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Editorial office

Journal of Economic Theory

xx August/September, 2025

# Journal of Economic Theory

Dear Editors,

RE: Manuscript Submission – "Integrating stochasticity into epi-econ models and its implications for welfare evaluation"

We are pleased to submit our manuscript entitled "Integrating stochasticity into epi-econ models and its implications for welfare evaluation" for consideration in the Journal of Economic Theory.

In this paper, we extend a well-known epidemiological-economic (epi-econ) model by incorporating stochastic dynamics into its structure. Building on the deterministic framework of Farboodi et al. (2021), we introduce discrete-time stochastic transitions using chain binomial processes to more accurately reflect the intrinsic randomness of infectious disease spread. This modification allows us to analyze a richer range of epidemic trajectories and evaluate their impact on social welfare.

We show that, in small populations, stochasticity leads to lower expected welfare losses than those predicted by deterministic models, primarily due to the possibility of epidemic fade-out. These findings suggest that models used for economic evaluation and policy design should account for randomness in transmission, as ignoring it may result in overly pessimistic and inefficient policy recommendations.

We believe our paper aligns well with the Journal of Economic Theory's mission to publish foundational contributions to economic theory. Our theoretical insights contribute to the growing literature on epi-econ models and illustrate the importance of properly accounting for stochastic effects.

Thank you for considering our submission. We look forward to your response.

Sincerely,   
Bart Smets (corresponding author)   
Steven Abrams   
Lander Willem

# Economic Theory

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# Journal of Mathematical Economics

Dear Editors,

RE: Manuscript Submission – "Integrating stochasticity into epi-econ models and its implications for welfare evaluation"

We are pleased to submit our manuscript entitled "Integrating stochasticity into epi-econ models and its implications for welfare evaluation" for consideration in The Journal of Mathematical Economics.

In this paper, we extend a well-known epidemiological-economic (epi-econ) model by incorporating stochastic dynamics into its structure. Building on the deterministic framework of Farboodi et al. (2021), we introduce discrete-time stochastic transitions using chain binomial processes to more accurately reflect the intrinsic randomness of infectious disease spread. This modification allows us to analyze a richer range of epidemic trajectories and evaluate their impact on social welfare.

We show that, in small populations, stochasticity leads to lower expected welfare losses than those predicted by deterministic models, primarily due to the possibility of epidemic fade-out. These findings suggest that models used for economic evaluation and policy design should account for randomness in transmission, as ignoring it may result in overly pessimistic and inefficient policy recommendations.

Our work contributes to the literature on the inclusion of uncertainty in epidemiological-economic frameworks, and we believe it fits well within the methodological and theoretical focus of The Journal of Mathematical Economics. In particular, the paper uses mathematical tools to explore how individual optimization and aggregate outcomes interact in a stochastic epi-econ environment.

Thank you for considering our submission. We look forward to your response.

Sincerely,   
Bart Smets (corresponding author)   
Steven Abrams   
Lander Willem