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ASSESSING THE IMPACT OF OIL PRICES AND INFLATION ON BANK DEPOSITS IN AZERBAIJAN

Abstract

Bank deposits are vital for the economy, serving as a primary source of funding for banks that facilitate lending, investment, consumption, and overall economic growth. This article aims to examine how oil price fluctuations and inflation, two critical macroeconomic variables, influence bank deposits in Azerbaijan, an energy-exporting country. The primary purpose is to reveal the extent to which these factors, particularly in the context of Azerbaijan's role as an energy exporter, affect the stability and liquidity of the banking sector. Using the Autoregressive Distributed Lag (ARDL) model and Granger causality testing, the study analyzes the dynamic relationships among these variables. The findings demonstrate a significant long-term relationship and causal effects between oil prices, inflation, and bank deposits. Specifically, a one-unit increase in oil prices results in a 0.057-unit rise in bank deposits, underscoring the positive impact of oil price increases on banking sector liquidity. Conversely, a one-unit increase in inflation decreases bank deposits by 0.812 units in the long term, highlighting inflation's detrimental effect on financial stability.

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INTRODUCTION

Bank deposits serve as a critical pillar of economic stability and growth, providing essential liquidity for financial institutions to facilitate lending and investment, which, in turn, stimulate economic activity. In Azerbaijan, where the banking sector plays a pivotal role in channeling financial resources, deposits represent the largest share of total banking liabilities. By the third quarter of 2024, deposits accounted for 80.9% of total liabilities, signifying increased public trust in the financial system (Tariverdiyev, 2024). This growing reliance on deposits underscores the need for robust financial stability, particularly given the sector's exposure to external macroeconomic dynamics.

Azerbaijan's economy remains highly susceptible to global oil price fluctuations due to its significant dependence on oil exports. Variations in oil prices directly affect government revenues and foreign exchange reserves, thereby contributing to economic instability and complicating long-term fiscal planning (IMF, 2021). Although strategic initiatives aimed at economic diversification are ongoing, the country's reliance on oil revenue continues to pose substantial risks to the stability of its banking sector. Inflation represents an additional challenge, largely driven by global increases in food and raw material prices. In response, the Central Bank of Azerbaijan has adopted measures such as raising the refinancing rate to curb inflationary pressures and maintain macroeconomic stability (CBAR, 2023). Nevertheless, persistent inflationary trends continue to challenge the resilience of the financial system, emphasizing the need for comprehensive risk management strategies to protect deposit stability and support sustainable economic growth. Ensuring the stability of the banking sector is essential for enhancing investor and depositor confidence, which is crucial for attracting capital and strengthening economic resilience. Enhancing deposit insurance frameworks and implementing sound governance practices are critical measures for mitigating financial risks and fostering sustainable financial development as Azerbaijan transitions toward a more diversified, non-oil-dependent economy (Aydemirov, 2017).

This study addresses the critical impact of oil price fluctuations and inflation on the financial systems of energy-exporting economies, with a specific focus on Azerbaijan, a country heavily dependent on oil revenues. While the broader relationship between these macroeconomic factors is well-explored, there is limited attention to their specific effects on Azerbaijan's banking sector. The scientific problem lies in understanding how these macroeconomic variables influence bank deposits in Azerbaijan and their broader implications for financial stability. By examining this dynamic, the study aims to contribute to resolving the challenges associated with economic volatility, offering insights that can guide future policy decisions for enhancing financial resilience and supporting sustainable economic growth.

1. LITERATURE REVIEW

Analyzing the influence of oil prices and inflation on the banking sector has become a focal point of academic inquiry in Azerbaijan. Scholars have approached this issue from diverse methodological perspectives, underscoring its complexity and significance. In a notable study, Ibrahimov (2016) investigated the role of macroeconomic variables, particularly oil prices and inflation, in shaping the profitability and stability of the Azerbaijani banking sector. Utilizing panel data analysis of 41 commercial banks registered with the Central Bank of Azerbaijan (CBA) between 2012 and 2015, Ibrahimov demonstrated the considerable repercussions of the 2014 global oil price decline on Azerbaijan's economy and banking industry. His research further analyzed the regulatory responses and policy interventions by the CBA, evaluating their effects on commercial banks' performance amid economic pressures and contextualizing Azerbaijani practices within a comparative international framework. Hasanov et al. (2018) examined the impact of bank-specific characteristics and overarching macroeconomic conditions on bank profitability in Azerbaijan, particularly in response to the 2015 oil price collapse, currency devaluation, and financial instability. Their study employed a dynamic panel model utilizing the Generalized Method of Moments and revealed that factors such as bank size, capital, loan levels, economic cycles, inflation expectations, and oil prices had a positive effect on profitability. Conversely, deposits, liquidity risk, and currency devaluation negatively impacted profitability. Aliyeva (2020) explored the empirical effects of national currency devaluation on the banking sector in Azerbaijan, focusing on how such devaluation impacts bank performance. Given the challenges posed by currency volatility in developing nations, the study analyzed the relationship between currency devaluation and bank profitability from 2013 to 2018, particularly considering the financial instability triggered by oil and gas price fluctuations in 2014, utilizing Panel Data Analysis to examine the interactions between the dependent and independent variables in the regression model.

