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The Effectiveness of Unconventional Monetary Policy in Oil-Producing Countries: A Comparative Analytical Study

Ameen Fahad Jayed^{1*}

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ABSTRACT

This study aims to assess the effectiveness of unconventional monetary policy tools in oil-producing countries over the period 2008–2023. These tools pose a particular challenge in these economies due to their volatility and dependence on oil revenues. The study used a longitudinal data analysis methodology on a sample of 12 oil-producing countries, applying fixed-effects models and advanced regression techniques to measure the impact of tools such as quantitative easing, reverse repo operations, and negative interest rate policies. It found that the effectiveness of these tools differs significantly between oil-producing countries and their effectiveness in conventional advanced economies. It also found that quantitative easing had limited success in stimulating the economy (coefficient 0.23, $p < 0.05$). Low interest rate policies showed a greater positive effect on private investment (coefficient 0.41, $p < 0.01$). This study goes further to suggest that adopting unconventional monetary policy can only succeed through close coordination of fiscal policy and diversification of government revenue sources, especially in oil-producing countries. The results of these studies provide important contributions to policymakers in improving the effectiveness of unconventional monetary policy tools to address oil price shocks.

INTRODUCTION

Global monetary policy has undergone significant changes since the 2008 financial crisis. Central banks in developed countries have resorted to unconventional tools to address unique economic challenges. These tools include quantitative easing, negative interest rates, large-scale asset purchase programs, and forward guidance as a means of guiding economic forecasts.

Studying the effectiveness of these tools in oil-producing countries is particularly important due to the unique characteristics of these economies. Oil-producing countries face significant economic volatility due to fluctuations in global oil prices, are highly dependent on oil revenues for their public budgets, and suffer from poor economic diversification and a rentier economy. These factors may affect the functioning of monetary policy mechanisms and make traditional tools less effective.

Oil-producing countries also face additional challenges when implementing unconventional monetary policies, such as the limited depth of financial markets, the lack of independence of some central banks, the overlap between monetary and fiscal policy, and institutional and regulatory issues. The nature of the banking system in most of these countries, which is often highly concentrated and heavily government-owned, may in turn affect the effectiveness of monetary policy transmission channels.

This study aims to fill a research gap in the economic literature by providing a comprehensive and comparative analysis of the effectiveness of unconventional monetary policy tools in oil-producing countries. The study focuses on measuring the impact of these tools on key macroeconomic variables such as economic growth,

inflation, investment, and financial stability, and seeks to identify the factors that influence the success or failure of these policies in the context of an oil economy.

LITERATURE REVIEW

Theoretical foundations of unconventional monetary policy

The theoretical literature on unconventional monetary policy has developed significantly since the beginning of the twenty-first century. Bernanke *et al.*'s (2004) work is considered a pioneer in analyzing the mechanisms of monetary policy under conditions of the zero lower bound for interest rates. Bernanke suggested that central banks can stimulate the economy by purchasing long-term securities to lower their yields and stimulate investment and consumption.

Krugman (1998) and Eggertsson and Woodford (2003) developed a theoretical framework for understanding how monetary policy works when nominal interest rates reach the zero lower bound, emphasizing the importance of managing expectations and credible commitment to future policy. Mishkin (2009) also provided a comprehensive analysis of unconventional transmission channels, focusing on the portfolio channel and the liquidity channel.

Practical applications in advanced economies

The applied literature has seen significant growth in assessing the effectiveness of unconventional monetary policy. Gagnon *et al.* (2011) provided a detailed evaluation of US quantitative easing programs, showing that the first round of quantitative easing (QE1) succeeded in

¹ Ministry of Education, Iraq Muthanna Education Directorate, Iraq

* Corresponding author's e-mail: ameenfah93@gmail.com

reducing long-term yields by approximately 38–82 basis points. Joyce *et al.* (2012) found similar results for the UK experience, where asset purchase programs reduced government yields by approximately 100 basis points.

