

## ***Evaluating the Asymmetric Impact of Oil Price Shocks on Environmental Degradation***

### ***Extended Abstract***

#### ***Abstract***

Objective: Environmental degradation is well-known as a result of the dynamic interaction between social, institutional, technological, and economic, especially fluctuations in energy prices. Environmental degradation is a worldwide issue in which carbon dioxide (CO<sub>2</sub>) emissions are a significant cause of global temperature increase. CO<sub>2</sub> has been used consistently as an indication of environmental degradation, with implications for air pollution, global warming and is responsible for climate change. CO<sub>2</sub> emissions have been included in this study as an indicator of the environmental degradation that may result from oil price shocks, especially in the Gulf Cooperation Council (GCC), which depends heavily on non-renewable sources such as oil.

Oil prices are viewed as a major contributor to increased economic growth and energy consumption at the expense of environmental quality in the literature. Due to environmental quality challenges and climate change, oil price shocks continue to be a major source of concern for policymakers. Additionally, positive and negative oil price shocks may lead to an increase or decrease in CO<sub>2</sub> emissions. For instance, higher oil prices can reduce CO<sub>2</sub> emissions. Low oil prices may result in greater usage of fossil fuels, which exacerbate their negative effects on the environment by increasing CO<sub>2</sub> emissions.

Policymakers and researchers pay close attention to the relationship between oil price shocks and carbon emissions in order to minimize CO<sub>2</sub> emissions without impacting economic growth. Oil price shocks and their impact on CO<sub>2</sub> emissions are an intriguing subject requiring further investigations, especially in light of two extreme situations seen in the past decade, namely the peak in oil prices in 2008 and the continuous drop in crude oil prices since 2014. The present study focuses on GCC countries such as Iran, Oman, Kuwait, Bahrain, the United Arab Emirates, Saudi Arabia, and Qatar, as they are at the forefront of this problem. Therefore, these countries are seen as a suitable sample with respect to their significant contribution to CO<sub>2</sub> emissions.

#### ***Methodology***

the present study employs a panel data approach to investigate the effects of oil price shocks on CO<sub>2</sub> emissions. First, the structural shocks in the oil market will be identified using the SVAR-GARCH approach, and then the model best fitting the panel data approach will be estimated. Therefore, the regression model derived from this theory will incorporate carbon dioxide emissions (CO<sub>2</sub>), gross domestic product (GDP), energy use (EU), positive oil price shocks (OIL-POS), and negative oil price shocks (OIL-NEG) as variables.

#### ***Findings***

In this section, the panel data approach will be used to estimate the research model with respect to the extracted positive and negative oil price shocks. The findings of the research model estimation indicate that GDP has a significant positive impact on CO<sub>2</sub> emissions, while quadratic GDP has a significant negative impact on CO<sub>2</sub> emissions, confirming the Kuznets hypothesis. The findings also show that per capita EU has a significant positive impact on CO<sub>2</sub> emissions. Finally, the results presented in the table below indicate that positive oil price shocks have a significant positive impact on CO<sub>2</sub> emissions, while negative oil price shocks have a significant negative impact on CO<sub>2</sub> emissions.

### ***Conclusion***

The findings of the present study are consistent with those of Malik et al. (2020) for Pakistan, Shahbaz et al. (2017) for Australia, and Omar et al. (2020) for African countries. These findings support those of Haque (2020), who discovered that raising oil prices leads to a drop in energy use by up to 0.22%, while higher energy use leads to increased CO<sub>2</sub> emissions in GCC countries. This conclusion is also consistent with Malik et al. (2020), who found that in the long-run relationship between oil prices and CO<sub>2</sub> emissions, oil price increase (negligible positive oil price shock) leads to a drop in CO<sub>2</sub> emissions, while oil price decrease (negligible negative oil price shock) will raise CO<sub>2</sub> emissions.

On the other hand, the impact of negative oil price shocks on CO<sub>2</sub> emissions in GCC countries indicates that negative oil price shocks have significant impacts on CO<sub>2</sub> emissions. In other words, the impact of oil price decrease on pollution is larger than the impact of increases. This is consistent with the findings of Marquez and Fuinhas (2011), who argued that prices of fossil-based fuels are not significant tools for mitigating carbon emissions. Similar findings reported by Sun et al (2019). reveal that energy price does not matter in predicting changes in CO<sub>2</sub> emission in China. They suggested that oil prices are not suitable tools to encourage the consumption of renewable energy sources. Based on these findings, governments of GCC countries may prioritize clean and green economic growth by maintaining oil prices as low as possible, which would be more effective in terms of environmental sustainability. The environmental degradation issues in these countries cannot be addressed systematically solely through economic growth.