A substantial body of literature has examined this research topic from a global perspective, elucidating the multifaceted factors that influence bank profitability across various countries and economic contexts. These studies investigate a wide range of determinants, including regulatory frameworks, market structures, and macroeconomic variables, all of which can profoundly affect bank performance in different environments. Kaffash et al. (2020) conducted a comprehensive study using Data Envelopment Analysis (DEA) to examine the impact of oil price fluctuations on bank efficiency in Middle Eastern Oil-Exporting (MEOE) countries, highlighting the significant influence of macro-financial conditions in this context. Their analysis indicated that oil price variations affect bank efficiency through both direct and indirect mechanisms, with Islamic banks showing lower

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Table 1. Overview of relevant studies

Author(s)	Research Year	Research Result
Al-Khazali and Mirzaei	2017	Oil price increases decrease non-performing loans (NPLs) in oil-exporting countries, with negative shocks impacting more significantly, particularly in large banks. Macroprudential policies suggested.
Rostin et al.	2019	In Indonesia, crude oil prices affect interest rates negatively in the long run, with no significant impact on inflation or economic growth.
Nadalizadeh et al.	2019	In Iran, lower oil prices increase non-performing loans (NPLs), with economic factors like low growth and high interest rates also raising NPLs.
Saif-Alyousfi et al.	2021	Oil and gas price rises benefit GCC banks by increasing deposits. Conventional banks benefit more than Islamic banks, especially during oil price increases.
Alqahtani et al.	2020	Oil prices have an inverse U-shaped effect on GCC bank indices, positively influencing them until $95/barrel, after which the impact turns negative.
Deka et al.	2024	Economic growth and financial development promote renewable energy. Oil prices, inflation, and public sector credit hinder RE development. No significant FDI effect found.
Slimane and Alsolamy	2024	Oil price shocks positively affect Saudi banks, with conventional banks benefiting more from increases. Islamic banks are more adversely impacted by oil price drops.
Sezal	2024	Inflation positively affects the BIST Bank Index, while gold prices, interest rates, and exchange rates negatively impact it. Oil prices show no statistical relationship.

sensitivity to these fluctuations compared to commercial and investment banks. Mohammad et al. (2019) explored the impact of oil price fluctuations and cyclical factors on the stability of conventional and Islamic banks, employing two distinct stability measures to highlight the differential effects of oil price changes. Their results indicated that while oil price variations enhance the stability of conventional banks through an accounting approach, Islamic banks showed a positive correlation with GDP and a negative relationship with inflation, revealing significant policy implications for financial stability in the Middle East and other oil-dependent emerging economies.

Table 1 presents a concise overview of numerous studies that examine the interrelationships between oil prices, inflation, and associated economic variables, as well as their influence on banking performance, illuminating significant findings and implications across diverse countries and contexts.

Existing studies highlight the significant impact of oil price volatility and inflation on financial systems, particularly in oil-exporting countries, where these factors shape banking sector liquidity and stability. While extensive research examines these macroeconomic relationships, limited attention has been given to Azerbaijan's banking sector, despite its heavy reliance on oil revenues. This article aims to fill this gap by investigating how oil price fluctuations and inflation jointly influence bank deposits in Azerbaijan. The purpose is to provide empirical insights to guide policymakers in enhancing financial stability and resilience in an energy-producing economy.

2. DATA AND METHODOLOGY

2.1. Data analysis

The data collection process incorporates three key variables obtained from reputable international sources. The dependent variable, Bank Deposits (BD), expressed as a percentage of GDP, reflects the scale of deposits in relation to the nation's overall economic output. Oil Price (OP), in US dollars per barrel, is included as an independent variable to examine the effects of global oil price shifts on Azerbaijan's banking sector, which is highly influenced by the country's oil-reliant economy. The Inflation Rate (INF), the second independent variable, denotes the annual rate of change in consumer prices and facilitates analysis of how inflationary trends influence domestic bank deposits.

