Dear Editor,

We thank the referee for her/his helpful comments on our manuscript “Price response functions and spread impact in correlated financial markets” by J.C. Henao-Londono et al. We followed all of the referee's suggestions and revised the paper accordingly.

In the sequel, we respond in detail to the three points that the referee made:

- We fully agree with the referee that such a comparison of different years is very important, and we plan to do that in a forthcoming study. However, the purpose of the present contribution is a careful check of the methods which is, in our opinion urgently called for, to allow for a robust interpretation of the results when evaluating response functions, spread impact and related quantities. We added the following paragraph:

  “This contribution specifically addresses methodical aspects related to the price response functions and spread impact in correlated financial markets. We carefully check and verify the methods used to evaluate response functions, spread impact and related quantities. This is important as such observables quantify the deviation from the largely Markovian behavior of financial markets. We chose the year 2008 to clarify these methodical aspects. We plan to extend our results in a future study to different years for a comparison of price response functions and spread impact.”

- Perhaps the authors should compare their observations regarding correlations reported in related studies for this period; see e.g., Local Gaussian correlations in financial and commodity markets, by Q. Nga Nguyena et al., European Journal of Operational Research, Volume 285 (2020), Pages 306-323, which investigates the increased correlations between commodity and U.S. financial markets from 1992 to 2017 under a non-linear framework and studied the impact of several several significant events that shaped the 2000s.

  We add the following paragraph in Section 3.3:

  “In Ref. [29], local Gaussian correlations in financial and commodity markets were analyzed. These correlations distinguish between positive and negative local dependence. In this work, a breakpoint in August 2008 is found. The increased comovements between commodities and financial markets are more critical after the breakpoint, not only between commodities and the S&P500 and 10-year Treasuries, but also within commodities themselves.”

  And the following paragraph in Section 4.3:

  “A special situation occurs when financial and commodity markets are analyzed to find correlations as shown in Ref. [29]. In this analysis a breakpoint in August 2008 is found, where, before and after the point, the results are qualitatively different. However, our work is only focused in correlated financial markets. Our price response functions on average, have the same behavior despite the time of the year.”

- Also the authors may indicate the physics part in their study.

  We add the following paragraph in Section 1:

  “While the definition of complexity varies, it is widely agreed upon that a system is referred to as complex if it, first, consists of a large number of interacting agents or constituents, respectively, second, is non-stationary, i.e. cannot be described by standard equilibrium approaches, and, third, its interactions are typically not captured by microscopic governing equations, rather, by statistical rules. There are many examples, ranging from traditional physical over biological to social and economic systems. The present interdisciplinary contribution studies financial markets, it is put forward in the proven physics spirit, first, that every quantity which is used has to be a measurable observable, second, that the results given are quantitative and statistically sound, and, third, that the methods are carefully and critically checked and verified. The emphasis of the present contribution is particularly on the third point: we evaluate the methods and show the impact of slight changes on the results. In view of an increasing interest in the analysis of response functions, we feel that this is a rewarding effort. It helps to answer the highly relevant question of the extent to which financial markets deviate from the largely Markovian behavior.”

We hope that we answered the referee's questions and the revised version of our manuscript meets the criteria for publication in the European Physical Journal B.

Yours Sincerely,

Juan Camilo Henao Londono, on behalf of all authors