On the other hand, Kuroda (2016) analyzed Japan's experience with unconventional monetary policy, pointing to the challenges specific to economies experiencing chronic deflation. Shirai (2018) showed that Japanese monetary policy had limited success in raising inflation but helped stabilize financial markets.

Monetary Policy in Developing and Oil-Driving Economies

Limited studies have addressed the application of unconventional monetary policy in developing economies. Mohanty (2014) noted that developing countries faced particular challenges in implementing these policies, including weak financial markets and limited available instruments. Hofmann *et al.* (2019) also emphasized the importance of institutional and financial stability as a prerequisite for the success of unconventional monetary policy.

In the oil context specifically, Al- Mashat and Billmeier (2008) provided an analysis of the role of monetary policy in the GCC countries, emphasizing the challenges resulting from pegging currencies to the US dollar. Sturm *et al.* (2009) found that the effectiveness of monetary policy in oil-producing countries is significantly influenced by oil price cycles and fiscal policy.

Research gap and expected contribution

A review of the literature reveals a clear research gap in analyzing the effectiveness of unconventional monetary policy, specifically in oil-producing countries. Most previous studies have focused on advanced economies or on developing countries in general, without focusing on the unique characteristics of oil economies. Furthermore, the few studies that have examined oil-producing countries have been limited to analyzing conventional policies or have covered limited time periods.

This study contributes to the literature by: (1) providing a comprehensive analysis of the effectiveness of various unconventional monetary policy tools in oil-producing countries, (2) using recent data covering the post-COVID-19 pandemic period, (3) applying advanced econometric methodologies that take into account the specificities of oil-producing countries, and (4) providing practical policy recommendations for decision-makers in these countries.

MATERIALS AND METHODS

Study sample and data sources

The study sample includes 12 major oil-producing countries: Saudi Arabia, the United Arab Emirates, Kuwait, Qatar, Bahrain, Oman, Iraq, Norway, Canada, Mexico, Venezuela, and Nigeria. These countries were selected based on the following criteria: (1) high dependence on oil revenues (more than 30% of total

government revenues), (2) availability of reliable data for the period 2008–2023, and (3) application of various forms of unconventional monetary policy during the study period.

Data were obtained from multiple sources including: the International Monetary Fund (International Financial Statistics database), the World Bank (World Development Indicators), the Bank for International Settlements, annual reports of central banks, and the International Energy Agency for oil price data.

Variables and Measurements

Dependent variables

- A. Economic growth : Real GDP growth rate (annual)
- B. Inflation : Rate of change in the Consumer Price Index (annual)
- C. Private investment : Gross fixed capital formation by the private sector as a percentage of GDP
- D. Financial stability : a composite index that includes exchange rate volatility, the financial stress index, and the non-performing debt ratio.

Independent variables (unconventional monetary policy tools

- A. Quantitative easing : the amount of assets purchased by a central bank as a percentage of GDP
- B. Low interest rates : A deviation of the key interest rate from its historically normal level.
- C. Emergency liquidity programs : the volume of credit facilities provided to banks as a percentage of total bank credit
- D. Forward guidance : A quantitative indicator of the central bank's clarity and commitment to future policy.

Control variables

- A. Oil prices : The real price of a barrel of oil (in US dollars, 2015 prices)
- B. Fiscal policy : government fiscal balance as a percentage of GDP
- C. Trade openness : the sum of exports and imports as a percentage of GDP
- D. Quality of Institutions : A composite index that includes central bank independence, rule of law, and government effectiveness.
- E. External factors : global economic growth rate, global economic uncertainty index.

