Exemplo F-DLM com dados artificiais

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Resumo

Este documento ilustra uma aplicação das funções que compõem o pacote `MScPack`. Todos os códigos do projeto se encontram em github.com

1 Simulação dos dados artificiais

Para simularmos dados artificiais do modelo linear dinâmico fatorial (F-DLM), basta utilizar a função `mdfDiscW.sim`. O código abaixo simula $T = 500$ observações de $q = 9$ variáveis.

```
TT = 500
set.seed(293874)
xDyn = 3 + cumsum(rnorm(TT, 0, 0.05))
plot(xDyn, type = "l")
```

```
xFix = rep(1, TT)
parmsFix = -c(0.8, 0.92, 1.01, 1.1, 0.79, 0.98, 0.94, 1.07, 0.77)
q = length(parmsFix)
m0 = rep(1, q)
C0 = diag(0.01, q)
k = 3
Lambda.lim = 0.1
set.seed(1928)
Lambda = array(runif(q * k, 0, Lambda.lim), c(q, k))
Lambda[upper.tri(Lambda)] = 0
diag(Lambda) = c(0.99, 0.95, 0.9) * Lambda.lim
psi = c(0.02, 0.19, 0.36, 0.02, 0.02, 0.19, 0.19, 0.36, 0.36) * Lambda.lim/10
comunal = diag(tcrossprod(Lambda))
comunal/(comunal + psi)

## [1] 0.9800 0.8636 0.7999 0.9716 0.9629 0.9240 0.8618 0.7871 0.8340
```

