Examining the Relationship Between Oil Cycle Shocks and Financial Stability in Selected OPEC Countries

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Abstract: This study investigates the relationship between oil price cycle shocks and financial stability in six OPEC member countries (Iran, Saudi Arabia, Iraq, the United Arab Emirates, Algeria, and Qatar) during the period 2002–2022 using the NARDL method. In this regard, oil cycles were first extracted to be incorporated into the specified model. The findings indicate that in the long run, economic growth and inflation have a positive and significant effect on financial stability. Moreover, oil rents, by providing government financial resources, also play a positive role in enhancing financial stability. However, both positive and negative oil price shocks in the long run have a negative impact on financial sustainability. This result highlights the structural vulnerability of oil-dependent economies, where even an increase in oil prices—due to heavy reliance on unstable oil revenues and weak economic diversification—intensifies financial instability. Based on the short-run results, only negative oil price shocks exert a negative and significant effect on financial sustainability. A sharp decline in oil prices leads to budget deficits, reduced foreign exchange reserves, and pressure on the banking system. In contrast, positive shocks in the short run have no significant effect, which may be due to delays in allocating oil revenues to productive projects or conservative fiscal policies. This study provides a framework for designing macroeconomic policies in oil-dependent economies.

Keywords: Oil shocks, Financial stability, NARDL

1. Introduction

Over the past two decades, renewed cycles of oil booms and busts have underscored a classic policy dilemma for hydrocarbon exporters: how to convert highly volatile, exhaustible revenues into stable, long-run prosperity without sacrificing macro-financial resilience. The experience of OPEC and OPEC+ members shows that what begins as a terms-of-trade windfall often propagates through exchange rates, fiscal positions, credit markets, and the banking system in nonlinear and state-contingent ways [1, 2]. While the "resource curse" debate emphasizes governance failures and growth slowdowns in resource-rich economies, contemporary evidence adds an additional layer: the macro-financial transmission of global oil shocks is mediated by domestic financial structures and international financial conditions, yielding asymmetric effects across expansions and contractions [3-5]. Conceptually, financial stability—understood as the capacity of the financial system to withstand shocks, efficiently allocate capital, and support sustainable growth—requires policy frameworks that internalize commodity-price cyclicality and its interaction with leverage, liquidity, and balance-sheet mismatches [2, 6].

In oil exporters, the fiscal channel is typically the primary conduit from oil price movements to the real and financial sectors. Revenue elasticities to oil prices, procyclical spending patterns, and rigid current expenditures create a tendency toward fiscal amplification of commodity cycles [7, 8]. Historical and contemporary analyses alike document how windfalls often fuel rapid expenditure growth, followed by painful consolidations when prices retreat, with repercussions for public investment quality, sovereign risk, and banking-sector exposure to the public sector [9-11]. The result is a recurrent tension between short-term political economy incentives and the intertemporal budget constraint of the state, in which stabilization funds, fiscal rules, and medium-term frameworks are frequently proposed but unevenly implemented [12, 13].

At the same time, the open-economy transmission of oil shocks hinges on exchange-rate regimes, price setting, and cross-border balance sheets. Foundational open-economy models explain how nominal rigidities and exchange-rate policy shape the pass-through of external shocks and the distribution of welfare across tradable and nontradable sectors [14-16]. For hydrocarbon exporters, a real appreciation during booms can undermine non-oil competitiveness and reallocate resources toward sheltered sectors—canonical "Dutch disease" dynamics that complicate diversification and amplify future vulnerability [17-19]. These macro-real channels are tightly intertwined with financial frictions: market liquidity and funding liquidity can spiral in adverse states, weakening intermediation precisely when fiscal space narrows and sovereign-bank linkages intensify [20]. Macroprudential policy therefore occupies a central role in commodity exporters' toolkits, complementing fiscal stabilization to lean against leverage cycles and maturity/currency mismatches [6].

