

# Heterogeneous beliefs, regret, and uncertainty: The role of speculation in energy price dynamics\*

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## Abstract

This paper proposes to investigate the impact of financialization on energy markets (oil, gas, coal and electricity European forward prices) during both normal times and extreme fluctuation periods through an original behavioral and emotional approach. To this aim, we propose a new theoretical and empirical framework based on a heterogeneous agents model in which fundamentalists and chartists co-exist and are subject to regret and uncertainty. We find significant evidence that energy markets are composed by heterogeneous traders which behave differently depending on the intensity of the price fluctuations and uncertainty context. In particular, energy prices are mainly governed by fundamental and chartist neutral agents during normal times whereas they face to irrational chartist averse investors during extreme fluctuations periods. In this context, the recent energy prices surge can be viewed as the consequence of irrational exuberance. Our new theoretical model outperforms the random walk in out-of-sample predictive ability.

*JEL Classification:* Q43, G15, G02, D81

*Keywords:* Energy forward prices, financialization, heterogeneous agents, uncertainty aversion, regret.

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