

## **Answers to Referee Reports on MS 704**

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We were very pleased with the reports, and thank the referees for their comments.

**Answers to referee No. 1.** The first referee makes positive comments regarding the use of complex analysis to study cobweb models. However, he notes that we do not study Muth's models for rational expectations and that we do not provide microeconomic reasons to justify the form of the supply and demand functions. Muth's model for rational expectations involves statistical fitting of data that includes random errors. A similar approach is that of Smyth, who uses a "random" belief in the forecast, assuming that a fraction of suppliers follow one forecast and the rest use current prices. Both methods could be applied to the case of production lags, but with considerable increase in complexity. In our approach, we consider the deterministic analysis and then we study separately the effects of random perturbations.

We appreciate the suggestion of the referee of extending our methodology to rational expectations, however this would imply more elaborate work and a longer paper. The results would most likely be much less explicit. We would rather leave this interesting question for further work.

As far as justifying the use of power functions, we will be happy to add a comment. It seemed to us that concavity and convexity are common assumptions (although not always justifiable, as made clear in Chiarella's papers explaining the onset of chaos). The results presented in the paper have the advantage of leading to closed-form solutions in a number of cases, and those closed-form solutions educate our intuition and we hope would be helpful in studying more complicated (and less explicit) models.

But in more general cases, use of Rochés Theorem and Hurwitz Theorem provide new and interesting results that shed light into the problem.

**Answers to referee No. 2.** We warmly thank the referee for pointing out the reference to Chiarella and He (2004), which we were not aware of; we will be happy to incorporate appropriate citations in the paper.

We understand the meaning and interest of  $S$ -shaped supply curves. Reading the paper by Chiarella (1986) provided us with new knowledge about the behaviour of economic systems. We believe that linear, log-linear and  $S$ -shaped curves should all be studied, there is no contradiction in doing so. Each have advantages and disadvantages, and one choice of curve may well lead to asking new questions about the other types. In our paper we are not including  $S$ -shaped curves, but we would welcome further research about them.