	3.059458	1.840877	65.89506

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Jarque-Bera	4.645725	4.141389	2.510561	4.477713	5.724234	13808.18
Probability	0.097993	0.126098	0.284996	0.106580	0.057148	0.000000
Observations	80	79	80	79	80	79

The descriptive statistics in Table (2) provide a clear overview of the behavior and distribution of the original and growth variables for the period 2004Q1–2023Q4. The average value of global oil prices (OILO) is 72.63 USD per barrel, reflecting the long-term level of oil prices over the sample. The growth rate of oil prices (OIL) has a mean of 1.33%, indicating a general upward trend in oil prices during the period. Bank deposits (DEPO) average 64,588.91 billion Iraqi dinars, and their growth rate (DEP) is 3.77%, confirming steady growth in the banking sector. The means of the credit to the private sector (CCRO) are 26.5 trillion dinars, and the rate of growth (CCR) is 19.69 per cent, which is a good measure showing high credit expansion. With regard to the dispersion, the values of the standard deviation engage proven deviations. The oil price growth (OIL) and credit growth (CCR) are the most volatile ones with standard deviations of 7.71 and 151.33 respectively. This level of dispersion implies strong fluctuations in these variables, especially in credit expansion. Bank deposits and their growth show lower levels of variability, suggesting more stable financial sector behavior in those indicators. The skewness values show that most variables are moderately skewed, with CCR exhibiting strong positive skewness (7.73), indicating frequent extreme positive changes. The kurtosis value of CCR (65.89) confirms a heavy-tailed distribution, with sharp peaks and fat tails. The Jarque-Bera test further verifies this result, as CCR is the only variable that significantly violates normality assumptions (p-value = 0.000). The remaining variables display acceptable skewness and kurtosis levels, and their p-values do not reject normality at conventional significance levels.

Table (3): Augmented Dickey-Fuller (ADF) Unit Root Test Results

Variable	Model Specification	ADF t-Statistic	1% CV	5% CV	10% CV	p-Value	Intercept p-Val	Trend p-Val
OIL	Trend + Intercept	-5.459205	-4.0817	-3.4692	-3.1615	0.0001	0.4744	0.6871
	Intercept Only	-5.486949	-3.5178	-2.8996	-2.5871	0.0000	0.4432	-
	None	-5.449519	-2.5953	-1.9451	-1.6140	0.0000	-	-
DEP	Trend + Intercept	-2.039582	-4.0906	-3.4734	-3.1640	0.5699	0.4089	0.6843
	Intercept Only	-2.270154	-3.5242	-2.9024	-2.5886	0.1843	0.2484	-
	None	-2.120578	-2.5975	-1.9454	-1.6138	0.0335	-	-
CCR	Trend + Intercept	-8.018042	-4.0800	-3.4685	-3.1611	0.0000	0.4554	0.7779
	Intercept Only	-8.062012	-3.5167	-2.8991	-2.5869	0.0000	0.3028	-
	None	-7.991036	-2.5949	-1.9450	-1.6141	0.0000	-	-

In Table (3), the Augmented Dickey-Fuller (ADF) unit root tests on all the three variables OIL, DEP and CCR are reported under three specifications of the models such as with Trend and Intercept, with only Intercept, and without both. Choice of the right model specification depends on the statistical significance of the intercept and the trend terms. In the present case of OIL, the p-values of the intercept and the trend are quite large (0.4744 and 0.6871), which reflects the insignificance of the findings. As such, the model without constant and trend is desirable, where the ADF statistic (-5.4495) is far below the critical value of 1 percent establishing that the data series is stationary. For DEP, both the intercept and trend terms are also statistically insignificant (p = 0.4089 and 0.6843), suggesting the use of the no constant and no trend model. In this specification, the ADF test yields a p-value of 0.0335 and a test statistic lower

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than the 5% critical value, which supports rejecting the null hypothesis and concludes that DEP is stationary. In the case of CCR, the p-values for the intercept (0.4554) and trend (0.7779) confirm their insignificance. Thus, the simplest model specification is again selected, and the ADF test strongly rejects the presence of a unit root (ADF statistic = -7.9910, p = 0.0000). These results demonstrate that all variables are stationary in their current form under the model specifications that exclude intercept and trend, which were selected based on the lack of statistical significance for those components. This ensures the validity of subsequent VAR estimations using these series in level form.