The data used for these variables were sourced from established international databases, including the Federal Reserve Bank of St. Louis (FRED), Macro Trends, Statista, and the World Bank. These sources offer high data reliability and continuity across multiple time frames, enabling a nuanced examination of trends and relationships within Azerbaijan's banking and economic sectors.

Table 2. Overview of data indicators for Azerbaijan

Variable	Source	Description	Year
BD	Federal Reserve Bank of St. Louis (FRED), World Bank	Represents bank deposits as a percentage of GDP	2024
OP	Statista, World Bank	Reflects the average oil price in US dollars per barrel	2024
INF	Macro Trends, World Bank	Indicates the annual inflation rate in percentage	2024

Spanning from 2001 to 2021, this dataset provides the basis for a thorough investigation into the potential long-term interactions between oil prices, inflation, and bank deposits in the Azerbaijani economic context. As illustrated in Table 2, these economic indicators present a thorough overview of Azerbaijan's banking and financial context for the specified year.

This study employs econometric models to statistically analyze the direct and indirect effects of oil price fluctuations and inflation on bank deposits, providing a deeper understanding of financial behavior in an oil-dependent economy.

The analysis of data trends from 2001 to 2021 reveals significant fluctuations in bank deposits, crude oil prices, and inflation in Azerbaijan. Figure 1 identifies three key periods of concurrent declines in these variables, each corresponding to major global economic disruptions. The first decline is associated with the 2008–2009 global financial crisis, which resulted in a substantial reduction in global oil demand and economic activity. The second downturn occurred during the 2014–2016 oil price collapse, primarily driven by an oversupply in global oil markets and weakened demand. The third period of decline coincided with the COVID-19 pandemic in 2019–2020, which caused a sharp economic contraction, further affecting oil prices and inflation.

Table 3 presents a general overview of the descriptive dataset, highlighting the mean, median, and standard deviation values that reflect central tendency and variability. Additionally, the measures of skewness and kurtosis provide insights into the shapes of the distributions. The Jarque-Bera test assesses the normality of each variable, with lower p-values indicating departures from normality.

Table 3. Descriptive statistics of economic variables

Statistic	BD	OP	INF
Mean	15.581	63.362	6.306
Median	12.841	61	4.03
Maximum	30.195	109.45	20.85
Minimum	7.131	23.12	1.07
Std. Dev.	6.974	27.250	5.520
Skewness	0.597	0.281	1.201
Kurtosis	2.046	2.026	3.596
Jarque-Bera	2.042	1.106	5.359
Probability	0.360	0.575	0.068
Sum	327.208	1330.61	132.43
Sum Sq. Dev.	972.913	14851.7	609.512

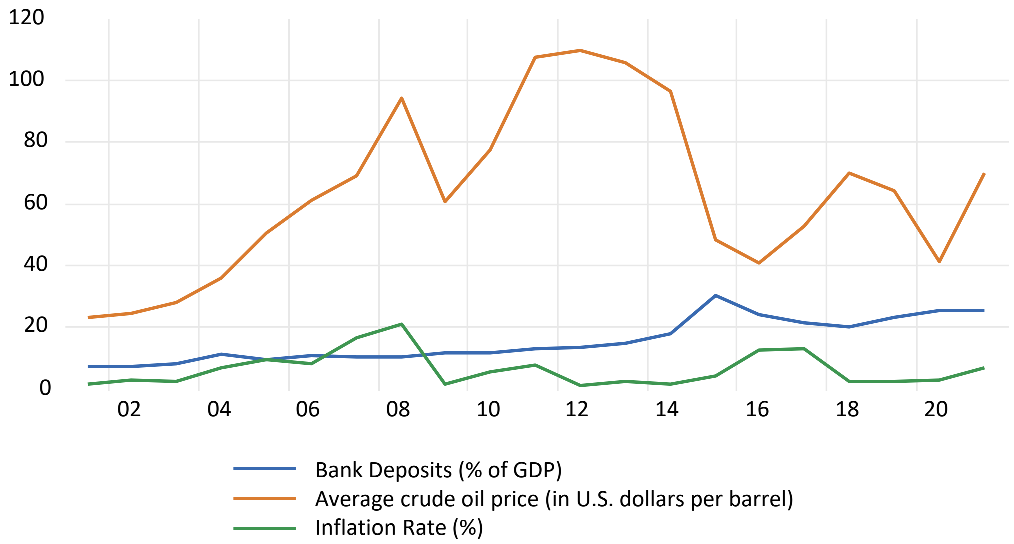

Figure 1. Trends in bank deposits, oil prices, and inflation in Azerbaijan (2001–2021)

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3. METHODS

This study employs an econometric framework to investigate the relationship between bank deposits, oil prices, and inflation in Azerbaijan. Given the time series nature of the data, testing for stationarity is essential to ensure valid and robust statistical inferences. Time series data often exhibit trends, seasonality, or other patterns that can lead to spurious regression results if not properly addressed. To assess the stationarity and suitability of the variables for further analysis, the Augmented Dickey-Fuller (ADF) test was applied, which is a widely used method for detecting unit roots in time series datasets.