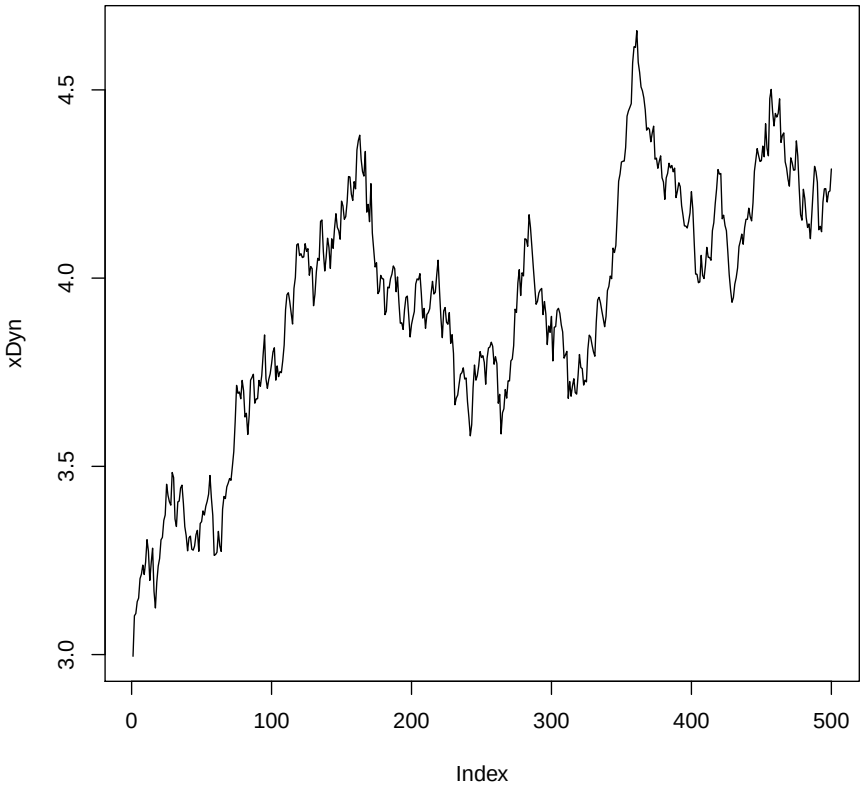

Figura 1: Exogenas geradas artificialmente

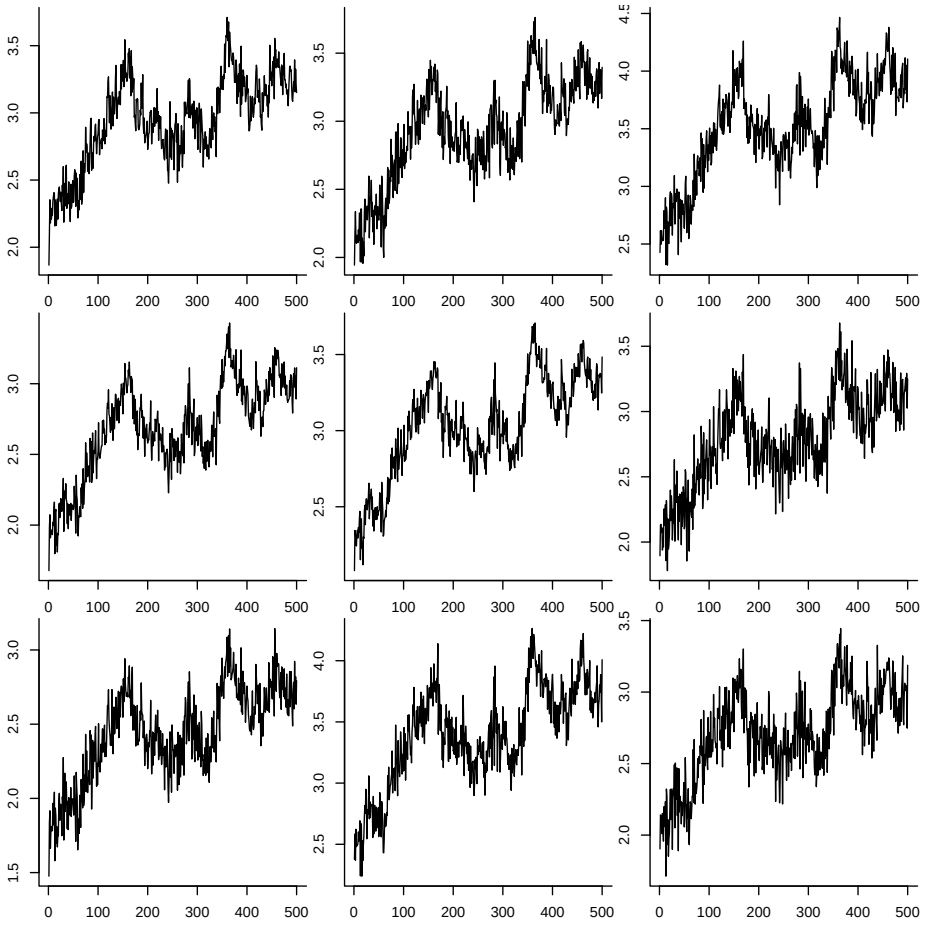

Figura 2: F-DLM - Dados artificiais

```
library(MScPack)

## Loading required package:  Rcpp
## Warning:  package 'Rcpp' was built under R version 3.0.3
## Loading required package:  RcppArmadillo
## Warning:  package 'RcppArmadillo' was built under R version 3.0.3

mdfSim = mdfDiscW.sim(xFix, array(parmsFix, c(1, q)), xDyn, m0, C0, 0.95, Lambda,
    psi, 90165)
par(mfrow = c(3, 3), mar = c(2.1, 2.1, 0.1, 0.1))
invisible(apply(mdfSim$y, 2, plot, type = "l", bty = "l"))
```

```
modelo = list(y = mdfSim$y, xFixReg = mdfSim$mod$xFixReg, xDynReg = mdfSim$mod$xDynReg,
    nFactors = ncol(mdfSim$mod$Lambda), L0 = array(0, dim(mdfSim$mod$Lambda)),
    H0 = diag(100, ncol(mdfSim$mod$Lambda)), m0 = as.matrix(mdfSim$mod$m0),
    C0 = mdfSim$mod$C0, b0 = array(0, dim(mdfSim$mod$parmsFixReg)), B0 = diag(1000,
        nrow(mdfSim$mod$parmsFixReg)), n0 = 1, s0sq = array(mdfSim$mod$psi,
        c(ncol(mdfSim$y), 1)), discW = mdfSim$mod$discW)
init.val = list(Lambda = mdfSim$mod$Lambda, psi = as.matrix(mdfSim$mod$psi),
    Beta = mdfSim$mod$parmsFixReg)
```