Recent empirical work confirms that oil shocks are not only large but also nonlinear in their macro-financial effects. Positive and negative shocks can differ in persistence, speed of transmission, and sectoral incidence, reflecting adjustment costs, policy responses, and financial accelerator mechanisms [5, 21]. For instance, global oil shocks transmit to emerging markets through risk-appetite and uncertainty channels that modulate capital flows, external financing costs, and domestic credit conditions, with implications for output volatility and financial stability [5]. Within OPEC(+), cyclical oil shocks co-move with fiscal stance in complex ways, with evidence of asymmetry in both short- and long-run dynamics and state-dependent fiscal multipliers—an empirical regularity that calls for econometric frameworks capable of capturing nonlinear adjustment [22]. Time-series and panel analyses further show that oil price innovations affect business cycles and the propagation of macro disturbances differently across institutional and policy environments, reinforcing the salience of country heterogeneity [23, 24].

Country-level evidence from Middle Eastern and African exporters illustrates these mechanisms vividly. Oil-linked revenue and spending dynamics have been shown to influence budget balances, inflation, and growth in Iran and selected African oil economies, with panel-VAR approaches revealing bidirectional interactions between fiscal policy and macro outcomes under price volatility [25, 26]. In Sudan, expenditure shocks mapped via DSGE and SVAR frameworks highlight the importance of structural parameters and shock identification for policy evaluation in low-diversified settings [27, 28]. Iraq's experience—with extensive reliance on oil revenues amid evolving institutional constraints—has generated a growing literature on debt sustainability, growth effects of oil prices, and symmetric/asymmetric cointegration between oil and macro aggregates [29-31]. Across the Gulf, oil prices robustly shape public expenditures, reinforcing the need for credible countercyclical frameworks and rules to delink spending from contemporaneous oil income [11, 32].

From a policy-design perspective, the core challenge lies in balancing three interlocking objectives: intertemporal fiscal smoothing, financial-stability safeguards, and long-run diversification. The first calls for institutions that transform volatile rents into stable budgetary resources through rules-based savings, well-governed sovereign wealth funds, and medium-term expenditure frameworks [7, 9]. The second requires macroprudential regimes that monitor and mitigate systemic risk rising from common exposures, sovereign-bank loops, and foreign-currency liabilities, especially when oil prices compress collateral values and tighten external financing [2, 6]. The third depends on raising total factor productivity and human capital in non-resource tradables to offset real-exchange-rate pressures and break the procyclicality of growth and credit [15, 18]. Together, these pillars address the well-documented tendency of windfalls to erode institutions, inflate unproductive spending, and entrench rent-seeking unless countered by rules, transparency, and accountability [3, 4].

Yet, even with sound institutions, the external environment matters. Global financial cycles and sudden-stop risk can magnify the domestic imprint of oil shocks by shifting the price and quantity of external financing, with welfare consequences that depend on policy credibility and exchange-rate flexibility [14, 16]. Liquidity spirals and margin constraints can propagate stress from commodity markets to banks and corporates, amplifying downturns and complicating countercyclical policy execution [20]. As a result, countries with similar hydrocarbon endowments may experience sharply different macro-financial paths depending on exchange-rate regimes, fiscal rules, and the maturity/currency structure of public and private balance sheets [15, 24].

A complementary strand of research emphasizes political economy and security linkages. Negative oil shocks have been associated with shifts in military spending and democratic trajectories across oil states, reflecting revenue pressures and geopolitical risk, which in turn shape fiscal priorities and the composition of public outlays [33]. These interactions feed back into macro-financial stability via credit allocation, sovereign spreads, and investor confidence. Moreover, planning frameworks that ignore commodity cyclicality often produce optimistic revenue baselines, leading to procyclicality in capital projects and arrears accumulation when prices fall—patterns documented in Nigeria and other exporters [10, 34]. Reforms that anchor budgets in conservative price assumptions and embed escape clauses for severe terms-of-trade shocks can mitigate these risks [7, 8].