Table (4): Pairwise Granger Causality Test Results (Lag = 2)

Null Hypothesis	Observations	F-Statistic	p-Value
DEP does not Granger Cause OIL	77	2.27229	0.0411
OIL does not Granger Cause DEP	77	2.58997	0.0216
CCR does not Granger Cause OIL	77	0.44148	0.8718
OIL does not Granger Cause CCR	77	4.23081	0.0062

Table (4) presents the results of the Pairwise Granger Causality Tests. The bidirectional causality between DEP and OIL is statistically significant at the 5% level, indicating that changes in bank deposit growth and oil price growth provide predictive power for one another. Further, unidirectional causality is found between OIL and CCR (p = 0.0062) implying that oil price shocks Granger-cause credit to the private sector and conversely, CCR does not Granger-cause oil prices (p = 0.8718). These findings suggest that oil shocks are a predictor of any financial aggregate changes in Iraq.

Table (5): VAR Lag Order Selection Criteria for CCR, DEP, and OIL

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-802.1415	NA	1,036,559	22.36504	22.45990	22.40281
1	-639.1098	307.9489	14,372.82	18.08638	18.46583	18.23744
2	-556.6611	148.8655	1,871.247	16.04614	16.71017	16.31049
3	-535.9367	35.69205	1,355.946	15.72046	**16.66908**	16.09811
4	-526.8856	14.83381	1,362.970	15.71904	16.95224	16.20998
5	-523.0894	5.905243	1,591.742	15.86359	17.38137	16.46783
6	-496.2040	**39.58117***	**983.8931***	**15.36678***	17.16914	**16.08430***
7	-488.3261	10.94154	1,037.738	15.39795	17.48489	16.22877

Legend:

- **LogL**: Log-likelihood
- **LR**: Likelihood ratio test statistic
- **FPE**: Final prediction error
- **AIC**: Akaike information criterion
- **SC**: Schwarz information criterion
- **HQ**: Hannan-Quinn information criterion

Selected Lag:

- **Lag 6** is selected based on **FPE**, **AIC**, and **HQ**.
- **Lag 3** is selected by **SC**.

Table (5) shows the best application of lag length which is the Vector Autoregressive (VAR) model. The lag 6 would be used as the best specification according to Final Prediction Error (FPE), Akaike Information Criterion (AIC) and Hannan-

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Quinn (HQ) criterion. A high penalty of model complexity (Schwarz Criterion (SC) recommends lag 3, although, having the model structural depth and diagnostic quality, lag 6 is to be kept in the estimation.

Table (6): Vector Autoregression (VAR) Estimates

Table: Vector Autoregression (VAR) Estimates
Endogenous variables: CCR, DEP, OIL
Sample: 2005Q4 – 2023Q4 (73 observations)
Lags: 6
Standard errors in ( ) and t-statistics in [ ]

