

# Financial Risk Spillover Effects Among China's Crude Oil Futures Market, Stock Market, and Bond Market During the COVID-19 Pandemic

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## Abstract

This paper unravels the dynamics of financial risk transmission across China's crude oil futures, stock, and bond markets, spotlighting the period during and subsequent to the COVID-19 pandemic. Leveraging the generalized vector autoregressive (VAR) framework by Diebold & Yilmaz (2012), we analyze systemic risk spillovers, and investigate the static and evolving interconnections among these pivotal financial sectors from the initiation of crude oil futures trading in 2018 up to 2023. The core findings include: (1) Systemic Risk Contagion: There exists a pronounced systemic risk contagion among the markets studied, with the bond market being the predominant net recipient of risk spillovers, highlighting its vulnerability. In contrast, the stock market emerges as the main conduit of risk transmission, serving as the largest net sender of systemic risk; (2) Impact of the COVID-19 Pandemic: The pandemic significantly exacerbated the Total Spillover Index (TSI) across all markets, with a remarkable surge of approximately 8% to 26%. This amplification underscores the profound impact of global crises on enhancing risk contagion effects among financial markets; (3) Role of the Crude Oil Futures Market: The integration of the crude oil futures market into China's financial ecosystem has not only augmented its influence but also introduced significant cross-market risks. This market's growing impact highlights its essential role in the broader financial market dynamics and systemic risk management.

**Keywords:** Risk spillover effect, Total spillover index, Oil futures, Spillover overflow analysis, Covid-19