

Package ‘Rtauchen’

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Type Package

Title Discretization of AR(1) Processes

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URL <https://github.com/davidzarruk/Rtauchen>

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Description Discretize AR(1) process following Tauchen (1986) <<http://www.sciencedirect.com/science/article/pii/0165176586901680>>. A discrete Markov chain that approximates in the sense of weak convergence a continuous-valued univariate Autoregressive process of first order is generated. It is a popular method used in economics and in finance.

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Imports stats

NeedsCompilation no

Repository CRAN

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Rtauchen

Rtauchen

Description

This function generates a matrix of transition probabilities of a finite-state Markov chain that mimics an AR(1) process with persistence parameter `llambda`, standard deviation `ssigma` and a fixed parameter `m`.

Usage

```
Rtauchen(ne, ssigma_eps, llambda_eps, m)
```

Arguments

<code>ne</code>	Number of points of the grid of the finite-state Markov chain that mimics the AR(1) process
<code>ssigma_eps</code>	Standard deviation of exogenous shock in the AR(1) process
<code>llambda_eps</code>	Persistence parameter of the AR(1) process
<code>m</code>	Tauchen parameter for the width of the process (number of standard deviations of the AR(1) process covered by the grid)

Details

See Tauchen (1986) for details.

Value

A matrix with the corresponding to the transition matrix of the finite-state Markov chain that approximates the AR(1) process

Examples

```
results = Rtauchen(2, 1.0e-5, 0.1, 0.4)
results
```

Tgrid

Tgrid

Description

This function generates a grid of a finite-state Markov chain that mimics an AR(1) process with persistence parameter `llambda`, standard deviation `ssigma` and a fixed parameter `m`.

Usage

```
Tgrid(ne, ssigma_eps, llambda_eps, m)
```

Arguments

<code>ne</code>	Number of points of the grid of the finite-state Markov chain that mimics the AR(1) process
<code>ssigma_eps</code>	Standard deviation of exogenous shock in the AR(1) process
<code>llambda_eps</code>	Persistence parameter of the AR(1) process
<code>m</code>	Tauchen parameter for the width of the process (number of standard deviations of the AR(1) process covered by the grid)

Details

See Tauchen (1986) for details.

Value

An array with the grid points of a finite-state Markov chain which approximates the original AR(1) process.

Examples

```
results = Tgrid(5, 0.02, 0.98, 3)
```

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