Regressor	CCR Equation	DEP Equation	OIL Equation
CCR(-1)	1.175 (0.127) [9.25]	0.0002 (0.0015) [0.14]	-0.0024 (0.0100) [-0.24]
CCR(-2)	-1.320 (0.192) [-6.89]	-0.0033 (0.0023) [-1.42]	-0.0057 (0.0150) [-0.38]
CCR(-3)	1.061 (0.234) [4.54]	0.0027 (0.0028) [0.98]	0.0052 (0.0183) [0.28]
CCR(-4)	-0.953 (0.233) [-4.09]	-0.0031 (0.0028) [-1.11]	-0.0111 (0.0183) [-0.61]
CCR(-5)	0.532 (0.198) [2.68]	0.0021 (0.0024) [0.87]	0.0034 (0.0156) [0.22]
CCR(-6)	-0.359 (0.131) [-2.74]	0.0009 (0.0016) [0.59]	-0.0003 (0.0103) [-0.03]
DEP(-1)	2.093 (9.928) [0.21]	2.130 (0.119) [17.95]	0.987 (0.778) [1.27]
DEP(-2)	-6.176 (22.676) [-0.27]	-1.352 (0.271) [-4.99]	-0.729 (1.777) [-0.41]
DEP(-3)	5.913 (26.387) [0.22]	0.218 (0.315) [0.69]	0.431 (2.067) [0.21]
DEP(-4)	2.762 (26.352) [0.10]	-0.745 (0.315) [-2.36]	-2.318 (2.065) [-1.12]
DEP(-5)	-3.929 (22.213) [-0.18]	1.380 (0.265) [5.20]	3.525 (1.740) [2.03]
DEP(-6)	1.222 (9.308) [0.13]	-0.657 (0.111) [-5.91]	-1.674 (0.729) [-2.29]
OIL(-1)	-0.480 (1.774) [-0.27]	-0.033 (0.021) [-1.57]	1.415 (0.139) [10.18]
OIL(-2)	-0.411 (3.164) [-0.13]	0.040 (0.038) [1.06]	-0.752 (0.248) [-3.03]
OIL(-3)	-0.091 (3.459) [-0.03]	-0.011 (0.041) [-0.26]	0.161 (0.271) [0.59]
OIL(-4)	-0.343 (3.456) [-0.10]	0.023 (0.041) [0.55]	-0.281 (0.271) [-1.04]
OIL(-5)	1.356 (3.161) [0.43]	-0.087 (0.038) [-2.30]	0.263 (0.248) [1.06]
OIL(-6)	-1.927 (1.726) [-1.12]	0.048 (0.021) [2.34]	-0.158 (0.135) [-1.16]
Constant	-0.882 (5.657) [-0.16]	0.081 (0.068) [1.20]	-0.298 (0.443) [-0.67]

Metric	CCR	DEP	OIL
R-squared	0.688	0.993	0.934
Adj. R-squared	0.584	0.991	0.912
F-statistic	6.625	438.283	42.595

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AIC	9.820	0.965	4.727
SC	10.416	1.562	5.323
Determinant residual covariance (adj.): 480.798 Overall Log likelihood: -503.140 System AIC: 15.346 System SC: 17.135 No. of estimated coefficients: 57			

The result of estimating the unrestricted Vector Autoregression (VAR) model, with a lag of six, using the endogenous variables, CCR, DEP, and OIL is cited in table (6). Although the framework of VAR depicts statistical dependency of the variables with time, it is also important to mention that it is incapacitated in its reduced form because the estimated coefficients cannot be interpreted directly economic causal (or even structural) relationships.

Each coefficient in the equation links the current position of one variable to past and other present positions of it and other factors in the system. Yet, since the residuals in a reduced-form VAR are often related between equations, each estimated model shows the impact of several contemporaneous shocks together. This disjointed structure makes it necessary to add more requirements to clearly credit a change in OIL to a single oil shock. Statistically, the presence of off-diagonal values in the residual covariance matrix points to simultaneous relationships between the error terms. Because of this, a shock to one variable might look like a shock to the others, making it difficult to understand what happened. A big DEP coefficient on CCR might show that DEP also impacts CCR and not only the reverse. Because of this limitation, the analysis must switch to a structural VAR (SVAR) model and add economic restrictions (either recursive or theoretical) to the relationships between variables at the same time. Due to these identifying constraints, the system is built with uncorrelated structural shocks, so we can explore the impact of shocks and understand the underlying causes. As a result, while the reduced-form VAR model yields helpful statistics and confirms important links between time periods, it is mainly intended as a first approach. The SVAR model allows us to separate the main influences within the system by removing instantaneous impacts, so we can find the true structural changes.

Table (7): Structural VAR (SVAR) Coefficient Estimates and Structural Impact Matrix (F)

Structural VAR Estimates				
Sample (adjusted): 2005Q4 2023Q4				
Included observations: 73 after adjustments				
Estimation method: Maximum likelihood via Newton-Raphson (analytic derivatives)				
Convergence achieved after 28 iterations				
Structural VAR is just-identified				
Model: e = Phi*Fu where E[uu']=I				
F =				
C(1)	0	0		
C(2)	C(4)	0		
C(3)	C(5)	C(6)		
	Coefficient	Std. Error	z-Statistic	Prob.
C(1)	41.79758	3.459193	12.08304	0.0000
C(2)	1.295815	0.996123	1.300858	0.1933
C(3)	-3.611703	0.998417	-3.617431	0.0003
C(4)	8.461416	0.700272	12.08304	0.0000
C(5)	5.749325	0.825281	6.966507	0.0000
C(6)	5.761258	0.476805	12.08304	0.0000
Log likelihood	-536.1513			
Estimated S matrix:				
26.83595	-5.056677	10.91893		
-0.021244	0.331635	0.114290		
-1.094146	0.138305	2.023247		