The ADF test results, presented in Table 4, indicate that both Bank Deposits (BD) and Oil Prices (OP) are non-stationary at their levels, reflecting time-varying means and variances and the presence of a unit root. However, after applying the first differencing, both variables become stationary, indicating they are integrated of order one (I(1)). In contrast, the Inflation (INF) series is stationary at the level, signifying it is integrated of order zero (I(0)). This combination of integration orders supports the application of the Autoregressive Distributed Lag (ARDL) model, which is suitable for analyzing relationships between variables with different levels of integration, provided none are integrated of order two (I(2)). The ARDL approach enables the exploration of both short-term and long-term dynamics, offering a comprehensive perspective on the interplay between these macroeconomic indicators within Azerbaijan's economic context.

Table 4. ADF unit root test

Variable	Level	First Difference
BD	–0.951 [0.749]	–4.740 [0.001]
	Non-Stationary	Stationary
OP	–2.046 [0.266]	–3.879 [0.009]
	Non-Stationary	Stationary
INF	–3.024 [0.049]	–
	Stationary	–

The Autoregressive Distributed Lag (ARDL) model, developed by Pesaran and Shin (1998), is a comprehensive framework for time series analysis that incorporates both lagged dependent and independent variables. This model is particularly well-suited for exploring long-term relationships among variables that exhibit different integration orders. The ARDL model can effectively handle data that are stationary at level (I(0)) or after first differencing (I(1)), as long as no variables are integrated of order two (I(2)). This flexibility makes the ARDL model a powerful tool for studying the short-term dynamics and long-term equilibrium relationships in economic time series data.

The Granger causality test (1969) is a statistical method used to determine whether one time series can help predict another. It assesses whether past values of one variable provide useful information for forecasting future values of another, thus distinguishing between correlation and causation. This test plays a critical role in identifying the direction of causality in econometric models, facilitating a deeper understanding of the relationships between variables. To address the limitations of traditional Granger causality tests, particularly when dealing with non-stationary data, the Toda-Yamamoto approach (1995) offers a more advanced solution. This method utilizes a higher-order Vector Autoregression (VAR) model, which allows for the inclusion of variables with different integration orders without the need for pre-testing for cointegration. By extending the lag structure and adjusting the VAR model, the Toda-Yamamoto method ensures robust causal inference, even with integrated or non-stationary time series data, making it a valuable tool in econometric analysis involving complex datasets.

4. RESULTS

When initiating the testing of the ARDL approach, it is imperative to identify a suitable ARDL model. Establishing an appropriate model ensures an accurate representation of the underlying data dynamics and facilitates reliable inference in subsequent analyses. Figure 2 illustrates the Akaike Information Criterion (AIC) values for 20 distinct ARDL models. The model identified as ARDL(4,3,4), which exhibits the lowest AIC value, is deemed the optimal fit, effectively balancing model complexity with explanatory power.

Table 5 is structured into two panels, each assessing the long-term relationship between the dependent variable (bank deposits, BD) and the independent variables OP (oil prices) and INF (in-