Estimation techniques and diagnostic tests

The study includes the application of comprehensive tests to verify the validity of the estimated models:

1. Data stationarity testing : applying unit root tests (Levin-Lin-Chu, Im - Pesaran - Shin)
2. Cointegration Test : Using the Pedroni Test and Kao for cointegration
3. Autocorrelation Test : Application of the Wooldridge Test
4. Testing for heterogeneity of variance : Using the Modified Wald test

5. Contemporary Association Test : Application of the Pesaran CD Test

The study also uses advanced estimation techniques such as

A. Driscoll- Kraay Estimated To deal with contemporary problems of heteroscedasticity and correlation

B. Vector Error Correction Models for Analyzing Short- and Long-Run Relationships

C. Bootstrap techniques for calculating confidence intervals.

RESULTS AND ANALYSIS

Descriptive statistics

The following table presents the basic descriptive statistics for the main variables in the study:

Descriptive statistics reveal a marked variability in the economic variables studied. The average economic

growth rate is 2.34% with a standard deviation of 4.52%, reflecting the significant fluctuations experienced by oil-producing economies. Growth rates range from -8.9% to 15.2%, indicating these economies' vulnerability to substantial external shocks, particularly oil price volatility. The inflation rate averages 3.81% with a standard deviation of 5.17%, ranging from -2.1% to 28.4%. This wide variation reflects periods of both deflation and hyperinflation, especially during global economic crises. Private investment as a percentage of GDP averages 15.6% with a standard deviation of 6.8%, indicating relative stability in investment levels compared to other variables. However, the wide range (from 4.2% to 31.5%) highlights significant differences between countries. Real oil prices averaged \$78.5 per barrel with a standard deviation of \$28.4, ranging between \$28.9 and \$133.2. This enormous variation reflects the oil crises and significant market volatility during the study period.

Table 1: Descriptive statistics

variable	Average	standard deviation	minimum	maximum	Number of views
Economic growth rate (%)	2.34	4.52	-8.9	15.2	192
Inflation rate (%)	3.81	5.17	-2.1	28.4	192
Private investment (% of GDP)	15.6	6.8	4.2	31.5	192
Quantitative easing (% of GDP)	2.7	4.1	0	18.3	192
Interest rate deviation (percentage points)	-1.8	2.3	-6.5	2.1	192
Real oil prices (\$/barrel)	78.5	28.4	28.9	133.2	192

Basic assessment results

The impact of unconventional monetary policy on economic growth

Emergency liquidity programs show a coefficient of 0.089 (not statistically significant), suggesting that this tool may not be directly effective in boosting economic growth in oil-producing countries.

The second model includes the logarithm of oil prices as a control variable. The quantitative easing coefficient decreases to 0.198 (still significant at 10%), indicating that part of the previous effect reflected the impact of oil prices. The oil price coefficient itself is 1.234 (significant at 1%), confirming the crucial importance of oil prices in determining the economic growth of oil-producing countries.

The third model adds the financial balance variable. The

quantitative easing coefficient continues to decrease to 0.187 (significant at 10%), while the financial balance coefficient is 0.156 (significant at 5%). This suggests that financial stability plays a significant role in determining the effectiveness of monetary policy.

3.2 Economic Interpretation
The decreasing coefficients of quantitative easing across the models indicate indirect effects and complex interactions. The decline from 0.231 to 0.187 reflects that some of the positive impact of quantitative easing operates through other channels, such as oil prices and financial stability.

The interest rate skew effect (0.389 in the third model) remains strong and relatively consistent across all models, suggesting that interest rate cuts are an effective and reliable tool for stimulating economic growth in these economies.

Table 2: Regression model for measuring the effect

independent variable	Model (1)	Form (2)	Model (3)
Quantitative easing	0.231** (0.095)	0.198* (0.102)	0.187* (0.098)
interest rate deviation	0.456*** (0.134)	0.412*** (0.128)	0.389*** (0.131)

Emergency liquidity programs	0.089	0.076	0.082
	(0.067)	(0.071)	(0.069)
Oil prices (logarithm)	-	1.234***	1.198***
	-	(0.287)	(0.295)
Financial balance	-	-	0.156**
	-	-	(0.072)
R ²	0.342	0.467	0.489
Number of views	192	192	192

Notes: Standard errors are in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Source: R 4.3.0 production package

The impact of unconventional monetary policy on inflation

The study presents similar models for measuring the impact of monetary policy on the inflation rate.

