



The effects of oil price shocks on the economies of the Gulf Co-operation Council countries: Nonlinear analysis



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HIGHLIGHTS

- We study the effects of oil price shocks on the real GDP of the GCC countries.
- We use the nonlinear ARDL model and panel cointegration analysis.
- Results suggest rising oil price increase real GDP and falling price lower real GDP.
- Increasing oil prices have a considerably larger impact than falling prices.

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ABSTRACT

This paper examines the effects of oil price shocks on the real GDP of the Gulf Cooperation Council (GCC) countries. The empirical method used is the nonlinear cointegrating autoregressive distributed lag (NARDL) model of Shin et al. (2013) in which short-run and long-run nonlinearities are introduced via positive and negative partial sum decompositions of the explanatory variable(s). The results suggest evidence of asymmetries in all the cases. We find significant positive oil price changes in all the cases with the expected positive sign, implying that increases in oil price lead to increases in real GDP. Conversely, negative oil price changes are significant for only Kuwait and Qatar with the expected positive sign, suggesting that decreases in oil price lead to decreases in their real GDP. Further analysis implemented using panel data shows that positive oil prices changes increase real GDP and negative changes decrease real GDP. Overall, the results suggest that positive oil price changes have a considerably larger impact on real GDP than negative changes.

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1. Introduction

The Gulf Cooperation Council (GCC) countries, consisting of Bahrain, Kingdom of Saudi Arabia, Kuwait, Qatar, Sultanate of Oman, and United Arab Emirates (UAE), share common characteristics including language, culture, history, and economic background. The countries speak the same language (Arabic), share the same religion (Islam), and are mainly producers and exporters of oil and gas. In addition, all member states rely heavily on foreign employment due to a shortage in domestic labor, have remarkably stable exchange rates, low and similar inflation rates, and low and co-moving interest rates in similar ranges (Sturm and Siegfried, 2005). However, one important characteristic that the GCC countries share is that they are oil (and gas)-based and dependent countries with the largest proven oil reserves in the

world. According to the US Energy Information Agency, crude oil proven reserves in the GCC countries in 2013 was 500.7 billion barrels, representing about 30.42 percent of the world's total.

Accordingly, oil plays an important and strategic role in the structure of the GCC economies. In fact, oil is considered the main driver of economic activity in the GCC countries as they are heavily dependent on oil revenues. This dependency is reflected in the shares of oil revenues in total government revenues, total exports, and gross domestic product (GDP). For example, in 2006, oil revenues in the GCC countries accounted for about 80 percent of government revenues, 70 percent of total exports, and 50 percent of GDP (Sturm et al., 2008). These shares have stayed relatively stable overtime. For instance, in 2013, oil revenues accounted for about 83 percent of government revenues, 72 percent of total exports, and 44 percent of GDP.¹ Fig. 1 shows the co-movement

¹ Sources: Annual reports of the GCC countries' central banks and author's own calculations.

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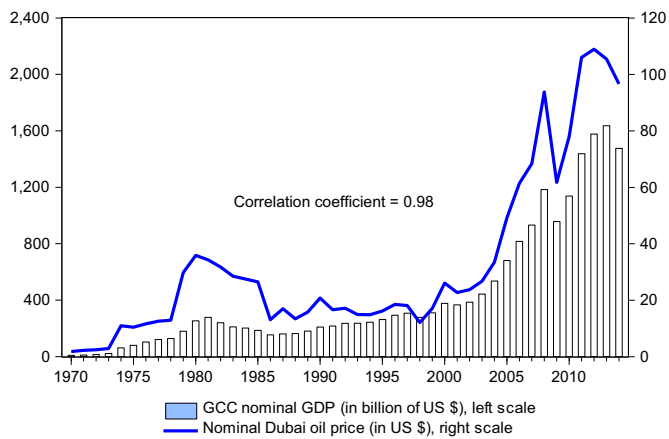


Fig. 1. GCC nominal GDP and Dubai oil price. *Notes:* Sample period: 1970–2014. Only the nominal GDPs of Qatar, Kuwait, Oman, and Saudi Arabia are included for period from 1970 to 1974. From 1975 to 1979, the nominal GDPs of all the GCC countries are included, except Bahrain. From 1980 to 2014, the nominal GDPs of all the GCC countries are included, except for Kuwait in 2013.

between the GCC countries' nominal GDP and Dubai oil price. The figure shows that the two variables move in tandem, with a correlation coefficient of about 98 percent. This implies that changes and developments in oil prices will have significant effects on their economies. For instance, the recent sharp increases in oil prices between 2002 and 2008 have generated a large volume of revenues for the GCC countries and contributed to impressive economic growth. For example, oil earnings for the GCC countries averaged US\$146 billion per year over the period 1997–2002 compared to US\$327 billion per year over the period 2002–2006, and real GDP growth averaged 3.2 percent per year over the period 1999–2002 compared to 7.1 percent per year over the period 2003–2007 (Momani, 2008). However, due to falling oil prices in recent years, oil revenues have decreased, which affected their economic growth. For example, oil revenues averaged US\$ 211 billion per year over the period 2012–2013, and real GDP growth rate averaged 4.5 percent over the same period.² According to the International Monetary Fund (IMF, 2003), oil proceeds in the GCC countries have been used to “modernize infrastructure, create employment, and improve social indicators, while the countries have been able to accumulate official reserves, maintain relatively low external debt, and remain important donors to poor countries.”