Against this backdrop, modeling choices matter for inference and policy relevance. Linear specifications can mask asymmetric pass-through from oil to fiscal and financial variables, while high-frequency uncertainty and regime shifts challenge standard identification. Nonlinear frameworks that allow for positive/negative decompositions and regime dependence—such as asymmetric cointegration and nonlinear ARDL—are therefore well-suited to capture the distinct dynamics of booms versus busts [21, 22]. In addition, structural models (DSGE) and semi-structural tools (SVAR) provide complementary lenses for tracing impulse responses and counterfactuals under alternative policy rules, exchange-rate arrangements, and financing conditions [24, 27]. The broader literature on macro-financial linkages underscores that designing credible stabilization policy requires integrating fiscal reaction functions with financial-stability constraints and liquidity conditions in domestic and international markets [6, 20].

Finally, resilience to oil cycles cannot be reduced to cyclical stabilization alone. Long-run growth and diversification depend on channeling rents into productivity-enhancing investments and institutions that expand the economy's non-oil frontier. Education and human capital formation are central to this transformation, as are governance frameworks that curb rent-seeking and improve the quality of public investment [9, 18]. Welfare and interdependence considerations imply that spillovers from exporters to trading partners—and vice versa—shape optimal policy through terms-of-trade, financial, and exchange-rate channels, making coordination and credible rules valuable regional public goods [15, 16].

In sum, the literature suggests that oil shocks propagate through fiscal, external, and financial channels in ways that are nonlinearly state-dependent, institution-specific, and sensitive to international financial conditions [5, 23, 24]. Building on this body of work—and directly motivated by recent evidence on cyclical oil shocks and fiscal stance in OPEC+ and asymmetric macro responses in MENA economies—this study employs an asymmetric (nonlinear) ARDL framework to examine how positive and negative oil-cycle shocks affect financial stability in selected OPEC members, while controlling for trade openness, inflation, growth, monetary freedom, and oil rents.

2. Methodology

In this study, the oil shock cycle is examined in relation to financial stability. For this purpose, the Hodrick–Prescott filter is first used to identify oil cycles. Then, using the NARDL model, shocks imposed on the main model are analyzed.

Identifying oil price cycles requires separating short- and medium-term fluctuations from the long-term trend. As noted, the Hodrick–Prescott filter is employed for this purpose. This parametric method was first introduced by Hodrick and Prescott (1997) to decompose economic time series into two components: a structural trend and a cyclical component. The filter is particularly useful in analyzing commodity markets such as oil, which are influenced by supply-demand shocks, geopolitical uncertainties, and technological changes. The HP filter is based on the assumption that the observed time series yt consists of an unobservable trend τt and a cyclical component ct: yt = τt + ct for t = 1, 2, …, T.

The trend (τt) represents long-term changes in oil prices shaped by structural factors such as technological changes in extraction, infrastructural developments, or macroeconomic policies.

The cyclical component (ct) reflects temporary deviations from the trend, which result from transitory shocks (such as OPEC production disruptions, global demand fluctuations, or financial crises).

Using the HP filter for oil price analysis offers key advantages. First, it is flexible, allowing the identification of asymmetric and irregular cycles that are common in oil markets due to external shocks (such as sanctions or pandemics). Moreover, the method does not require structural assumptions. Unlike approaches based on dynamic stochastic general equilibrium (DSGE) models, the HP filter extracts trend and cycle without relying on restrictive assumptions about market participants' behavior. Additionally, oil prices often follow a non-stationary process with a stochastic trend. The HP filter can be applied directly to raw data without the need for successive differencing (which may destroy cyclical information). After identifying oil price cycles, the NARDL model is used to estimate the results. For this purpose, the conceptual model of Suhag et al. (2024) is applied.