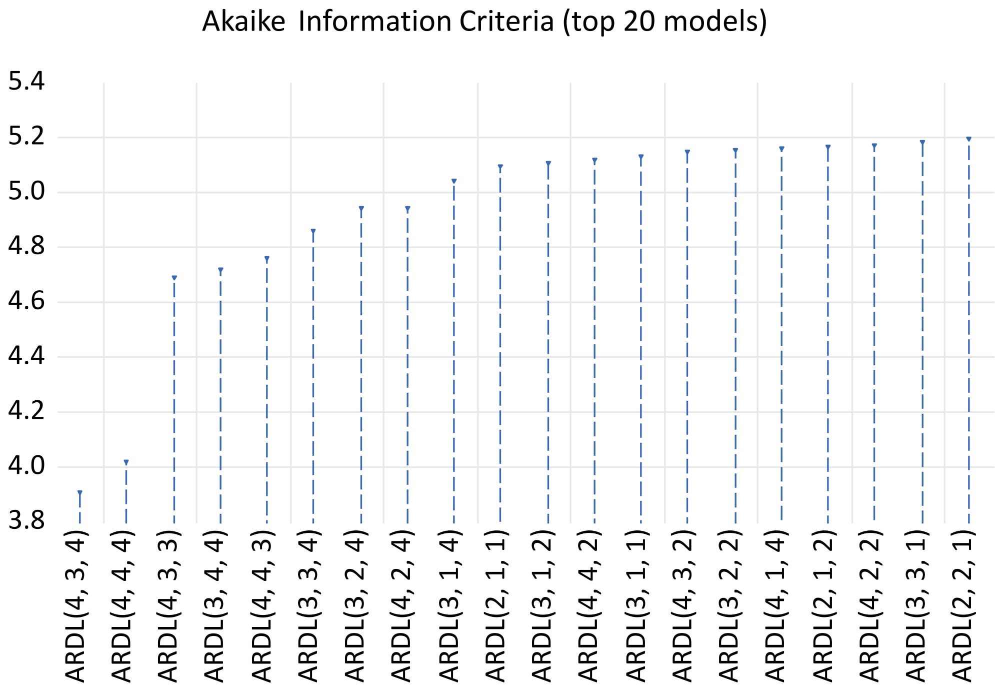

Figure 2. Evaluation of ARDL models based on AIC values

flation rate). Panel 1 displays the estimated coefficients, showing how OP and INF influence BD over the long run. Specifically, the coefficient for OP is 0.057, indicating that a one-unit increase in OP corresponds to a 0.057-unit increase in BD in the long term, assuming other factors remain constant. This points to a positive long-term effect of oil prices on bank deposits. These results are consistent with the findings of Saif-Alyousfi et al. (2018) and Osuma et al. (2019), who demonstrated that rising oil prices positively impact bank deposits and contribute to financial development. Conversely, the coefficient for INF is –0.812, implying that a one-unit increase in INF results in a 0.812-unit decrease in BD over the long term, highlighting a negative and substantial impact of inflation on bank deposits. These results are in agreement with the findings of Orok et al. (2018), who demonstrated that rising inflation rates have a detrimental impact on bank deposits and impede financial development.

The constant term (C) acts as the intercept, reflecting the baseline level of BD when both OP and INF are zero. In Panel 2, the F-bounds test is employed to assess the presence of a long-term relationship among the variables by testing the null hypothesis of no cointegration. The F-statistic value of 6.436 surpasses the critical upper bound values at conventional significance levels, leading to the rejection of the null hypothesis. This outcome indicates a statistically significant long-term association between OP, INF, and BD. Overall, the test results confirm that OP has a positive long-term effect on BD, while INF has a negative impact, establishing a stable long-term equilibrium relationship among these variables in the model.

The equation for calculating the economic variable EC provides a clear representation of the relationships between Bank Deposits (BD), Oil Prices (OP), and Inflation (INF) within the model. Specifically, EC is derived by factoring in the influence of oil

Table 5. ARDL (4,3,4) model with long-run form and bounds test

Panel 1. Levels equation					Panel 2. F-Bounds test				
Variable	**Coefficient**	**Std. error**	**t-Statistic**	**P-value**	**Test statistic**	**Value**	**Signif.**	**1(0)**	**1(1)**
OP	0.057	0.076	0.748	0.050	F-statistic	6.436	10%	3.02	3.51
INF	–0.812	0.456	–1.779	0.173	k	1	5%	3.62	4.16
C	27.865	5.437	5.124	0.014	–	–	1%	4.13	5

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prices and inflation on bank deposits, where the coefficients reflect the degree to which each factor affects the deposit behavior in the context of Azerbaijan's economy. The term BD represents the dependent variable, which is bank deposits, while OP and INF capture the effects of oil price fluctuations and inflation, respectively:

$$EC = BD - 0.057 \cdot OP + 0.812 \cdot INF - 27.865. \quad (1)$$

The coefficient for oil prices (0.057) suggests a positive but relatively modest influence on deposits, while the coefficient for inflation (–0.812) indicates a stronger inverse relationship. The constant term (27.865) accounts for the baseline level of deposits when the other factors are neutral. This equation consolidates the empirical findings into a single formula, effectively quantifying the impact of macroeconomic variables on the banking sector.

