Actualizacion de ecuaciones univariada

2022-07-25

```r
#La base de datos freeny tiene la siguiente estructura:
head(freeny)
```

```
##               y lag.quarterly.revenue price.index income.level market.potential
## 1962.25 8.79236               8.79636     4.70997      5.82110          12.9699
## 1962.5  8.79137               8.79236     4.70217      5.82558          12.9733
## 1962.75 8.81486               8.79137     4.68944      5.83112          12.9774
## 1963    8.81301               8.81486     4.68558      5.84046          12.9806
## 1963.25 8.90751               8.81301     4.64019      5.85036          12.9831
## 1963.5  8.93673               8.90751     4.62553      5.86464          12.9854
```

```r
#A. Posterior en t=19
set.seed(1)
m19 <- c(8, 0.35, -0.27)
C19 <- matrix(c(0.00002, 0.00001, -0.00002, 0.00001, 0.00004, -0.00001, -0.00002,
                -0.00001, 0.00005),
              ncol = 3)
theta19_posterior <- mvrnorm(1, mu = m19, Sigma = C19)
theta19_posterior
```

```
## [1]  7.9998533  0.3536653 -0.2745138
```

```r
G20 <- matrix(c(1.05, 0, 0, 0, 1, 0, 0, 0, 1), ncol=3)
W20 <- matrix(c(0.00001, 0, 0, 0, 0.0001, -0.00001, 0, -0.00001, 0.00005), ncol=3)
#B. Priori en t=20
a20 <- G20 %*% m19
R20 <- G20 %*% C19 %*% t(G20) + W20
theta20_priori <- mvrnorm(1, mu = a20, Sigma = R20)
theta20_priori
```

```
## [1]  8.3922911  0.3340014 -0.2601660
```

```r
F20 <- c(1, 6.06093, 4.51018) #El 1 es para agregar el intercepto
#C. Pronóstico a un periodo.
f20 <- t(F20) %*% a20
V20 <- 0.002
Q20 <- t(F20) %*% R20 %*% F20 + V20
Y20 <- rnorm(1, mean = f20, sd = sqrt(Q20))
Y20
```

```
## [1] 9.347319
```

```r
#D. Posterior en t=20
A20 = R20 %*% F20 %*% solve(Q20)
e20 = Y20-f20
m20 = a20 + A20 %*% e20
C20 = R20 - A20 %*% Q20 %*% t(A20)
theta20_posterior <- mvrnorm(1, mu = m20, Sigma = C20)
```