

USING REGRESSION ANALYSIS TO STUDY THE IMPACT OF CRUDE OIL SHOCKS ON THE PROFITABILITY OF THE BANKING SECTOR IN QATAR

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ABSTRACT

This study aims to analyze the impact of crude oil price shocks on the profitability of the banking sector in Qatar. The research focuses on a sample of four banks listed on the Qatar Stock Exchange during the period from 2005 to 2023. Using an econometric model based on the Ordinary Least Squares (OLS) method, The research investigates the impacts of oil price fluctuations, GDP growth, and loan loss provisions on return on assets (ROA), a metric used to quantify bank profitability. The results reveal that oil price shocks have a significant positive impact on bank profitability, highlighting the sector's dependence on oil revenues. Additionally, GDP growth positively influences profitability, while loan loss provisions show a negative effect. The study underscores the importance of diversifying income sources and improving credit risk management to enhance the resilience of the banking sector against oil price fluctuations.

Keywords: *Oil Price Shocks, Bank Profitability, Qatar Stock Exchange, GDP Growth, Loan Loss Provisions, Return on Assets.*

INTRODUCTION

For many years, the macroeconomic performance of nations has been significantly influenced by the oil markets. Numerous pertinent works have extensively examined the economic impact of oil markets, emphasizing how countries' reliance on oil has grown over time. The economy is likely to be impacted by oil prices in both direct and indirect ways. According to Hess and Poghosyan (2016), the direct route entails changes in the price of oil or shocks that have an immediate effect on bank profitability through lending related to oil, business ventures, or excess liquidity in the banking industry.

Furthermore, research has looked at how the oil markets affect the stock and/or financial markets. However, the indirect route indicates that in many nations, oil revenues make up a sizeable amount of both external and governmental income. As a result, fiscal spending can be influenced by oil income forecasts, which can then have an impact on banks' and firms' profitability through private sector lending. As a result, oil markets are probably going to have a significant role in determining the monetary and fiscal policies of many countries. As Hess and Poghosyan (2016) also point out, expectations and the broader business climate inside nations serve as another potential indirect channel.

For nations that depend significantly on the oil trade, both importers and exporters, the consequences of oil prices become even more important. However, there is a scarcity of studies examining the impact of oil price fluctuations on the performance of the banking sector in oil-exporting countries. It is generally accepted that rising oil prices contribute to business cycle asymmetries. Recent oil price movements have become a major concern regarding the economic performance of nations.

It is crucial to keep in mind that both oil-importing and oil-exporting nations' financial and economic systems are heavily reliant on foreign energy. The literature examining the relationship between oil prices and the banking industry is still scarce, despite the fact that there are an increasing number of research examining how oil prices affect macroeconomic performance. This problem is especially important for developing and oil-importing nations.

Both the direct and indirect effects of shocks to the price of oil on bank profitability are examined. Existing research indicates that while the direct effect of oil price shocks on bank profitability seems to be negligible, the indirect influence is mediated by nation-specific macroeconomic and institutional determinants. However, recent research in banking shows that bank profitability is influenced by macroeconomic factors such as interest rates and GDP growth, and inflation as well as bank-specific elements like credit risk, efficiency, liquidity, and capital adequacy. Over the past ten years, more study has begun to look into the role of the macroeconomic factors mentioned above, even though many studies have already looked at the internal determinants of bank profitability.

To the best of our knowledge, however, The effect of oil prices on bank profitability in the oil exporting industry nations has not gotten enough attention, except from the Hess and Poghosyan (2016) study. Examining how fluctuations in oil prices affect bank profitability would therefore be a very intriguing study topic, especially in large oil-exporting nations that have also made notable improvements to their banking infrastructure.

RESEARCH PROBLEM

The literature exhibits a clear gap in studies addressing the relationship between oil price shocks and the performance of the banking sector, particularly in oil-exporting countries like Qatar. Therefore, the research problem stems from the need to understand how fluctuations in oil prices affect the Qatari banking sector during the period from 2005 to 2023, and whether these effects are direct or indirect.

RESEARCH HYPOTHESIS

The study is based on the fundamental hypothesis that oil price shocks impact the performance of the banking sector in Qatar through direct channels, such as oil-related lending, and indirect channels, such as the influence of oil revenues on government spending and overall economic activity.

SIGNIFICANCE OF THE STUDY

This study holds significant importance given Qatar's reliance on oil as a primary source of revenue. It highlights the relationship between two critical variables: oil prices and the performance of the banking sector, offering insights that can assist policymakers in developing financial and banking policies that adapt to oil price fluctuations.