Table 6 provides a comprehensive overview of the results from the diagnostic tests performed for the ARDL model specification, which are critical for evaluating the model's validity and reliability. Panel 1 ECM Regression indicates that the lagged error correction term (ECT), represented by CointEq(–1), has a negative coefficient of –0.432, which is statistically significant (p-value = 0.005). This result suggests that the model is effectively approaching a long-run equilibrium, correcting approximately 43.2% of any deviation from this equilibrium in each period, thereby demonstrating the model's dynamic adjustment capabilities. Panel 2 Breusch-Godfrey Serial Correlation LM Test presents an F-statistic of 26.830 with a p-value of 0.135, indicating no significant serial correlation in the residuals, which further supports the model's integrity. Panel 3 Breusch-Pagan-Godfrey Heteroskedasticity Test shows an F-statistic of 1.299 and a p-value of 0.468, suggesting that there is no significant heteroskedasticity influencing the residuals. Collectively, these diagnostic tests suggest that the ARDL model is well-specified and free from major concerns regarding serial correlation and heteroskedasticity. The negative and statistically significant coefficient for the lagged error correction term reinforces the notion of dynamic stability within the model, highlighting its capability to converge effectively toward long-run equilibrium.

Table 6. Results of diagnostic tests for ARDL model specification

Panel 1. ECM Regression

Variable	Coefficient	Std. Error	t-Statistic	P-value
CointEq(-1)	–0.432	0.060	–7.175	0.005

Panel 2. Breusch-Godfrey Serial Correlation LM Test

F-statistic	26.830
Prob. F(2,1)	0.135

Panel 3. Breusch-Pagan-Godfrey Heteroskedasticity Test

F-statistic	1.299
Obs*R-squared	14.436
Scaled Explained SS	8.123
Prob. F(13,3)	0.468
Prob. Chi-Square (13)	0.343
Prob. Chi-Square (13)	1.000

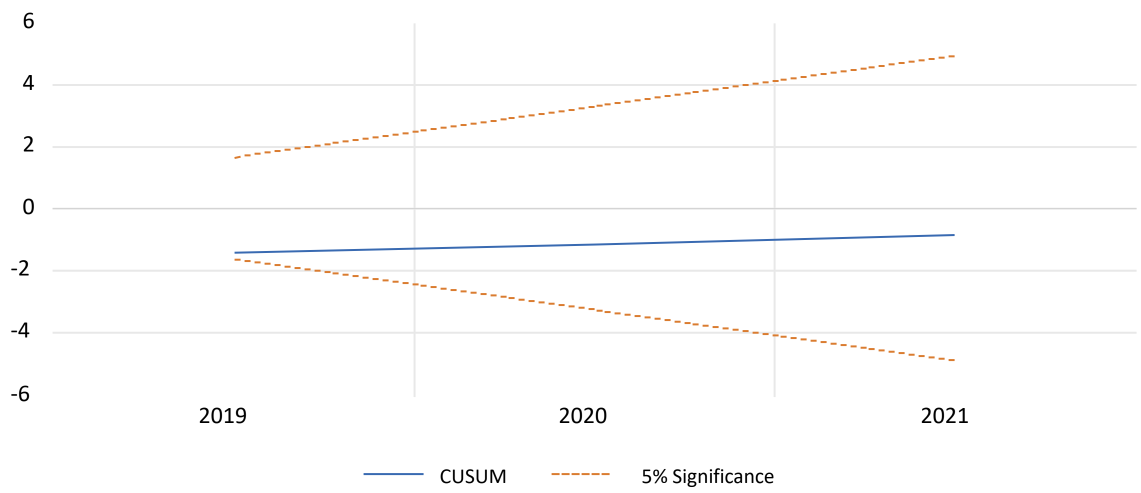

Figure 3. Detecting structural stability in model parameters using CUSUM

Table 7. VAR lag order selection criteria

Lag	LogL	LR	FPE	AIC	SC	HQ
0	–221.605	NA	1140680	22.460	22.609	22.489
1	–188.680	52.679*	105590*	20.068*	20.665*	20.184*

Note: * indicates lag order selected by the criterion.

The CUSUM (Cumulative Sum) test is an important diagnostic tool for evaluating the stability of model parameters over time. It is designed to detect structural changes or shifts that could compromise the reliability of the model's predictions. Figure 3 illustrates that the model's parameters have remained stable during the observation period. The CUSUM line is contained within the 5% significance bounds, indicating no significant structural breaks or shifts in the model parameters. This observed stability bolsters the model's validity and reliability for generating accurate predictions.

Following the application of the ARDL model approach, the Vector Autoregression (VAR) model is now used to conduct the Granger causality test. The initial step in this process involves establishing a reliable VAR model, which is critical for ensuring the validity of subsequent analyses. To enhance the robustness of the VAR model, it is essential to carefully consider the appropriate selection of lags, as well as to conduct diagnostic tests for serial correlation, heteroskedasticity, and stability. By ensuring that the VAR model is adequately specified and that the underlying assumptions are met, more accurate estimates of the relationships between the variables of interest can be obtained. This approach will enable us to draw meaningful conclusions regarding the causal dynamics within the system, thereby providing a clearer understanding of the interdependencies among the variables being studied.