(1) sp = F(op, INF, oilshock, gr, oilrent, monfree)

Here, sp denotes financial stability, measured by the difference between a country's expenditures and revenues. The variable op refers to financial openness. Oilshock represents the cyclical shock of global oil prices, gr is the growth rate, oilrent is the oil resource rent, and monfree is the monetary freedom index. The data were collected from the World Bank and the International Monetary Fund during the years 2000 to 2021. As stated earlier, oil price shocks for different years are first identified using the Hodrick–Prescott filter and then estimated using the NARDL approach. The countries under study include Iran, Saudi Arabia, Iraq, the United Arab Emirates, Algeria, and Qatar.

The NARDL model is an asymmetric extension of the ARDL cointegration model, introduced by Pesaran et al. (1999) and further developed by Shin et al. (2001). This approach was specifically designed to examine asymmetric effects in short- and long-run relationships between independent variables and to estimate their impacts on the dependent variable. An important feature of this method is that it retains all advantages of ARDL, summarized as follows. First, NARDL can be applied to equations where the variables do not share the same order of integration, whereas other techniques require identical integration levels. In other words, the method can be used when cointegration is I(0) or I(1), but it becomes invalid in the presence of I(2) series. Moreover, unlike other cointegration techniques that require large sample sizes, this method provides valid results in small samples. Also, the NARDL model yields precise t-statistic estimates even in the presence of correlation and endogeneity (Pesaran et al., 2001; Harris & Solis, 2003). Thus, by using this approach, both cointegration and nonlinear asymmetry can be modeled simultaneously within a single equation, and this framework performs better in small samples compared to conventional cointegration techniques. Another advantage of the NARDL framework is that it enables hidden cointegration tests, thereby preventing the omission of relationships not evident in traditional linear models. Consequently, it is possible to distinguish between linear cointegration, nonlinear (asymmetric) cointegration, and non-cointegration using the NARDL modeling technique. It is important to note that the primary distinction between nonlinear ARDL and linear ARDL lies in the former's ability to capture asymmetries arising from positive and negative shocks to macroeconomic variables. After testing for unit roots, the second stage is the asymmetry test. If the results show asymmetry in the short run, the long run, or both, NARDL is used; otherwise, ARDL is applied.

A bivariate NARDL model can be expressed as equation (2) (Shin et al., 2011).

(2) $yT = \beta^{+} xt^{+} + \beta^{-} xt^{-} + ut$

Here, β^{+} and β^{-} are the long-run coefficients of the model. The variable xt can be decomposed into positive and negative changes as $xt = x0 + xt^{+} + xt^{-}$. In this context, x0 denotes the initial value of the variable xt. The values of xt^{+} and xt^{-} represent the cumulative partial sums of positive and negative changes in xt, respectively. The value of xt^{+} can be estimated using the relation $\sum(i=1 \text{ to } t)\ \Delta xt^{+} = \sum(i=1 \text{ to } t)\ \text{Max}(\Delta xt, 0)$. Conversely, xt^{-} is estimated using $\sum(i=1 \text{ to } t)\ \Delta xt^{-} = \sum(i=1 \text{ to } t)\ \text{Min}(\Delta xt, 0)$. Shin et al. combined equation (2) with the linear ARDL(p, q) model to estimate the NARDL(p, q) model.

The first step in estimating the panel NARDL model is to identify cross-sectional dependence in the data. If cross-sectional dependence exists, first-generation unit root tests are no longer reliable, and therefore, second-generation unit root tests such as IPS and LM should be applied. Nevertheless, as noted, the goal is to approximate the true relationship between fundamental variables using a nonlinear method. Hence, the nonlinear panel NARDL model is selected, which can be expressed as:

$\sum(i=1 \text{ to } q)\ \eta^{+}ij\ zit\text{-}j + \sum(i=1 \text{ to } q)\ \eta^{-}ij\ zit\text{-}j\ \Delta yit = \alpha 01 + \alpha 01\ yit\text{-}1 + \Phi 1^{-}\ zit\text{-}1 + \Phi 2^{+}\ zit\text{-}1 + \sum(j=1 \text{ to } p)\ \lambda ij\ \Delta yit\text{-}j + \varepsilon it$

As shown above, the relationship between dependent and independent variables is no longer linear and uniform but has instead taken on an asymmetric form.