RESEARCH METHODOLOGY

The study uses an econometric and analytical technique, including time-series data ranging from 2005 to 2023. The impact of oil price shocks on the performance of the Qatari banking industry will be examined using an economic model that incorporates both macroeconomic and banking sector-specific variables. The research uses oil price shocks, GDP growth, and loan loss provisions (credit risk) as independent variables, with return on assets (ROA) as the dependent variable.

OBJECTIVES OF THE STUDY

1. To analyze the relationship between oil price fluctuations and the performance of the banking sector in Qatar.
2. To provide recommendations for policymakers on how to enhance the stability of the banking sector amid oil price volatility.

SCOPE OF THE STUDY

The study covers Qatar from 2005 to 2023, focusing on the impact of oil price shocks on the banking sector rather than other economic sectors.

THEORETICAL AND CONCEPTUAL FRAMEWORK

The current study examines the impact of bank-specific factors and macroeconomic variables on bank profitability amidst declining oil prices during the period from 2005 to 2023. This section reviews relevant previous research that investigates these variables. It also highlights the relationship between bank profitability, bank-specific factors, and selected macroeconomic variables. Finally, these presentations contribute to building the theoretical framework of the study in the concluding section (Ahmed et al., 2024).

Per capita GDP, a measure of economic growth, takes into account differences in a wide range of characteristics that might be missed by regression analysis yet have a big impact on bank profitability. Despite the industry's move toward greater geographical diversification and growing use of financial engineering tools to minimize risks linked with business cycle expectations, Sufian and Chong (2008) assert that bank profitability is vulnerable to macroeconomic events. In general, banks are more inclined to lend when the economy is growing faster, which enables them to increase profits and enhance asset quality (Walid Ali et al., 2022).

Commercial banks, like other firms, have similar expectations regarding the health of the economy. When there is a consensus within the business community about favorable economic prospects, companies expand their operations. Conversely, in the absence of such confidence, entrepreneurs limit the expansion of their investments. While commercial banks expand their lending during economic growth, they contract during recessions. At this stage, companies criticize banks for their low risk appetite. When the economy recovers, commercial banks contribute to the money supply, thereby helping to expand demand for goods and services (Petkovski, 2023).

This relationship has been examined by numerous empirical studies. Martinho et al. (2017) investigated the impact of GDP growth on profitability in Europe, finding a positive correlation between real GDP growth and bank profitability due to cyclical imbalances (Martinho et al., 2017). Gambacorta (2009) also found that bank profitability is positively linked to GDP growth, identifying increases in net interest income and reduced provisions as key channels through which higher economic activity affects banks' return on assets (Ugo & Gambacorta, 2009).

In the Vietnamese banking industry, Nguyen and Dinh (2020) investigated factors that influence credit risk and bankruptcy risk, using data from 25 commercial banks over ten years (2008-2017). The study examined the relationship between internal and external variables and bank risks, identifying variables such as bank size, capital, ROA, ROE, loan loss provisions, capital adequacy ratio, inflation rate, and GDP growth rate. Non-performing loans and the Z-score represented the dependent variables. The empirical results showed that all factors, including economic growth, influence bank risks, except for the liquidity ratio (Nguyen & Trang Dinh, 2021).

Furthermore, Petria et al. (2015) studied banks in 27 EU countries from 2004 to 2011, finding a positive correlation between GDP growth and bank profitability (Petria et al., 2015). In Egypt, Abobakr (2018) used unbalanced annual data for 26 banks, applying Generalized Method of Moments (GMM) estimation techniques to identify the most influential factors. The study used ROA and ROE as measures of bank profitability and concluded that macroeconomic strategies promoting low inflation and sustained growth enhance loan expansion and bank profitability (Abobakr, 2018).

Oil prices influence the economy in both direct and indirect ways. In the direct route, for example, oil price shocks may have a direct impact on bank profitability by increasing oil-related loans, commercial activity, or excess liquidity in the banking system. Indirectly, because oil revenues account for a substantial amount of external and governmental income in MENA nations, the prospects for oil income influence fiscal spending, which in turn influences business and bank profitability via private sector lending (Al-Salhi et al., 2024). Another indirect channel is based on assumptions and overall business attitude. High oil prices may improve domestic demand, enhancing bank trust, lending, and lowering nonperforming loans. On the supply side, high oil prices are likely to encourage the growth of countries' production capacities through new public and private investments.