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Estimated F matrix:			
41.79758	0.000000	0.000000	
1.295815	8.461416	0.000000	
-3.611703	5.749325	5.761258	

Table (7) indicates the outcome of Structural Vector Autoregression (SVAR) model estimated as maximum likelihood, analytic derivatives. The SVAR model is specified subject to a recursive pattern with the help of Cholesky decomposition in order to identify the structural impact matrix (F) derived to enable interpretable implications of shocks. The model is just-identified, meaning the number of restrictions imposed equals the number required for identification, and convergence was achieved after 28 iterations.

In this structure, the reduced-form residuals are decomposed into uncorrelated structural shocks through the matrix equation $e=\Phi \cdot F$ where $E[uu'] = I$. The recursive identification assumes that oil shocks (first equation) are contemporaneously exogenous, affecting the system immediately, while bank deposit shocks respond to oil but not to credit within the same period. Credit shocks are allowed to respond contemporaneously to both oil and deposit shocks. The structural coefficient estimates indicate the magnitude and direction of immediate responses to structural shocks: C(1) = 41.798 is highly significant and reflects the direct response of oil prices to their own innovation. C(2) = 1.296, the contemporaneous response of deposits to oil shocks, is statistically insignificant (p = 0.1933), suggesting weak immediate transmission from oil to deposits. C(3) = -3.612 is significant (p = 0.0003), capturing a negative contemporaneous response of credit to oil price shocks. C(4), C(5), and C(6) are all highly significant, indicating strong and immediate internal dynamics among deposits and credit in response to their respective shocks. The estimated structural impact matrix (F) reflects this recursive ordering: This matrix F in the table confirms that:

- Oil shocks affect all variables,
- Deposit shocks affect credit but not oil,
- Credit shocks affect only credit contemporaneously.

The S matrix, the estimated covariance matrix of the structural residuals, shows well-behaved variances and moderate covariances, supporting the robustness of the decomposition. the SVAR model overcomes the interpretational limitations of the reduced-form VAR by isolating economically meaningful structural shocks. It provides the foundation for impulse response and historical decomposition analysis, enabling precise examination of how oil shocks transmit through Iraq's financial sector.

Table (8): SVAR Diagnostic Test Results

Test Type	Lag / Component	Statistic	df	p-Value
Serial Correlation (LM Test)	Lag 1	10.411	9	0.318
	Lag 2	17.683	18	0.477
	Lag 3	22.504	27	0.711
	Lag 4	36.561	36	0.443
	Lag 5	40.902	45	0.646
	Lag 6	49.091	54	0.664
	Lag 7	53.937	63	0.785
Heteroskedasticity (Joint Test)	—	249.239	216	0.160
Normality (Doornik-Hansen Test)	Joint	0.235	3	0.628

The diagnostic tests of the Structural VAR model have been reported in table (8) to guarantee the dependability of the result. All tests of the LM serial correlation except the test at lag 1 are not statistically different than 0; this is an indication of an absence of significant serial correlation in the residuals. The heteroskedasticity test also indicates a p-

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value of 0.160 which proves homoscedastic residuals. Also, the Doornik-Hansen test of normality gives p-value of 0.628 indicating that the residuals are normally distributed (multi-dimensionally). All of these results attest together to the statistical sufficiency of the SVAR version and prove that the assumptions used as the foundation of estimation are satisfied.

