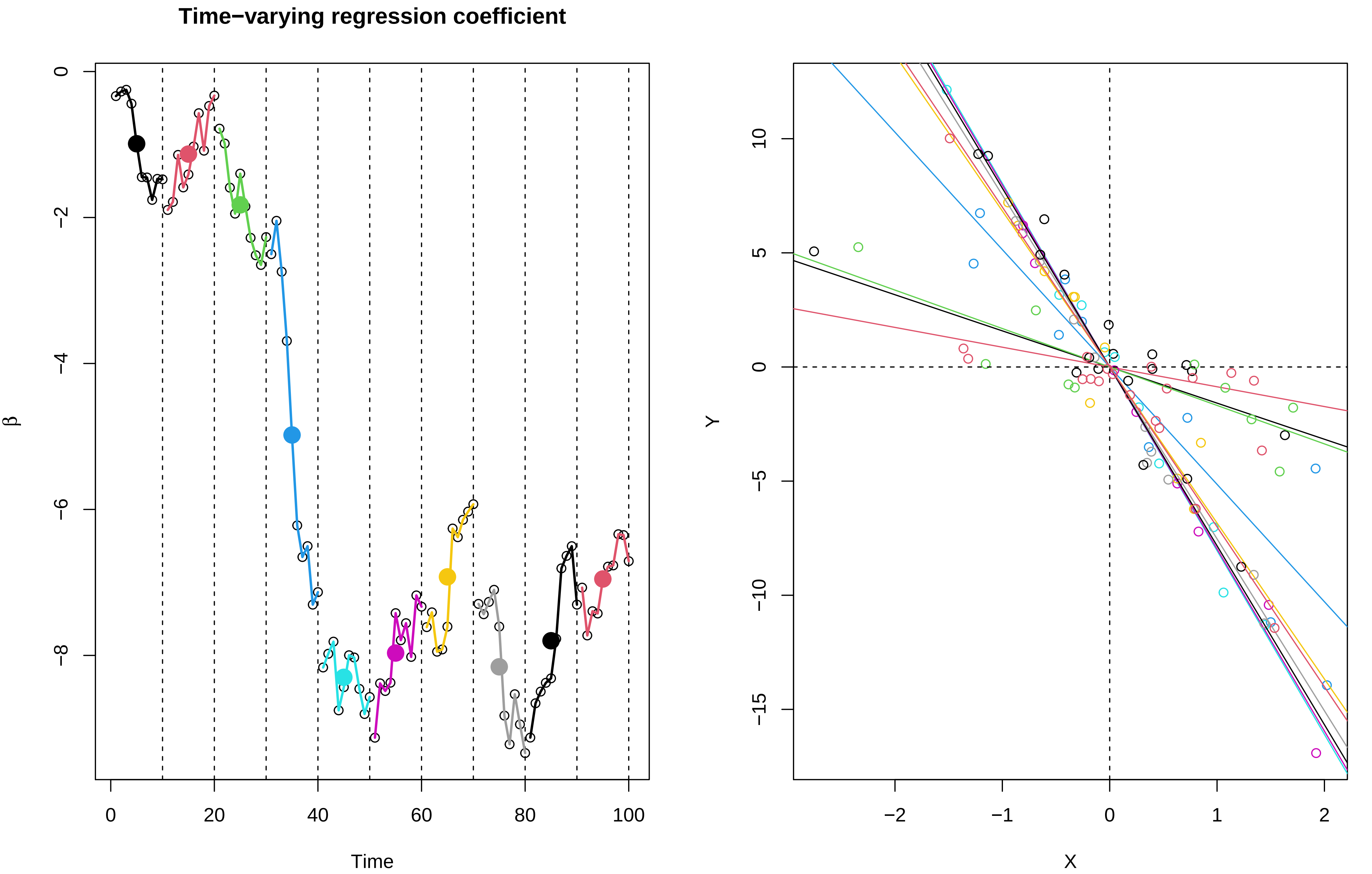