Model 1: The quantitative easing coefficient is 0.145 (significant at 10%), indicating that quantitative easing is associated with a slight increase in inflation. The interest rate deviation coefficient is -0.287 (significant at 5%), suggesting that interest rate cuts are associated with lower inflation, a result that may initially seem surprising.

Model 2: When oil prices are added, the quantitative easing coefficient drops to 0.132 (not significant), while the oil price coefficient is 0.876 (significant at 1%), indicating

that oil prices are the primary driver of inflation in these economies.

Model 3: Adding trade openness, with a coefficient of -0.021 (significant at 10%), suggests that more open economies experience lower inflation rates. 4.2 Economic Interpretation

The negative relationship between interest rate skewness and inflation may reflect the fact that interest rate cuts typically occur during periods of deflation or recession, when inflation is low. Additionally, this relationship may reflect expectations, as accommodative policies can lower long-term inflation expectations.

Table 3: Regression model for measuring the impact of unconventional monetary policy on inflation

independent variable	Model (1)	Form (2)	Model (3)
Quantitative easing	0.145*	0.132	0.128
	(0.078)	(0.081)	(0.079)
interest rate deviation	-0.287**	-0.254**	-0.241**
	(0.112)	(0.108)	(0.105)
Emergency liquidity programs	0.034	0.029	0.031
	(0.055)	(0.057)	(0.054)
Oil prices (logarithm)	-	0.876***	0.852***
	-	(0.234)	(0.238)
Trade openness	-	-	-0.021*
	-	-	(0.012)
R ²	0.267	0.398	0.421
Number of views	192	192	192

Sensitivity and Robustness Tests

Hausman Test and Model Selection

Hausman tests showed highly statistically significant values ($\chi^2 = 23.45$ for economic growth, $\chi^2 = 18.72$ for

inflation, $\chi^2 = 31.28$ for private investment), indicating that fixed effects models are best suited to the data. This means there are consistent differences between countries that cannot be ignored.

Table 4: Resilience Test

dependent variable	Hausman test	Preferred model	Quantitative easing factor
economic growth	$\chi^2 = 23.45***$	fixed effects	0.187*
inflation	$\chi^2 = 18.72***$	fixed effects	0.128
private investment	$\chi^2 = 31.28***$	fixed effects	0.312**

Sensitivity Analysis by Time Period

Sensitivity analysis by time period reveals significant differences in the effectiveness of monetary policy:

2008–2015: The quantitative easing coefficient is 0.298 (significant at 5%), the highest of all periods. The interest

rate deviation coefficient is 0.521 (significant at 1%), also the highest. These results reflect the strong response of accommodative monetary policies during the global financial crisis and its aftermath.

Table 5: Sensitivity Test

period	Quantitative Easing (Growth) Factor	Interest rate deviation (growth)
2008-2015	0.298**	0.521***
2016-2019	0.143	0.334**
2020-2023	0.205*	0.412***

Period 2016–2019: The quantitative easing coefficient (QE) falls significantly to 0.143 (not significant), while the interest rate deviation coefficient falls to 0.334 (significant at 5%). This reflects a period of relative stability where monetary policy was less accommodative.

Period 2020–2023: The QE coefficient rises to 0.205 (significant at 10%), reflecting the monetary policy response to the COVID-19 crisis. The interest rate deviation coefficient is 0.412 (significant at 1%), indicating the continued effectiveness of this tool.

marginal returns from quantitative easing, with the second limiting factor (QE²) reaching -0.021 (significant at 10%). This suggests that further increases in quantitative easing have a lesser impact on economic growth.

The interaction coefficient between quantitative easing and oil prices is 0.0034 (significant at 5%), indicating that the effectiveness of quantitative easing increases with rising oil prices. This result is logical because higher oil prices provide additional financial resources, thus enhancing the impact of accommodative monetary policies.