Table 7 presents the outcomes of various information criteria employed to identify the optimal lag order for a VAR model, to achieve a balance between model fit and simplicity by minimizing information loss and preventing overfitting. Key criteria, including Log-Likelihood, Likelihood Ratio, Final Prediction Error, Akaike Information Criterion, Schwarz Information Criterion, and Hannan-Quinn Information Criterion, offer valuable insights into the model's performance, while the asterisks denote the lag orders selected by each criterion. The analysis reveals that lag order 1 is the most frequently recommended, suggesting that a VAR model utilizing one lag for each variable is the most appropriate choice, which is essential for ensuring accurate model fit, enhancing forecast accuracy, and enabling valid inferences regarding the causal relationships among the variables.

Figure 4 illustrates the inverse roots of the autoregressive (AR) characteristic polynomial, serving as a conventional diagnostic tool for evaluating the stability of a time series model. In this instance, all roots are located within the unit circle, signifying that the model exhibits stability. This stability

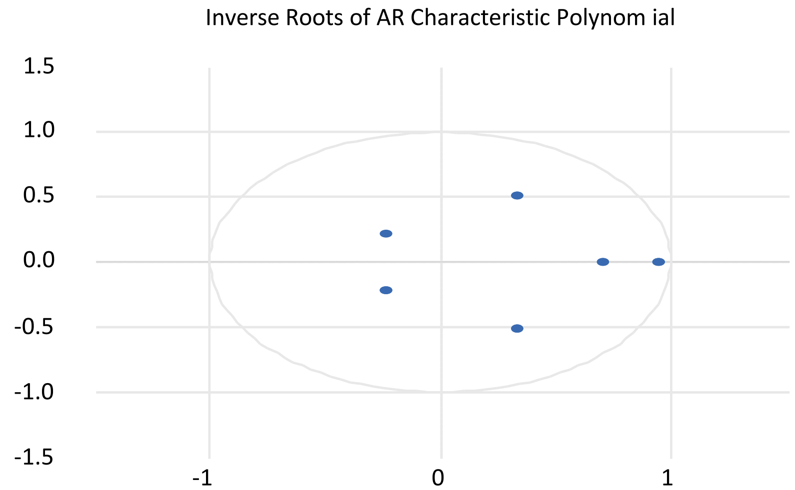

Figure 4. Inverse root of AR characteristic polynomial

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Table 8. VAR residual tests

Panel 1. Serial Correlation LM Tests						
Lag	**LRE* stat**	**df**	**Prob.**	**Rao F-stat**	**df**	**Prob.**
1	4.704	9	0.859	0.487	(9, 17.2)	0.863
2	7.585	9	0.576	0.845	(9, 17.2)	0.586
3	5.255	9	0.811	0.55	(9, 17.2)	0.816

Panel 2. Heteroskedasticity Test			
	Chi-sq	**df**	**P-value**
Joint test	115.461	108	0.294

Table 9. Toda-Yamamoto Granger causality test

Null hypothesis	Lag (k)	K + d_{max}	Chi-squared test	Result
Oil price (OP) does not cause to Bank deposits (BD)	1	2	6.323 (0.012*)	Reject
Inflation rate (INF) does not cause Bank deposits (BD)	1	2	5.698 (0.017*)	Reject

Note: * denotes rejection of the hypothesis at the 5% level.

implies that any shocks or disturbances affecting the system will gradually dissipate, allowing the system to revert to its equilibrium state.

Table 8 summarizes the results of VAR residual tests organized into two panels, which are essential for evaluating the validity and reliability of the estimated model. In Panel 1, the Serial Correlation LM Tests assess the presence of serial correlation in the model's residuals, with both the Lagrange Multiplier (LM) test statistic and the Rao F-stat, indicating no significant evidence of serial correlation, as p-values exceed 0.05 for all lags. Panel 2 focuses on the Heteroskedasticity Test, where the chi-square test statistic also suggests no significant evidence of heteroskedasticity, as evidenced by a p-value of 0.294, thus confirming that the VAR model is well-specified and suitable for forecasting and analytical purposes.

The Toda-Yamamoto Granger causality test is a statistical technique used to evaluate whether one time series variable can predict another, particularly in cases involving non-stationary data. The findings from Table 9 offer essential insights into the dynamics among oil prices, inflation rates, and bank deposits. The analysis reveals that the null hypothesis stating that oil prices do not Granger-cause bank deposits is rejected, with a p-value of 0.012. This indicates that changes in oil prices can significantly forecast future variations in bank deposits. Likewise, the null hypothesis asserting that inflation rates do not Granger-cause bank deposits is also rejected, evidenced by a p-value of 0.017, suggesting that inflation rates similarly serve as predictors for subsequent changes in bank deposits. These results emphasize the critical need for policymakers and financial institutions to incorporate the fluctuations in oil prices and inflation rates into their strategies concerning monetary policy, banking regulations, and economic forecasting, given their substantial impact on bank deposits.