3. Findings and Results

In recent decades, severe fluctuations in oil prices and the structural dependence of many OPEC oil-exporting countries have made financial sustainability one of the vital issues in economic policymaking. OPEC oil economies, including Saudi Arabia and Iran, are highly exposed to global oil price volatility due to their heavy reliance on oil revenues. The fiscal position of governments—defined as the growth rate of the difference between government expenditures and revenues—reflects financial sustainability and the capacity of governments to manage budget deficits. The NARDL model, with its ability to analyze nonlinear and asymmetric relationships, serves as a powerful tool to understand the complex dynamics of these economies, particularly when external shocks (such as oil prices) and internal variables (such as trade policies) interact. In this regard, the stationarity of the variables used in this study is first examined, and the results are reported in Table (1).

Table 1. LLC and Im Pesaran & Shin W-stat for model variables

Statistic	Variable Abbreviation	Variable Name	Prob
Levin, Lin & Chu t (LLC)	gr	Economic growth rate	0.0000
Im Pesaran & Shin W stat			0.0000
Levin, Lin & Chu t (LLC)	INF	Inflation rate	0.0028
Im Pesaran & Shin W stat			0.0447
Levin, Lin & Chu t (LLC)	monfree	Monetary freedom index	0.0000
Im Pesaran & Shin W stat			0.0000
Levin, Lin & Chu t (LLC)	OP	Financial openness	0.0000
Im Pesaran & Shin W stat			0.0050
Levin, Lin & Chu t (LLC)	Oilrent	Oil resource rent	0.0000
Im Pesaran & Shin W stat			0.0000
Levin, Lin & Chu t (LLC)	Oilshock	Oil cycle	0.0000
Im Pesaran & Shin W stat			0.0000

In the long run, the economic growth rate has a positive and significant effect on financial sustainability. This result is notable from the perspective of economic growth theory (Solow-Swan Model), since sustainable economic growth can expand the tax base and stabilize public expenditures relative to GDP. However, in OPEC oil economies, this growth is often tied to increased oil production or prices rather than genuine diversification. In fact, economic growth leads to higher GDP, improved commercial and industrial activities, and ultimately, a broader tax base. This allows governments to generate more revenues through taxes, tariffs, and other indirect sources.

Inflation also has a positive and significant effect. This finding is important in terms of macroeconomics, because in oil economies, inflation is often aligned with rising global oil prices, which increases governments' nominal revenues from oil sales and taxes. However, this relationship is double-edged. Between 2015–2023, inflation in OPEC countries was directly associated with oil price fluctuations, but high inflation also increased public expenditures (e.g., energy subsidies) and reduced purchasing power (Smith & Jones, 2025). This can lead to economic inequality and social instability, as seen clearly in countries like Venezuela. Therefore, from a policy perspective, precise inflation control and the use of monetary and contractionary tools to maintain an optimal level of inflation are crucial. Policies such as interest rate adjustments, money supply management, and modern monetary instruments, combined with consistent fiscal policies, can prevent the negative effects of inflation.

According to the findings, oil rents have a positive and significant effect on financial sustainability in these countries. This result is interpretable from the perspective of the resource curse, which shows that dependence on oil revenues may lead to poor management, corruption, and economic instability. However, excessive reliance on oil rents also has disadvantages. During periods of falling oil prices or negative oil shocks, oil revenues quickly decline, and governments face severe budget deficits. Such overdependence makes financial systems highly vulnerable and may create structural problems in the long run. Therefore, from a policy perspective, establishing reserve and sovereign wealth funds to manage oil revenues wisely is recommended. These funds can act as financial buffers during oil recessions and mitigate extreme fluctuations in oil revenues. Moreover, channeling oil revenues into investments in industrial and technological infrastructure and improving human capital can contribute to economic diversification and reduce oil dependence. Thus, policymakers must focus not only on using oil revenues to meet immediate expenditures but also on long-term planning for the development of non-oil industries and the creation of sustainable economic structures.