Nonlinear Effects

Analysis of nonlinear effects revealed diminishing

Table 6: Nonlinear Effects

independent variable	Laboratories	standard error	t-statistic	P-value
Quantitative easing	0.312**	0.134	2.33	0.021
interest rate deviation	0.489***	0.156	3.13	0.002
Emergency liquidity programs	0.178*	0.094	1.89	0.061
Oil prices (logarithm)	2.145***	0.423	5.07	0.000
Institutional quality	1.876***	0.512	3.66	0.000
constant	-8.234**	3.127	-2.63	0.009

Differences Between Country Groups

Analysis of Effects by Level of Development

The study reveals significant differences in the effectiveness of monetary policy across different country groups:

Gulf Arab States: The quantitative easing coefficient is 0.156 (significant at 10%), while the coefficient for interest rate cuts is 0.423 (significant at 1%). These results reflect the important role of monetary policy in these relatively advanced economies.

Advanced Oil-Producing Countries: These exhibit the highest quantitative easing coefficient (0.287, significant at 5%), indicating that these countries benefit more from quantitative easing tools. The coefficient for interest rate cuts is 0.378 (significant at 1%).

Developing Oil-Producing Countries: These register the lowest quantitative easing coefficient (0.112, not significant), suggesting that this tool may not be very effective in these economies. The coefficient for interest rate cuts is 0.345 (significant at 5%).

4.5.2 Economic Interpretation of Differences

The differences between groups of countries reflect differences in economic structures and institutional capacities. Developed countries have more sophisticated financial markets and stronger enforcement capabilities, making unconventional monetary policies more effective. In contrast, developing countries may face credit constraints and limited institutional capacity that restrict the effectiveness of these policies.

Table 7: Impact Analysis by Level of Development

Group of countries	Number of countries	Average impact of quantitative easing	Average impact of low interest rates
Gulf Arab states	6	0.156*	0.423***
advanced oil countries	2	0.287**	0.378***
oil-producing developing countries	4	0.112	0.345**

Discussion

Interpretation of main results

The study's findings reveal important patterns in the effectiveness of unconventional monetary policy in oil-producing countries that differ fundamentally from those recorded in the literature for conventional advanced economies. First, the relatively limited impact of quantitative easing on economic growth (coefficient 0.187), compared to coefficients recorded in advanced economy studies, which range from 0.4 to 0.8, highlights the structural challenges facing this instrument in the oil-producing environment. This can be explained by the weakness of monetary transmission channels, particularly the portfolio investment channel, due to the limited depth of financial markets and the poor development of capital markets in most oil-producing countries.

Second, the results highlight the greater relative effectiveness of low interest rate policies, with the interest rate deviation coefficient recording positive and statistically significant values across all models (0.389 for growth, -0.241 for inflation, 0.489 for investment). This suggests that the interest rate channel remains relatively effective in oil-producing countries, perhaps due to the banking sector's heavy reliance on variable-rate financing and the high sensitivity of private investment decisions to the cost of capital.

Third, the results reveal a pivotal role for oil prices in determining the effectiveness of unconventional monetary policy, with oil price coefficients recording high and significant values across all models (1.198 for growth, 0.852 for inflation, and 2.145 for investment). This underscores the rentier nature of these economies and the dominant impact of external shocks on macroeconomic performance. Interaction analysis also indicates that the effectiveness of quantitative easing improves during periods of high oil prices, reflecting improved economic confidence and government fiscal capacity during these periods.

Comparative analysis across country groups

The results reveal clear differences in the effectiveness of unconventional monetary policy across different country groups. The Gulf Cooperation Council (GCC) countries performed moderately well in their response to quantitative easing, which can be explained by the characteristics of their US dollar-pegged monetary systems, which limit the flexibility of domestic monetary policy. In contrast, advanced oil-producing countries such as Norway and Canada demonstrated greater effectiveness of quantitative easing, perhaps due to the development of their financial markets and the strength of their monetary institutions.

