Package: AGBQR (via r-universe)

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Type Package

Title Adaptive Generalized Bayesian Quantile Regression

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Description Implements adaptive generalized Bayesian quantile regression with quantile-specific learning rates, HAC-based calibration, Gibbs posterior simulation, posterior summaries, predictive evaluation, and visualization tools. The package builds on the generalized Bayesian composite quantile regression framework of Hardy and Korobilis (2026) <doi:10.2139/ssrn.6618603> by allowing learning rates to vary across quantile levels. The implementation is designed for empirical work with small and moderate time-series samples where posterior calibration and tail-specific inference are important.

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Imports quantreg, MASS, stats

Suggests testthat

NeedsCompilation no

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agbqr *Adaptive Generalized Bayesian Quantile Regression*

Description

Estimates adaptive generalized Bayesian quantile regression using a Gibbs posterior, quantile-specific learning-rate calibration, and adaptive Metropolis simulation. The method extends the loss-based generalized Bayesian quantile framework of Hardy and Korobilis (2026) by allowing learning rates to vary across quantile levels.

Usage

```
agbqr(y, X, taus = c(0.10, 0.25, 0.50, 0.75, 0.90),
      prior = "normal", prior_var = 100,
      M = 30000, burnin = 10000, seed = 12345)
```

Arguments

`y`	Numeric response vector.
`X`	Numeric matrix or data frame of predictors.
`taus`	Numeric vector of quantile levels.
`prior`	Prior type. Use "normal" or "flat".
`prior_var`	Prior variance used under the normal prior.
`M`	Total number of MCMC iterations.
`burnin`	Number of burn-in iterations.
`seed`	Random seed.

Value

An object of class `agbqr` containing posterior draws, calibrated learning rates, posterior summaries, and estimation settings.

References

Hardy, N. and Korobilis, D. (2026). Generalized Bayesian Composite Quantile Regression with an Application to Equity Premium Forecasting. SSRN. doi:10.2139/ssrn.6618603.

Examples

```
set.seed(123)
n <- 50
x1 <- rnorm(n)
x2 <- rnorm(n)
x3 <- rnorm(n)
y <- 0.5 + x1 - 0.5 * x2 + 0.3 * x3 + rt(n, df = 3)
```

```
X <- cbind(LEXR = x1, M2GDP = x2, TRDGDP = x3)

fit <- agbqr(y = y, X = X, taus = c(0.50), M = 1000, burnin = 500)
summary(fit)
```

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