

Errata for [Phelan and Eslami \(2022\)](#)

Thomas Phelan

Federal Reserve Bank of Cleveland

March 11, 2023

This document provides a list of errata for [Phelan and Eslami \(2022\)](#). None affect the findings of the paper but are listed here so as to avoid confusing anyone using the code for their own research. If you have any questions please email me at tom.phelan@clev.frb.org.

- **Erroneous guess in growth model.** The deterministic version of the growth model began with a different initial guess than that reported in the paper. The $\sigma = 0.0$ case began at the value function computed for the $\sigma = 0.2$ case. With the initial guess reported in the paper (zero net savings) the code takes longer to converge but (as expected) converges to the same function within numerical tolerance, leaving the figures essentially identical.
- **Overflow in IFPs.** In the IFPs, the code sometimes did not have zero up transitions at the upper boundary for income due to a rounding problem: the conditional statement for volatility not vanishing was $x < \bar{x} - \Delta_x$ and therefore didn't vanish at $x = \bar{x} - \Delta_x$ if Δ_x was a recurring decimal. This occurred for exactly one example in the paper: the 3D IFP and GIFP with grid (90,30,30) (all other examples were unaffected). The error does not affect anything of consequence because it was consistent across VFI, PFI and MPFI and still leads to a well-defined IFP: it is equivalent to assuming that for the highest income level the consumer discounts at a higher rate. This has a minuscule effect on the computed value function because an OU process has a normal stationary distribution and the upper boundary is four standard deviations above the mean and hence visited very infrequently. However, in general it is better to define these conditional statements in a way that is not subject to rounding errors. E.g. the array of volatilities with a conditional statement of the form $(\text{self.jj} > 1) \times (\text{self.jj} < N_z - 1)$.

References

Phelan, T. and Eslami, K. Applications of Markov chain approximation methods to optimal control problems in economics. *Journal of Economic Dynamics and Control*, 143:104437, October 2022. doi:[10.1016/j.jedc.2022.104437](https://doi.org/10.1016/j.jedc.2022.104437).