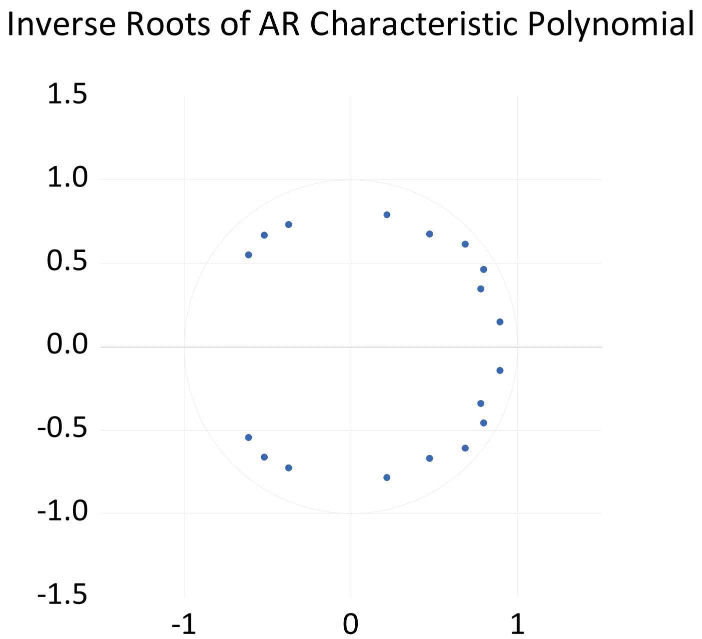

Figure (1): inverse roots of the AR characteristic polynomial for a Structural Vector Autoregression (SVAR) model.

The inverse roots of the Structural VAR auto-regressive (AR) characteristic polynomial is provided in figure (1). The roots are all located inside the unit circle hence the model meets the stability criterion. It means that we have dynamically stable system and that impacts will decay as time moves on it, therefore, confirming the validity of all the findings accredited to the impulse reaction functions and the whole VAR based inference.

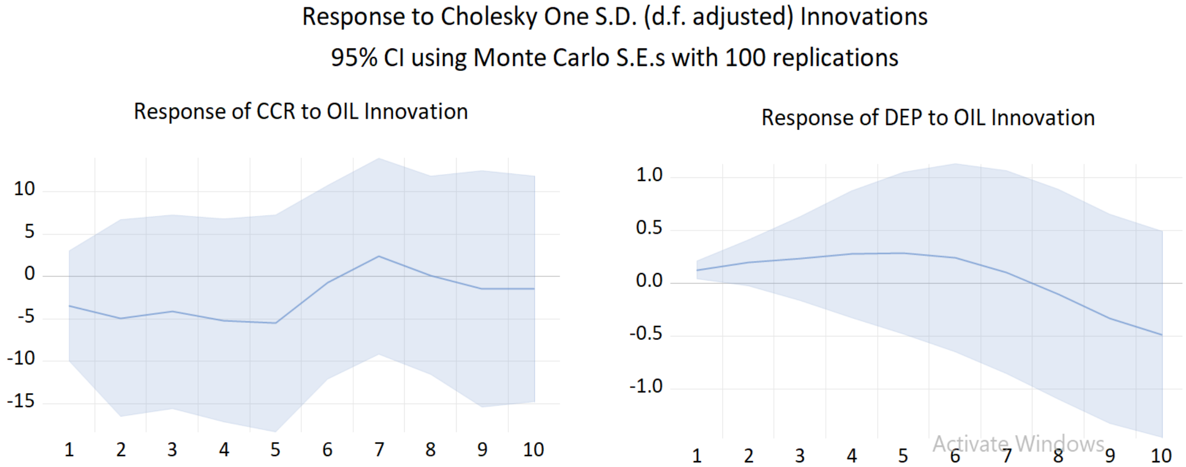

Figure (2): Impulse Response Functions of CCR and DEP to One Standard Deviation Shock in OIL

Figure (2) presents the impulse response functions (IRFs) of credit to the private sector (CCR) and bank deposit growth (DEP) to a one standard deviation positive shock in oil prices, identified through a Cholesky decomposition. The shaded areas represent 95% confidence intervals based on Monte Carlo simulations.

It is shown in the left panel that an oil price rise causes the CCR to drop right away in the initial four periods. This short-term reduction happens because of financial adjustments and a lack of ready liquidity which makes less credit available.