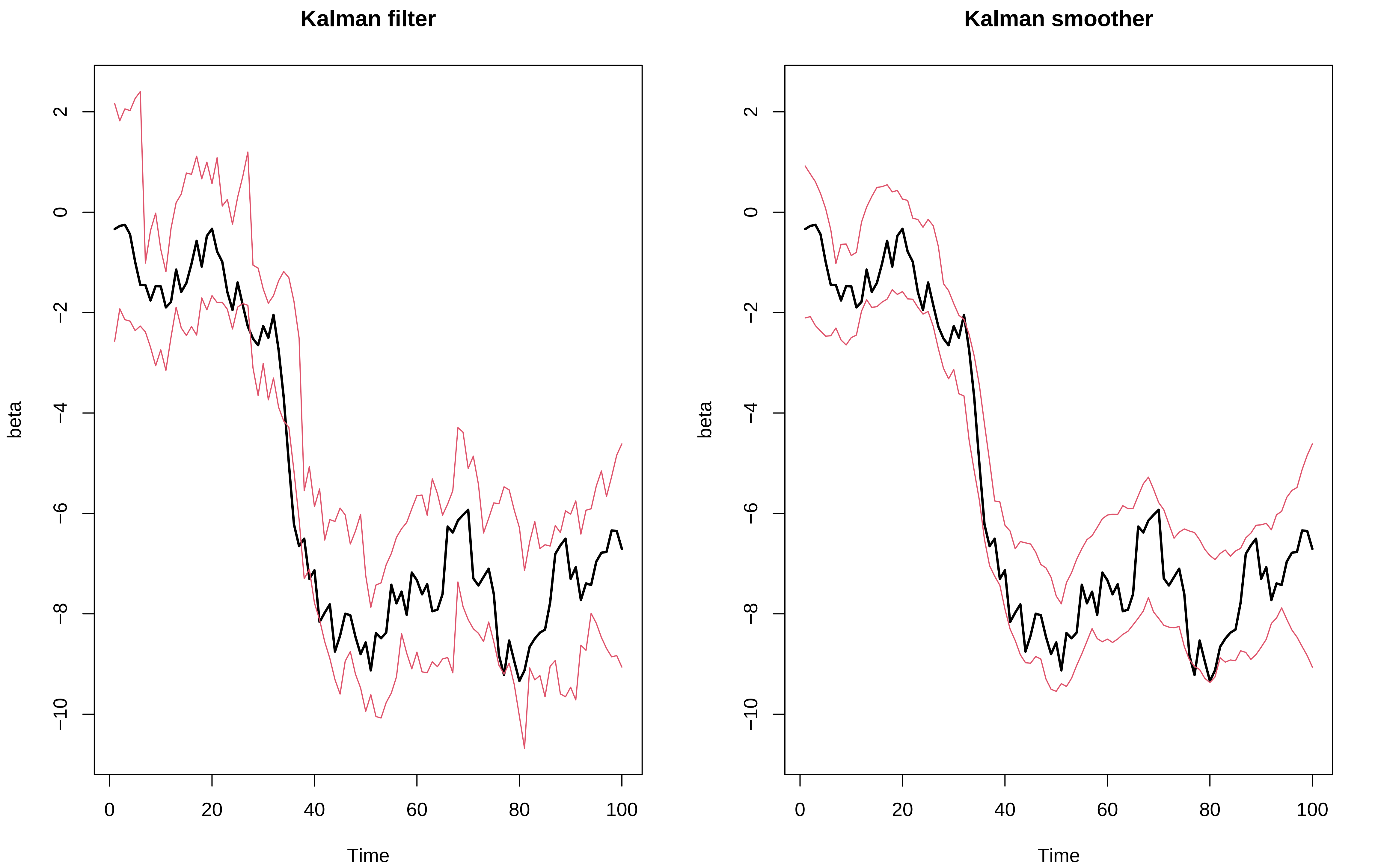