The relationship between oil price shocks and bank performance has gotten little study. Hesse and Poghosyan (2009) conducted a key study on the influence of oil price shocks on bank profitability in MENA nations between 1994 and

2007 (before to the financial crisis). Using data from 145 banks in 11 oil-exporting MENA nations, they investigated the direct and indirect effects of oil price shocks on bank profitability. Their findings revealed that oil price shocks have an indirect impact on bank profitability, which is mediated by country-specific macroeconomic and institutional variables, while the direct effect is small (Poghosyan and Hesse, 2009).

As the world's largest importer of crude oil and other energy liquids, Lee (2019) concentrated on how oil prices affect bank performance in China. From 2000 to 2014, they used a variety of CAMEL indicators (Capital Adequacy, Asset Quality, Management, Earnings, and Liquidity) to analyze how oil prices affected banks. According to the findings, oil prices have a major impact on banking performance; when prices rise, capital, managerial effectiveness, earning potential, and liquidity all decrease (Lee, 2019).

Saif-Alyousfi et al. (2020) used data from 2000 to 2017 to evaluate the effect of oil and gas price shocks on bank performance in key GCC oil and gas exporting countries. The findings showed that rising oil and gas prices have a direct impact on bank performance via the deposit channel, which is influenced by pricing and commercial activity lending. Falling oil and gas prices had a stronger negative influence on bank performance than rising prices did (Saif-Alyousfi et al., 2021).

Due to recent difficulties and crises faced by banks, Loan Loss Provisions (LLP) play a crucial role in strengthening banks' financial positions. Beatty & Liao (2009) define LLP as a policy adopted by commercial banks to allocate some funds (reserves) to cover potential loan defaults, thereby helping protect banks' profitability and capital positions (Beatty & Liao, 2009). The primary goals of LLP are to provide specific information about future bank management and to manage regulatory capital (Bouchekoua et al., 2010). According to Norden & Stoian (2013), LLP aims to manage income volatility, earnings fluctuations, and avoid changes in risk-weighted assets, which affect bank risks and profitability (Norden & Stoian, 2013).

Given the significance of LLP, earlier studies have looked at how it will affect banks' performance in the future. For example, Caporale et al. (2015) examined the factors that contributed to LLP in 400 Italian banks from 2001 to 2012 and discovered that non-discretionary factors were the primary causes of LLP, with managers' estimates of possible future losses having little bearing. Additionally, they discovered evidence of a negative relationship between future losses and secured loans, which lower credit risk (Caporale et al., 2015).

After adjusting for other known variables, Ahmad et al. (2014) investigated the effect of LLP on bank profitability in Pakistan. The study discovered the following using ROA and ROE as stand-ins for profitability: First, there is a negative correlation between LLP and profitability (ROA, ROE), suggesting that banks' financial stability and profitability are lowered by larger loan loss provisions. Second, there was a negative correlation between profitability and deposits. Third, bank size and ROA were found to be positively correlated (Ahmad et al., 2014).

The effect of loan loss provisions on the profitability of private conventional commercial banks doing business in Syria was examined in Daher's (2021) study. The ratio of loan provisions to total direct credit facilities served as the independent variable, while ROE was used to quantify bank profitability using annual panel data for 11 banks from 2010 to 2019. The generalized least squares approach revealed that loan loss provisions had a detrimental effect on the banks' profitability under study (Daher, 2021).

PRESENTATION AND DISCUSSION OF RESULTS

Qatar National Bank (Appendix 1)

Appendix (1):

Results of Estimating the Impact of Crude Oil Price Shocks on Return on Assets (ROA) for Qatar National Bank (QNB)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1.79731	0.125302	14.34378	0.0000
SHO_OIL	0.02263	0.006404	3.533995	0.0030
LLP	-19.8581	8.7205869	-2.27715	0.0379
GDP	0.03238	0.009730	3.328538	0.0046
$R^2=0.765$ $R^2_{Adj.}=0.719$ F-statistic=16.3625 Prob(F-statistic)=0.000054				

Source: Prepared by researchers using Eviews software

- **SHO_OIL:** ROA improved significantly, demonstrating the bank's sensitivity to oil price shocks and reliance on oil-related earnings.
- **LLP:** Negative and significant effect (-19.8581), indicating that higher provisions reduce profitability, highlighting the need for improved credit risk management.
- **GDP:** Positive and significant effect (0.03238), showing that economic growth enhances the bank's ability to achieve higher profits through increased economic and investment activities.