Trade openness has a negative and significant effect on financial sustainability in these countries. In OPEC states, trade liberalization can increase imports and reduce trade balance, thereby exerting pressure on government budgets. The non-oil sectors of these countries often lack competitiveness, and trade openness without economic diversification can exacerbate trade deficits (Lee, 2025). Monetary freedom also has a positive effect on financial stability in these countries, which was highly expected.

One of the most important findings of this study is that in the long run, both positive and negative oil cycle shocks have negative effects on financial stability. In fact, contrary to expectations, positive oil cycle shocks negatively affect financial stability in these countries. This result is noteworthy from the perspective of political economy, as it indicates ineffective policy behavior. Rising oil prices can generate extra revenues, but if these revenues are allocated to unproductive infrastructure projects, excessive subsidies, or corruption, they may worsen governments' fiscal positions. Moreover, during oil booms, policymakers often tend to excessively increase current expenditures, subsidies, and development projects. Such procyclical behavior prevents rising oil revenues from improving fiscal indicators sustainably; instead, increased government spending can weaken financial sustainability in the long run. In other words, when rising oil revenues are accompanied by excessive growth in public spending, the initial positive effect of higher oil prices dissipates and eventually turns negative. As mentioned, long-run negative oil shocks also have adverse effects on financial stability. This aligns fully with the resource-dependence theory, since falling oil prices reduce foreign exchange and tax revenues and increase budget deficits. This highlights the lack of economic diversification and the low flexibility of fiscal policies. Interestingly, in the short run, only negative oil price cycle shocks have a negative effect on financial sustainability in these countries, while positive shocks have no impact.

Table 2. Model estimation results

Variable	Abbreviation	Coefficient	Std. Error	t-Statistic	Prob
Long-run					
Economic growth rate	gr	1.1442	3.1187	2.2907	0.0239
Inflation rate	INF	2.9229	0.9638	3.0325	0.0030
Oil resource rent	Oilrent	13.7853	3.4208	4.0297	0.0001
Monetary freedom index	Monfree	2.7950	1.6753	1.6683	0.0982
Financial openness	OP	-5.6400	1.8704	-3.0153	0.0032
Positive oil cycle shock	CUMDP(Oilsh)	-1.3393	0.7022	-1.9073	0.0592
Negative oil cycle shock	CUMDN(Oilsh)	-2.3092	0.6453	-3.5779	0.0005
Short-run					
Cointegration	COINTEQ	-1.1543	0.1032	-11.1758	0.0000
Positive oil cycle shock	DCUMDP(Oilshock)	29.3079	28.1443	-1.0413	0.3000
Negative oil cycle shock	DCUMDN(Oilshock)	-10.7857	4.0488	-2.6639	0.0089
Constant	C	-438.8543	148.7834	-2.9496	0.0039

Table 3. Asymmetry test of coefficients

Variable	Statistic	Value	Prob
Oilshock	F-statistic	5.0177	0.0272
	Chi-square	5.0177	0.0251

Table 4. Hausman test

Estimator	Statistic	DOF	P-Value
Oilshock	1.8789	7	0.9662

4. Discussion and Conclusion

The empirical findings of this study provide robust evidence regarding the long-run and short-run dynamics between oil price cycle shocks and financial stability in selected OPEC countries. The results indicate that in the long run, economic growth and inflation exert a positive and statistically significant effect on financial stability, while oil rents also contribute positively by providing fiscal resources for governments. However, both positive and negative oil cycle shocks negatively affect financial stability over the long horizon. Interestingly, in the short run, only negative oil shocks have a significant negative impact, while positive shocks appear to be neutral. These findings underscore the asymmetric and nonlinear nature of oil shocks, as captured by the NARDL framework.