From period five onward, the shift of CCR increases and its response turns positive from periods six and seven onwards. This results from oil revenues becoming available to the economy later on, because spending by the government, easier access to money and increased activity by the private sector all help this. You can see in the right panel that DEP increases right away, reaching its highest level during the fourth and fifth periods. The rise in liquidity within banks comes from the greater income and higher activity that flow from oil revenues. But as time goes on, the positive effect on the industry gradually lessens, until it becomes negative at the end of the period pointed out by the forecast. As a result of this pattern, the rapid growth from oil revenue is soon reduced due to growing imports, fewer real earnings from deposits or adjustments in where scientists prefer to invest. The findings prove that oil price shocks differently and randomly affect Iraq's financial sector over time. At first, big swings and costs happen with oil shocks, but soon they boost financial strength as the incoming cash is placed in banks. They point out that joint work on fiscal and monetary aspects is needed to help oil-driven increases in liquidity improve financial development in the long term.

Table (9): Impulse Response of DEP and CCR to OIL Shock (Cholesky Ordering: OIL → DEP → CCR)

Standard errors in parentheses (Monte Carlo, 100 repetitions)

Period	DEP	CCR
1	0.130	-3.459
	(0.044)	(3.341)
2	0.200	-4.899
	(0.111)	(5.940)
3	0.240	-4.156
	(0.203)	(5.852)
4	0.279	-5.196
	(0.306)	(6.103)
5	0.289	-5.502
	(0.391)	(6.530)
6	0.244	-0.694
	(0.453)	(5.822)
7	0.109	2.417
	(0.490)	(5.919)
8	-0.101	0.146
	(0.508)	(5.958)
9	-0.332	-1.438
	(0.507)	(7.126)
10	-0.482	-1.461
	(0.498)	(6.805)

Table (9) reports the numerical values of the impulse response of bank deposit growth (DEP) and credit to the private sector growth (CCR) to a one standard deviation positive oil price shock over a ten-period horizon, based on Cholesky ordering (OIL → DEP → CCR). Monte Carlo replications (100) are used to give standard errors. DEP has a positive response that reaches peak in period number 5 with value 0.289. This affirms that the rise in oil prices causes temporary build up of the amount of reserves in the banking sector because of heightened liquidity and government revenue inflow. Since period 7, the reaction is converting to negative as it shows -0.482 in period 10, which means that there is opposite effect compared to the first impact. This tendency indicates the temporary cycle of oil-generated liquidity which wears out with time. In the case of CCR, the negative response is recorded in the initial five periods, and the greatest level of contraction of credit growth is recorded in period 2 (-4.899), showing that the initial response of credit growth shrinks post-oil shocks. This complies with the financial tightening or postponed changes in the provision of credit in the short run. Starting at period 6 the answer becomes positive and it reaches 2.417 in period 7 then drops a bit. The trend portrays that the oil receipts tend to respond to the improvement of credit terms by firms after a period of initial adjustment. the findings suggest that oil shocks have short effect contractionary impacts on the credit and short-lived inflationary impacts on the deposit and then realignment in medium-term. The dynamics emphasize the necessity of

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controlling the inflow of oil revenues in order to stabilize the responses of the financial sector and contribute to stable growth of credit and deposits.