5. DISCUSSION

The findings of this study highlight the significant role of oil prices and inflation in shaping bank deposits within Azerbaijan's economy. Similar to the findings of Deniz and Heyderov (2024), which underscore Azerbaijan's heavy dependence on the oil and gas sector and its susceptibility to fluctuations in oil prices, this research offers a deeper exploration of how changes in oil prices impact key economic variables such as bank deposits, inflation, and oil-driven economic growth. This study moves beyond the broader implications of oil dependency explored by Deniz and Heyderov, providing a more detailed econometric analysis of the direct consequences of oil price fluctuations, thereby reinforcing the argument for economic diversification to reduce the risks associated with oil price volatility.

The positive long-term relationship between oil prices and bank deposits suggests that rising oil prices enhance banking sector liquidity, likely driven by the increased revenues from oil exports, which in turn stimulate economic activity and encourage deposit growth. Conversely, the negative relationship between inflation and bank deposits reflects the detrimental effect of rising inflation on the value of money, which erodes the purchasing power of deposits and undermines financial stability. These findings are consistent with Mammadov's (2016) analysis, which identified challenges for Azerbaijan's monetary policy in stabilizing the economy in the face of oil price fluctuations. However, this study distinguishes itself by integrating advanced time-series analysis, offering new insights into the evolving dynamics of Azerbaijan's economy.

This study further supports the notion that fluctuations in oil prices and inflation are critical factors influencing financial stability in oil-dependent economies. The observed positive effect of oil prices on bank deposits can be attributed to the higher income generated from oil exports, which enhances economic activity and liquidity in the banking sector. On the other hand, inflation's negative impact on deposits stems from its ability to diminish purchasing power, thus discouraging savings and hindering deposit growth. Future research could explore the effects of additional macroeconomic factors, such as exchange rates and interest rates, on bank deposits in Azerbaijan. Further investigation into the effectiveness of various monetary policies aimed at mitigating inflation's negative impact on deposits could provide valuable insights for policymakers. Additionally, examining the long-term viability of the positive relationship between oil prices and bank deposits, particularly in light of potential shifts in global energy markets, would offer crucial guidance as Azerbaijan continues its efforts to diversify its economy. Future studies could also consider the role of non-oil sectors, including high-tech and renewable energy, in shaping financial stability and bank deposits, as these sectors gain increasing significance in the country's economic transformation.

CONCLUSION

This study aims to explore the interconnections between oil prices, inflation, and bank deposits in Azerbaijan, a country where the banking sector and broader economic performance are significantly influenced by the oil industry. Using advanced econometric techniques, including the ARDL bounds test and the Toda-Yamamoto Granger causality test, this study investigates how fluctuations in oil prices and inflation impact the stability and liquidity of bank deposits.

The findings from the ARDL bounds test reveal a significant long-term relationship between oil prices and bank deposits, indicated by an F-statistic of 6.436 that exceeds the critical upper bounds, confirming a strong and positive correlation. This suggests that higher oil prices increase oil revenues, which in turn stimulate economic activity, boosting the liquidity of the banking sector and promoting the growth of bank deposits. On the other hand, the results also show a negative relationship between inflation and bank deposits, as increasing inflation reduces the purchasing power of money. This leads to a decline in deposit growth, as people are less inclined to save when the value of their money is eroded over time. Additionally, the Toda-Yamamoto Granger causality test confirms the causal relationships between the variables. The null hypothesis that oil prices do not affect bank deposits is rejected with a Chi-squared statistic of 6.323 (p-value = 0.012), providing strong evidence that oil price fluctuations significantly drive changes in bank deposits. Similarly, inflation is also found to have a causal effect on bank deposits, with a Chi-squared statistic of 5.698 (p-value = 0.017), further confirming that inflationary shifts influence deposit stability.

These results have important implications for Azerbaijan's financial sector. The positive effect of oil prices on bank deposits underscores the importance of oil revenues in maintaining banking sector liquidity. However, the negative impact of inflation signals the risks posed by inflationary pressures, which can undermine financial stability. Given Azerbaijan's reliance on oil exports, the findings suggest

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that policymakers should adopt strategies that reduce the economy's vulnerability to oil price volatility and inflationary trends. This could involve diversifying the economy away from oil dependence, implementing effective monetary policies to control inflation, and fostering other sectors that contribute to economic stability.

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