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# A Discrete Model for Bootstrap Iteration

by

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## Abstract

The bootstrap can be validated by considering the sequence of  $P$  values obtained by bootstrap iteration, rather than asymptotically. If this sequence converges to a random variable with the uniform  $U(0, 1)$  distribution, the bootstrap is valid. Here, the model is made discrete and finite, characterised by a three-dimensional array of probabilities. This renders bootstrap iteration to any desired order feasible. A unit-root test for a process driven by a stationary MA(1) process is known to be unreliable when the MA(1) parameter is near -1. Iteration of the bootstrap  $P$  value to convergence achieves reliable inference unless the parameter value is very close to -1.

**Keywords:** Bootstrap, bootstrap iteration, unit root, MA(1)

**JEL codes:** C10, C12, C15

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