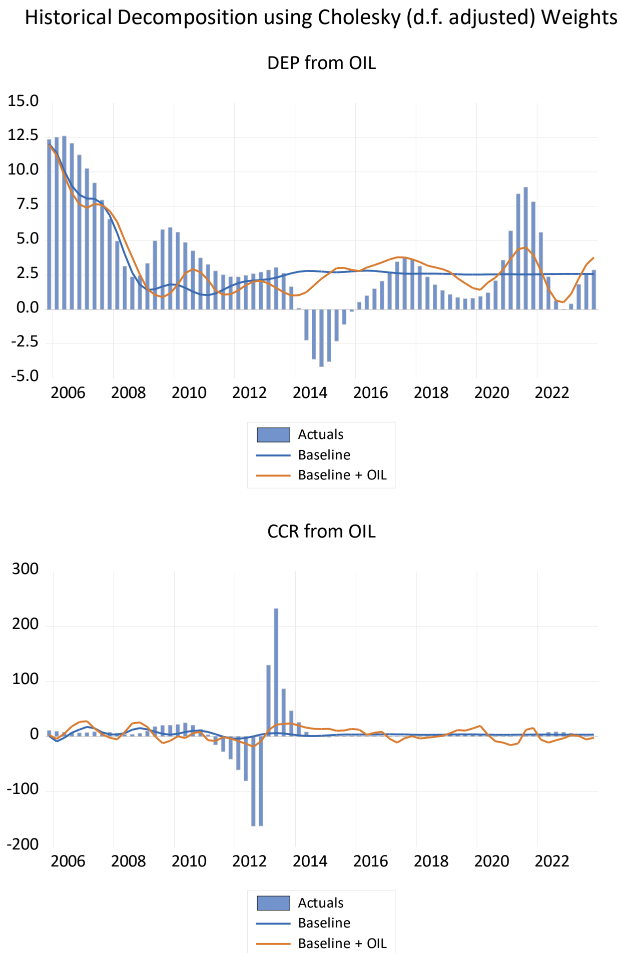

Figure (3): Historical Decomposition of DEP and CCR Attributed to OIL Shocks
Using Cholesky (d.f. adjusted) weights

Figure (3) displays the historical decomposition of bank deposit growth (DEP) and credit to the private sector growth (CCR) attributed to oil price shocks, using Cholesky (d.f. adjusted) weights. In the upper panel (DEP from OIL), oil shocks explain a significant portion of deposit fluctuations between 2006 and 2010, with positive contributions during oil booms and sharp declines during oil price collapses. From 2011 onward, the influence of oil shocks becomes more moderate and stable, reflecting a structural adjustment in the banking system's sensitivity to oil revenues. In the lower panel (CCR from OIL), credit growth shows a pronounced negative response to oil shocks during the period 2009–2011. This gives in the contractionary effect of oil price volatility on credit conditions, probably because of fiscal tightening and augmented risk aversion. The role of oil shocks in CCR is distilled eventually after 2012, and it is irrelevant, which means that the immediate direct effect of oil prices on credit behavior is diminished, and it may be attributed to either policy buffers or diversification of drivers of credit behavior. historical decomposition shows that oil shocks had a substantial role in the dynamics of the financial sector especially in the instances of volatility. The findings portray the significance of oil as a prevailing external influence in the monetary and credit progress in Iraq particularly prior to 2014.

CONCLUSIONS AND RECOMMENDATIONS:

This study analyzed the impact of oil price shocks on bank deposit growth and credit to the private sector in Iraq over the period 2004Q1–2023Q4, using a Structural Vector Autoregression (SVAR) model. The results confirm that oil shocks have a strong and time-dependent influence on key financial indicators. In the short term, positive oil price shocks lead

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to an increase in bank deposits, driven by a direct rise in oil revenues and subsequent liquidity injection into the banking sector, credit to the private sector contracts during the same period due to delayed fiscal responses, weak credit transmission channels, and precautionary behavior by banks. In the medium run the reverse is true. With the oil revenues slowly deposited through a public expenditure, there is an increment in the demand of finance, x-rays to improve the liquidity as well as the commencement of the credit expansion. The dynamic behaviors of the impulse response functions fit the economic setup of the country where more than 90 percent of government revenues and a large portion of domestic liquidity are pegged on oil exportation. Historical decomposition analysis demonstrates that oil shocks accounted for the majority of the fluctuations in both bank deposits and credit growth between 2006 and 2012. From the mid-00s, oil shocks impacted Iraq less, as reforms were introduced, liquidity grew under new central bank policies and banks faced pressure to pay more attention to wage policies and international trade. After looking at what is known about these trends, these are the policy suggestions we need. The government should first set up a policy that smooths oil revenue spending in the economy, avoiding rapid growth or shrinkage of the financial system. Next, it's important for the banking sector to be modified in a way that helps it better take in and distribute oil revenue, using solid guidelines, new risk prevention strategies and higher capital reserves. In addition, it is necessary to coordinate fiscal and monetary policies so that revenue from oil production is not overwhelmed by credit expansion during times of changing oil prices. By starting a sovereign wealth fund for oil income, it is possible to stabilize finances and ensure money for future investment. These steps play a crucial role in helping Iraq's oil income support responsible financial development over the long term.