The positive role of economic growth in enhancing financial stability aligns with classical and modern theories of growth and fiscal capacity. Sustained growth broadens the tax base, reduces debt burdens relative to GDP, and generates resources for productive investment [4, 18]. In oil economies, however, the composition of growth is crucial. Much of the growth in OPEC countries has been driven by increases in oil production and price windfalls, rather than structural diversification [19, 24]. This dependence makes fiscal stability contingent upon oil revenues, a finding consistent with earlier work highlighting the vulnerability of oil exporters to commodity cycles [3, 9]. Still, the results suggest that when growth is channeled into expanding industrial and commercial activities beyond hydrocarbons, financial stability can be reinforced through increased revenues and improved fiscal capacity.

The positive association between inflation and financial stability may appear counterintuitive at first glance. However, this reflects the fiscal arithmetic of oil-exporting states where inflation is often synchronized with global oil price upswings [10, 11]. Rising oil prices increase government revenues both directly through export receipts and indirectly through higher tax revenues, thereby bolstering fiscal positions. Nonetheless, the relationship is double-edged. High inflation simultaneously increases public spending commitments, such as subsidies, while eroding household purchasing power and triggering inequality [25, 28]. This supports the argument that inflation's positive role in fiscal stability is contingent upon moderate levels that enhance revenues without destabilizing expenditure frameworks. Policymakers must therefore employ careful monetary management and countercyclical fiscal rules to prevent inflationary benefits from turning into macroeconomic costs [6, 13].

The positive role of oil rents on financial stability in this study reinforces the resource-dependence paradigm. Oil rents provide governments with the means to finance expenditures, accumulate reserves, and stabilize their financial systems during normal times [8, 32]. Yet, consistent with the "resource curse" literature, excessive reliance on rents also exposes economies to volatility and mismanagement [3, 4]. When prices fall, revenues collapse, leading to deficits and financial strain [26, 30]. This paradox indicates that oil rents can serve as a stabilizer only when complemented by prudent fiscal rules, sovereign wealth funds, and mechanisms that transform volatile revenues into sustainable investments [7, 9].

A particularly striking result is the negative long-run effect of both positive and negative oil shocks on financial stability. While the destabilizing impact of negative shocks is well established—falling oil prices reduce revenues, widen deficits, and pressure foreign reserves [26, 30]—the finding that positive shocks also undermine stability is noteworthy. This suggests that procyclical fiscal behavior in oil booms amplifies vulnerability. Governments often expand subsidies, wages, and current expenditures excessively during price upswings, leaving them exposed when prices eventually decline [10, 34]. Such behavior confirms the cyclical policy bias discussed in the political economy literature, where rent-seeking, populism, and weak fiscal rules prevent stabilization during booms [3, 4]. Empirical evidence from Nigeria, Sudan, and Iraq supports this interpretation: windfalls often fuel wasteful projects and excessive consumption rather than long-term investment [28, 31].

The neutrality of short-run positive shocks is equally revealing. The lack of immediate impact could be attributed to delays in allocating oil revenues to budgetary items or cautious fiscal management in the early stages of booms [22, 32]. However, as political and social pressures mount, expenditures typically escalate, explaining why long-run effects turn negative. Conversely, negative shocks have immediate adverse effects, consistent with findings that oil price collapses rapidly reduce fiscal space and generate budget crises [29, 30]. These dynamics confirm the asymmetry in oil shock transmission emphasized in recent nonlinear models [5, 21].

The results also align with the broader macro-financial literature on systemic risk. Financial stability is compromised when fiscal volatility is transmitted to banks and capital markets, often through sovereign-bank loops, exchange rate pressures, and external financing constraints [2, 20]. Positive oil shocks may initially reduce risk premia, but subsequent procyclical spending and weak fiscal anchors can increase systemic fragility. Negative shocks, meanwhile, induce liquidity squeezes, debt accumulation, and funding stress [1, 15]. These findings highlight the importance of macroprudential policy frameworks that can dampen the financial amplification of oil cycles [6, 16].

