

# Cryptocurrency Bubble on the Systemic Risk in Global Energy Companies

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Financialization has brought new challenges to the international energy markets, making energy systemic risk a more complicated issue. One of the important features is the development of cryptocurrency, which has become a critical part of the global financial markets. The linkages between the energy sector and financial markets and other commodities are not new in the literature, but the appearance of cryptocurrency in the spillover network has clear innovative features. In this paper, we find that cryptocurrency bubbles form and burst can have nonnegligible impacts on the systemic risks in the international energy sector.

To explore this issue, we extend the framework proposed by Brunnermeier et al. (2020), who establish an empirical strategy to test the role of asset bubbles on systemic risks in the banking sector. In particular, we first identify bubble dynamics in cryptocurrency prices and then use this information to test to what extent systemic risks in the energy sector respond to these bubbles. Our dataset includes the prices of a sample of the Thomson Reuters top 100 international energy companies, the cryptocurrency index (CRIX) and other related financial variables from July 2014 to March 2021. The systemic risks among energy firms are measured by the conditional value at risk and relative to their local market indices. We use the CRIX index to represent the overall performance of the cryptocurrency market. Then the Backward Supremum Augmented Dickey Fuller test is used to identify bubble dynamics in the cryptocurrency index. The connectedness between systemic risks and cryptocurrency bubbles is then investigated via panel data models.

Our empirical results show that the formation of cryptocurrency bubbles, especially when the bubbles burst, significantly increases systemic risks in the energy sector. This effect retains the same in the recent COVID-19 pandemic period. In addition, oil and gas companies play an essential channel in the risk spillover from cryptocurrency markets to the international energy markets. A number of robustness checks verify our main findings.

Our findings can also lead to a number of policy implications relevant to managers and regulators. For the executives of main energy firms, they should pay attention to the fluctuation of cryptocurrency prices, especially when observing pricing bubbles in the markets. Meanwhile, the bubbles in cryptocurrencies can induce higher systemic risks in the whole energy sector, leading to stronger needs to hedge against such risks. Existing literature on “safe-haven assets” suggests that cryptocurrency may act as a safe-haven asset, but the findings here show that extra caution should be taken when forming hedging strategies using cryptocurrency, as the frequent bubbles can cause higher risks. Regulators may not be able to control cryptocurrencies directly, but they should take cryptocurrency bubbles as a signal for increasing systemic risks in stock market, or specifically, energy sector and respond to such shocks accordingly.

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