Developing oil-producing countries recorded the weakest response to quantitative easing, reflecting deeper institutional and structural challenges in these economies, including weak central bank independence, limited monetary policy options, and weak confidence in government economic policies.

Impacts on monetary transmission channels

The results help understand how the various monetary transmission channels operate in the oil environment. The interest rate channel appears reasonably effective, particularly in stimulating private investment, indicating the private sector's sensitivity to the cost of financing. The portfolio investment channel, considered the main driver of quantitative easing, appears limited in effectiveness, reflecting the weakness of financial markets and the banking sector's dominance of the financial system.

The expectations channel appears particularly important in oil-producing countries, where the success of monetary policy depends on the central bank's ability to manage expectations about the path of oil prices and future government policies. The banking liquidity channel has a limited effect, perhaps due to the relative abundance of liquidity in the banking sector during periods of high oil prices.

The role of institutional and structural factors

The results confirm the importance of institutional factors in determining the effectiveness of unconventional monetary policy. The high institutional quality coefficient (1.876) in the private investment model indicates that the strength of monetary and financial institutions is a necessary condition for the success of these policies. This is consistent with the theoretical literature that emphasizes the importance of institutional credibility and independence for the effectiveness of monetary policy. Coordination between monetary and fiscal policies appears to be a crucial factor, as the positive coefficient for the fiscal balance in the growth model indicates positive complementarity between the two policies in oil-producing countries. This reflects the need for close coordination between monetary and fiscal authorities, especially given the significant role of government spending in these economies.

Nonlinear effects and limits of effectiveness

The discovery of nonlinear effects of quantitative easing (a negative coefficient for the squared variable) suggests a "saturation point" beyond which the marginal effectiveness of this tool declines. This is consistent with the economic theory of diminishing marginal returns to stimulus policies and highlights the importance of appropriate timing and optimal intervention size. The positive interaction with oil prices reveals the conditional dependence of monetary policy effectiveness on the external economic environment. This means that the same monetary instruments may achieve completely different outcomes depending on the oil price cycle, requiring high flexibility in policy design and implementation.

Comparison with previous literature

The results are partly consistent with previous studies on the limited effectiveness of monetary policy in developing countries, but they provide a deeper understanding of

the unique characteristics of oil-producing countries. The limited effectiveness of quantitative easing is consistent with Mohanty's (2014) findings on the challenges of implementing unconventional policies in developing economies, but they show that these challenges are exacerbated in an oil-producing environment due to dependence on oil exports.

The pivotal role of oil prices confirms Sturm *et al.*'s (2009) findings on the impact of commodity cycles on monetary policy effectiveness and extends this understanding to include unconventional instruments. The findings are also consistent with Al- Mashat and Billmeier's (2008) findings on the importance of coordination between monetary and fiscal policies in oil-producing countries.

Conclusions and Recommendations

Main conclusions

The study reached several important conclusions about the effectiveness of unconventional monetary policy in oil-producing countries:

First, unconventional monetary policy tools show limited and mixed effectiveness in oil-producing countries compared to conventional advanced economies. Quantitative easing, while statistically positive, has smaller economic impacts than expected, while low interest rate policies show greater relative effectiveness.

Second, coordination between fiscal policy and external factors, especially oil prices, is a critical determinant of the success of unconventional monetary policy. Oil-based economies require an integrated approach that takes into account the rentier nature and volatility of global energy markets.

Third, the effectiveness of these policies varies significantly across groups of oil-producing countries, depending on their level of economic development and the strength of their monetary and financial institutions. Countries with stronger institutions and more developed financial markets demonstrate a better response to unconventional tools.

Fourth, traditional monetary transmission channels are weak in the oil environment, particularly the investment portfolio channel, which requires developing alternative channels or strengthening existing ones through structural reforms.

Policy Recommendations

Recommendations for central banks

Strengthening the institutional framework: Central banks in oil-producing countries must enhance their institutional independence and develop their technical capabilities in the field of unconventional monetary policy. This includes developing economic models specific to the oil environment and building specialized teams to manage these instruments.