1- Alakkari, K. (2023). Nowcasting GDP in Parsimony Data Environment Using Bayesian Mixed Frequency VAR (Empirical Evidence from Syria). *Syrian Journal for Science and Innovation*, *1*(2-Volume 1).
2- Alakkari, K., Yadav, S., & Mishra, P. (2022). Measuring economic uncertainty in Syria: An approach to the stochastic volatility model. *Indian Journal of Economics and Development*, *18*(2), 281-291.
3- Al-Harthy, L. S. H., Jalagat, R., Jr., & Sayari, K. (2021). Determinants of bank profitability during oil price decline: Evidence from selected banks in Oman.
4- Baek, J. (2021). Crude oil prices and macroeconomic activities: a structural VAR approach to Indonesia. *Applied Economics*, *53*(22), 2527-2538.
5- Blundell, R., & Bond, S. (1998). Initial conditions and moment restrictions in dynamic panel data models. *Journal of Econometrics, 87*(1), 115–143. https://doi.org/10.1016/S0304-4076(98)00009-8
6- Boukhatem, J., & Djelassi, M. (2022). The bank-lending channel of monetary policy transmission in a dual banking system: empirical evidence from panel VAR modeling. *Cogent Economics & Finance*, *10*(1), 2107765.
7- Breitung, J., & Eickmeier, S. (2011). Analysing business cycle asymmetries in a large multi-country dataset. *Journal of Applied Econometrics*, *26*(3), 391–420.
8- Canova, F. (2007). *Methods for Applied Macroeconomic Research*. Princeton University Press.
9- Dickey, D. A., & Fuller, W. A. (1979). Distribution of the estimators for autoregressive time series with a unit root. *Journal of the American Statistical Association*, *74*(366), 427–431.
10- EViews. (2022). *EViews User's Guide II*. IHS Global Inc.
11- Hamilton, J. D. (1994). *Time Series Analysis*. Princeton University Press.
12- Jiang, Y., Liu, C., & Xie, R. (2021). Oil price shocks and credit spread: Structural effect and dynamic spillover. *The North American Journal of Economics and Finance*, *58*, 101467.
13- Kilian, L., & Lütkepohl, H. (2017). *Structural Vector Autoregressive Analysis*. Cambridge University Press.
14- Lütkepohl, H. (2005). *New Introduction to Multiple Time Series Analysis*. Springer-Verlag.
15- Ma, Y., Zhang, Y., & Ji, Q. (2021). Do oil shocks affect Chinese bank risk?. *Energy Economics*, *96*, 105166.
16- Magen, M. M., & Kaleel, A. K. (2022). The impact of oil shocks on public revenues in Algeria: An economic analytical study during the period (1970–2020).
17- Maghyereh, A., & Abdoh, H. (2021). The effect of structural oil shocks on bank systemic risk in the GCC countries. *Energy Economics*, *103*, 105568.
18- Maghyereh, A., Ziadat, S. A., & Al Rababa'a, A. R. A. (2024). The pass-through effects of oil price shocks on sovereign credit risks of GCC countries: Evidence from the TVP-SVAR-SV framework. *International Journal of Finance & Economics*, *29*(4), 4681-4703.
19- Mahmah, A. El, & Trabelsi, M. (2021). Banks' performance amid oil price shocks: Empirical evidence from GCC countries, 2002–2017. *Sustainable Development Goals and External Shocks in the MENA Region: From Resilience*

to Change in the Wake of Covid-19, 1–20. https://erf.org.eg/publications/banks-performance-amid-oil-price-shocks-empirical-evidence-from-gcc-countries-2002-2017/
20- Patrão, L. M. F. J. (2021). *The impact of oil price shocks on the performance of U.S.* [Master's thesis, Universidade Católica Portuguesa]. https://repositorio.ucp.pt/handle/10400.14/35814
21- Pesaran, M. H., & Shin, Y. (1998). Generalized impulse response analysis in linear multivariate models. *Economics Letters*, *58*(1), 17–29.
22- Poghosyan, T., & Hesse, H. (2009). Oil price and bank profitability: Evidence from major oil-exporting countries in the Middle East and North Africa.
23- Sims, C. A. (1980). Macroeconomics and reality. *Econometrica*, *48*(1), 1–48.
24- Stock, J. H., & Watson, M. W. (2020). *Introduction to Econometrics* (4th ed.). Pearson.
25- Xu, C., & Xie, B. (2015). *The impact of oil price on bank profitability in Canada* [Master's thesis, Simon Fraser University]. http://refhub.elsevier.com/S2214-8450(24)00136-4/sref77