Doha Bank (Appendix 2)

Appendix (2)

Results of Estimating the Impact of Crude Oil Price Shocks on Return on Assets (ROA) for Doha Bank

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1.158007	0.198118	5.84501	0.0000
SHO_OIL	0.067628	0.011447	5.90789	0.0000
LLP	-3.54411	3.7619326	-0.94209	0.3611
GDP	0.051880	0.017703	2.930580	0.0103
$R^2=0.82$ $R^2_{Adj.}=0.78$ F-statistic=23.49094 Prob(F-statistic)=0.000006				

Source: Prepared by researchers using Eviews software

- **SHO_OIL:** Largest positive and significant effect (+0.067628) among the four banks, indicating heavy reliance on oil-related activities.
- **LLP:** Insignificant negative effect (-3.54411), suggesting that loan loss provisions were not a decisive factor in the bank's profitability during the study period.

- **GDP:** Positive and significant effect (+0.05188), highlighting the strong role of economic growth in enhancing the bank's profitability.

Qatar Islamic Bank (Appendix 3)

Appendix (3)

Results of Estimating the Impact of Crude Oil Price Shocks on Return on Assets (ROA) for Qatar Islamic Bank:

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1.457856	0.4635	3.144810	0.0067
SHO OIL	0.135241	0.0258	5.241692	0.0001
LLP	1.197813	15.7948	0.075835	0.9406
GDP	0.14743	0.0391	3.762929	0.0019
$R^2=0.814$ $R^2Adj.=0.77$ F-statistic=21.92871 Prob(F-statistic)=0.000010				

Source: Prepared by researchers using Eviews software

- **SHO_OIL:** Highest positive and significant effect (+0.135241), reflecting significant dependence on oil-supported economic activities.
- **LLP:** Insignificant positive effect (+1.197813), indicating that credit risk management did not significantly affect profits, possibly due to more conservative Islamic financing strategies.
- **GDP:** Positive and significant effect (+0.14743), showing a strong correlation between economic performance and bank profitability, benefiting from a thriving economic environment.

Commercial Bank of Qatar (Appendix 4)

Appendix (4):

Results of Estimating the Impact of Crude Oil Price Shocks on Return on Assets (ROA) for Commercial Bank of Qatar:

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1.581541	0.41395	3.82061	0.0017
SHO OIL	0.02750	0.01113	2.469332	0.0260
LLP	-17.51848	17.52445	-0.99965	0.3333
GDP	0.052752	0.02252	2.3422179	0.0334
$R^2=0.76$ $R^2Adj.=0.72$ F-statistic=16.49634 Prob(F-statistic)=0.000051				

Source: Prepared by researchers using Eviews software

- **SHO_OIL:** Positive and significant effect (+0.02750), indicating a notable but relatively lower role of oil prices in supporting bank profits compared to other banks.
- **LLP:** Negative and insignificant effect (-17.51848), suggesting that loan loss provisions weaken profitability, though the effect is not statistically significant.
- **GDP:** Positive and significant effect (+0.052752), reflecting the importance of general economic activity in enhancing the bank's financial performance.

In the analysis of all banks, the R² values were high, indicating a good fit of the model.

CONCLUSIONS AND RECOMMENDATIONS

RESEARCH CONCLUSIONS

1. **The study confirms Qatari banks'** reliance on oil-related activities, indicating that oil price shocks have a positive and considerable impact on their profitability. **Role of Economic Growth:** There is a positive and significant relationship between economic growth and bank profitability, where economic expansion contributed to improving the return on assets through increased investment and lending activities.
2. **Credit Risk Management:** Loan loss provisions negatively affected bank profitability, indicating the need for improved risk management strategies.
3. **Variation of Impact Among Banks:** The results showed differences in the level of impact among the four banks studied, with some banks being more sensitive to oil price shocks and economic growth.

RECOMMENDATIONS

1. **Diversifying Income Sources:** It is recommended to reduce the heavy reliance on oil revenues by diversifying investments and banking activities to ensure sustainable profitability.
2. **Improving Risk Management:** There is a need to develop more efficient strategies for managing loan loss provisions to minimize their negative impact on profitability.
3. **Enhancing Economic Resilience:** Strengthening engagement with non-oil economic sectors to support bank performance amid oil price fluctuations.
4. **Guiding Financial Policies:** Policymakers should develop policies that support banking stability by improving the economic growth environment and adapting to oil market fluctuations.

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