

# Discussion of "Bayesian Foundations of Constant-Gain Learning" by A. Nakov and G. Nuño

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# Overview

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- ▶ gives a 'microfoundation' for constant gain learning
- ▶ while taking seriously recent evidence on expectation formation (Malmendier and Nagel)
- ▶ tackles aggregation issues in models with learning

# The Model

- ▶ overlapping generations models with  $N$  agents
- ▶ constant probability of dying
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- ▶ initial beliefs of newborn agents centered on RE beliefs

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- ▶ key: when an agent dies, the successor inherits wealth, but not beliefs
- ▶ initial beliefs of newborn agents centered on RE beliefs
- ▶ If we want to take a model of this form to the data, we would probably have to think harder about initial beliefs - **seems to be a daunting challenge**

# Key Result

- ▶ Let  $n$  be the age of an agent
- ▶ average beliefs  $\gamma_t$  (as  $N \rightarrow \infty?$ ) can be approximated by a constant gain algorithm
- ▶

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- ▶ Can this be generalized to models where agents have more general PLMs?



## How good is this approximation?

- ▶ The approximation result on the previous slide only holds under the following condition:



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- ▶ It would be nice to have some error bounds
- ▶ How general is this?
- ▶ How well would a representative agent model with constant gain learning approximate the equilibrium dynamics?

# Conclusion

- ▶ Very interesting paper
- ▶ As someone who uses constant gain learning, it would be great to know how general the results are
- ▶ The heterogenous agent model itself seems a great tool that could potentially find lots of uses