Whereas rising oil prices may contribute to economic growth by providing the financial resources needed for investment in the GCC countries, they may also undermine economic growth as they may worsen economic conditions contributing to economic growth through currency appreciation, rent-seeking, and poor policy-making (Moshiri and Banijashem, 2012). This suggests that positive oil price shocks may have negative effects on economic activity in the GCC countries. In other words, oil price shocks may have asymmetric effects on the economies of the GCC countries. Accordingly, assuming a linear relationship between oil price shocks and macroeconomic variables may not be appropriate.

Against this background, the objective of this paper is to examine the effects of oil price shocks on the economies of the GCC countries allowing for asymmetries in the relationship between oil price shocks and economic activity. Precisely, the paper examines short-run and long-run effects of oil price shocks on real GDP allowing for asymmetric oil price shocks. The empirical method used is the cointegrating nonlinear autoregressive distributed lag

(NARDL) model of Shin et al. (2013). Short-run and long-run nonlinearities in the NARDL model are introduced via positive and negative partial sum decompositions of the explanatory variable (s). In addition, panel data tests are also utilized to examine the effects of positive and negative oil price shocks on the real GDP of the GCC countries as a group.

To achieve this, we use annual data extracted from the International Monetary Fund's International Financial Statistics and the World Bank Development Indicators.³ The data contains real GDP and Dubai real price of oil, expressed in constant 2005 US dollar price. The sample period varies depending on the country: Bahrain (1975–2014), Kuwait (1972–2013), Oman (1968–2013), Qatar (1979–2014), Saudi Arabia (1968–2014), and UAE (1975–2014).

This study is important because it sheds light on the dynamic relationship between oil price shocks and economic activity in a group of countries that represents about 30 percent of the world's total proven oil reserves. This makes the GCC countries important players in the international energy market and in the global economy as well. In particular, the high and rising oil price since 2003 have enhanced the role of the GCC countries in the global economy as investors and trade partners and have become net suppliers of capital in global markets (Sturm et al., 2008). In addition, and due to the high and rising oil prices, the GCC countries have accumulated massive amounts of wealth invested in sovereign wealth funds (SWFs). Therefore, the GCC countries are the home to some of the world's largest SWFs, and thus; have become part of the international policy debate on global imbalances and financial stability issues (Sturm et al., 2008).⁴ For instance, during the US financial crisis, Gulf-based SWFs were important sources of liquidity for Western financial institutions, including Merrill Lynch, Barclays Bank and Citigroup (Ulrichsen 2014).

The rest of the paper is organized as follows: the next section provides literature review and Section 3 presents the theory and methodology. Section 4 presents the results and Section 5 provides conclusions and policy implications.

2. Literature review

There is a huge literature that examines the effects of oil price shocks on different economic variables for both developed and developing countries. For example, Cunado and Perez de Gracia (2005) find that oil price shocks Granger-cause economic growth in Japan, South Korea, and Thailand. Chen and Chen (2007) show that real oil prices may have been the dominant source of real exchange rate movements in the G7. Rafiq et al. (2008) find that oil price volatility has a significant impact on unemployment and investment in Thailand. Du et al. (2010) find a significant effect of oil prices on growth and inflation in China. Wang (2013) finds that the effects of rising oil prices on personal consumption expenditures in the G-7 countries to be greater than those of falling prices. Cunado and Perez de Gracia (2014) find that oil price changes have negatively affected the stock market returns for 12 oil-importing European countries.

There are also studies that examine the effects of oil price shocks on economic activity in oil-exporting countries. For example, Farzanegan and Markwardt (2009) find a strong positive relationship between positive oil price changes and industrial

³ Although higher frequency data, such as quarterly data, is more desirable as it provides more observations, this paper employs annual data due to the unavailability of higher frequency data on the GCC economies.

⁴ According to the Sovereign Wealth Fund Institute (SWFI), as of October 2014, the total worth of the top 20 SWFs in the world is about \$6.06 trillion in assets under management, with the GCC countries accounting for about 38 percent (<http://www.swfinstitute.org/>).

² These are weighted averages, based on author's own calculations using data from the World Bank Development Indicators.

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