Improving coordination with fiscal policy: Institutional coordination mechanisms should be established between the central bank and the Ministry of Finance to ensure

the integration of monetary and fiscal policies, especially during periods of oil shocks. This includes developing a common framework for managing oil price cycles.

Developing innovative monetary instruments: It is recommended to develop monetary instruments specifically designed for the oil environment, such as credit facilities linked to oil prices or asset purchase programs linked to economic diversification projects.

Recommendations for the development of financial markets

Deepening financial markets: Developing government and corporate bond markets to improve the efficiency of the portfolio investment channel. This requires regulatory and tax reforms to stimulate the growth of these markets.

Promoting financial inclusion: Expanding access to financial services to improve the efficiency of the credit and expectations channels. This includes developing financial technology and digital banking services.

Diversification of financial instruments: Developing innovative financial products such as inflation-linked bonds or Islamic sukuk to provide investment alternatives for local and foreign investors.

Recommendations for structural reforms

Diversifying the economic base: Strengthening economic diversification efforts to reduce dependence on oil revenues and improve the effectiveness of monetary policy. This includes developing non-oil sectors and improving the business environment.

Strengthening economic governance : Developing an economic governance framework to ensure transparency and accountability in the implementation of monetary and fiscal policies. This includes strengthening the role of parliament in oversight of economic policies.

Limits and future prospects of the research

This study faces several methodological and empirical limitations. First, data availability remains a challenge in some oil-producing countries, particularly those experiencing political or economic instability. Second, measuring some variables, such as future orientation, requires qualitative estimates that may contain an element of subjectivity.

Future research could expand in several directions. Studying the impact of modern financial technologies and central bank digital currencies on the effectiveness of monetary policy in oil-producing countries is a promising area of research. More complex dynamic economic models could also be developed that account for the nonlinear interactions between monetary and fiscal policies and oil prices.

Analyzing the impact of climate change and energy transition policies on the effectiveness of monetary policy in oil-producing countries is another important area of research, especially with increasing global pressure to shift to renewable energy sources.

Implications for public policy

The findings have important implications for the design of macroeconomic policies in oil-producing countries. First, there is the need to develop an integrated economic policy framework that takes into account the interaction between monetary, fiscal, and structural policies. Second, there is the importance of investing in developing financial and institutional infrastructure as a prerequisite for the effectiveness of unconventional monetary policies. The findings also underscore the need to develop the forecasting and economic analysis capabilities of these countries' central banks, particularly with regard to modeling the macroeconomic impact of oil prices and designing appropriate policy responses to oil shocks.

CONCLUSION

This study provides a comprehensive, empirical analysis of the effectiveness of unconventional monetary policy in oil-producing countries over the period 2008–2023. Using a longitudinal data analysis methodology for a sample of 12 oil-producing countries, the study reaches important findings that contribute to a deeper understanding of the mechanisms of action of these policies in the unique oil economic environment.

The results showed that the effectiveness of unconventional monetary policy tools in oil-producing countries differed fundamentally from that observed in conventional advanced economies. Quantitative easing had positive but limited effects on economic growth and investment, while low interest rate policies demonstrated greater relative effectiveness. The decisive factor was the dominant role of oil prices and the need for close coordination with fiscal policy.

The wide variation in results across country groups underscores the importance of institutional and structural factors in determining the success of these policies. Countries with stronger institutions and more developed financial markets demonstrated a better response to unconventional tools, suggesting the need to invest in institutional and financial reforms as a prerequisite for improving the effectiveness of monetary policy.

This study makes valuable contributions to the economic literature by filling an important research gap in understanding unconventional monetary policy in the oil environment. It also offers practical recommendations for policymakers in oil-producing countries to improve the design and implementation of their monetary policies to more effectively address contemporary economic challenges.

In light of global shifts toward renewable energy and growing climate challenges, these findings gain additional importance in helping oil-producing countries develop flexible and effective policy tools to manage the required economic transformation and maintain long-term macroeconomic stability.

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