

The Impact of Commodity Markets on Financial Risk Dynamics

Bruno Eeckels¹ Michail Filippidis² George Filis³ Panagiotis Tzouvanas⁴

Abstract

This study examines the relationship between commodity returns and different types of risk at the firm level. Specifically, we investigate whether commodity returns influence total risk, systematic risk, and unsystematic risk using commodity betas to capture firms' exposure to commodity price movements over the period January 2005 to May 2025. We employ monthly observations for twenty-six commodities grouped into five categories: agriculture, energy, industrial metals, precious metals, and livestock. The sample incorporates approximately 11.3 million monthly observations from 92,629 firms worldwide. Methodologically, we employ the Dynamic Model Averaging (DMA) framework developed by Koop and Korobilis, which allows for model uncertainty and time-varying relationships between variables. The analysis is conducted at multiple levels. First, we examine the effect of an aggregate commodity factor derived from principal component analysis across all firms. Second, we explore the relationship across commodity groups and industries. Third, we assess the impact of the most influential commodity within each group. Finally, commodity indexes are used instead of principal components as a robustness check. Understanding these dynamics provides valuable insights for regulators monitoring systemic vulnerabilities and for investors seeking to manage portfolio risk and commodity market exposure.

Keywords: commodity returns, systematic risk, idiosyncratic risk, dynamic model averaging

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¹ Clinical Prof., New York University, United States. ORCID: 0000-0002-7125-5719

² Lecturer, University of Westminster, United Kingdom. ORCID: 0000-0002-4747-564X

³ Assoc. Prof., Panteion University of Social and Political Sciences, Greece. ORCID: 0000-0002-4912-0973

⁴ Senior Lecturer, University of Portsmouth, United Kingdom. ORCID: 0000-0002-9520-6890