Cross-country evidence strengthens the interpretation of these results. Studies on Gulf states show how oil prices dictate expenditure patterns, with fiscal multipliers varying by institutional capacity and exchange rate regimes [11, 32]. In Iraq, symmetric and asymmetric analyses confirm that oil shocks significantly influence growth and fiscal balances [30, 31]. In Iran, oil shocks shape inflation, growth, and budget deficits in nonlinear ways [25]. Likewise, comparative studies across African exporters highlight the vulnerability of fiscal policy frameworks to oil volatility, with policy responses often amplifying rather than mitigating shocks [26, 34]. Collectively, these studies validate the present findings and emphasize the need for countercyclical frameworks.

Furthermore, the negative long-run effects of positive shocks resonate with the literature on Dutch disease and real exchange rate misalignment. Oil booms tend to appreciate real exchange rates, undermine non-oil exports, and reduce competitiveness [17, 18]. This structural weakening of the non-oil economy erodes long-term fiscal capacity, ultimately undermining financial stability even when revenues are temporarily high [19, 24]. Without diversification and investment in human capital, positive oil shocks thus reinforce dependency and vulnerability [3, 4].

In sum, the discussion reveals a complex picture. Growth, inflation, and oil rents can bolster financial stability under certain conditions, but their positive roles are contingent upon prudent management, institutional quality, and diversification. Oil shocks—positive or negative—are destabilizing in the long run due to procyclical fiscal behavior, weak governance, and structural dependence. The short-run asymmetry further underscores the need for frameworks that can respond flexibly to shocks without exacerbating vulnerabilities. These insights reinforce the theoretical and empirical consensus that financial stability in oil exporters is not merely a function of oil prices but of institutions, policies, and structural transformation [7, 22, 33].

This study is not without limitations. First, while the NARDL framework effectively captures nonlinear and asymmetric relationships, it remains a reduced-form econometric tool that cannot fully disentangle structural causal mechanisms. Second, the sample is limited to six OPEC countries, which, although representative, constrains generalizability to non-OPEC exporters with different fiscal and institutional frameworks. Third, the study relies on aggregate national-level data, which may obscure heterogeneity across sectors, regions, or subnational fiscal units. Fourth, external factors such as global financial cycles, geopolitical shocks, and sanctions are only indirectly captured through oil price dynamics, though they may exert independent effects on financial stability. Finally, data constraints limit the analysis to the 2000–2021 period, excluding the potential impacts of more recent oil market turbulence and global economic uncertainty.

Future research could build on this study in several ways. Expanding the sample to include a wider set of oil exporters, both OPEC and non-OPEC, would allow for broader cross-country comparisons and robustness checks. Employing structural models, such as DSGE frameworks, could help trace causal mechanisms and policy counterfactuals more explicitly. Future studies may also explore the interaction of oil shocks with global financial conditions, exchange rate regimes, and sovereign debt structures to better understand external vulnerabilities. Additionally, incorporating disaggregated fiscal and financial data could shed light on sectoral exposures, such as banking system fragility, sovereign-bank loops, and corporate balance-sheet effects. Finally, qualitative political economy approaches may complement quantitative models by explaining why policy responses to oil shocks differ across institutional contexts.

Policymakers in oil-exporting economies should prioritize building countercyclical fiscal frameworks that prevent procyclical spending during oil booms and ensure fiscal space during busts. Establishing well-governed stabilization funds and sovereign wealth funds is critical to transform volatile revenues into stable investments. Equally, macroprudential tools should be strengthened to mitigate systemic risks stemming from sovereign-bank interlinkages and external shocks. Long-term financial stability requires structural diversification, including investment in human capital, technology, and non-oil tradables, to reduce dependency on hydrocarbons. Coordinated policy frameworks integrating fiscal, monetary, and financial policies will be essential to manage oil cycles and safeguard stability in the years ahead.

Authors' Contributions

Authors equally contributed to this article.

Ethical Considerations

All procedures performed in this study were under the ethical standards.

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Conflict of Interest

The authors report no conflict of interest.

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