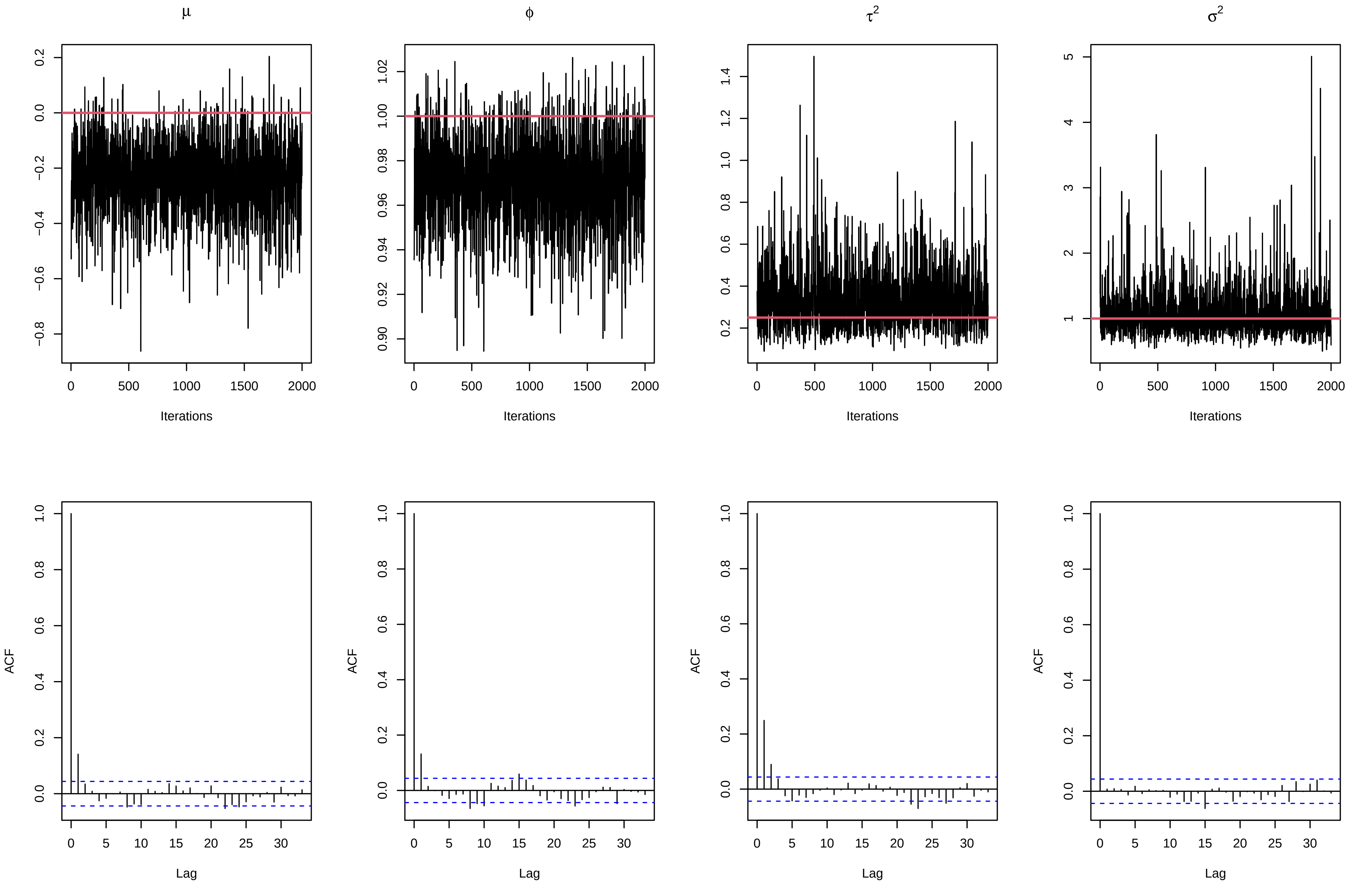
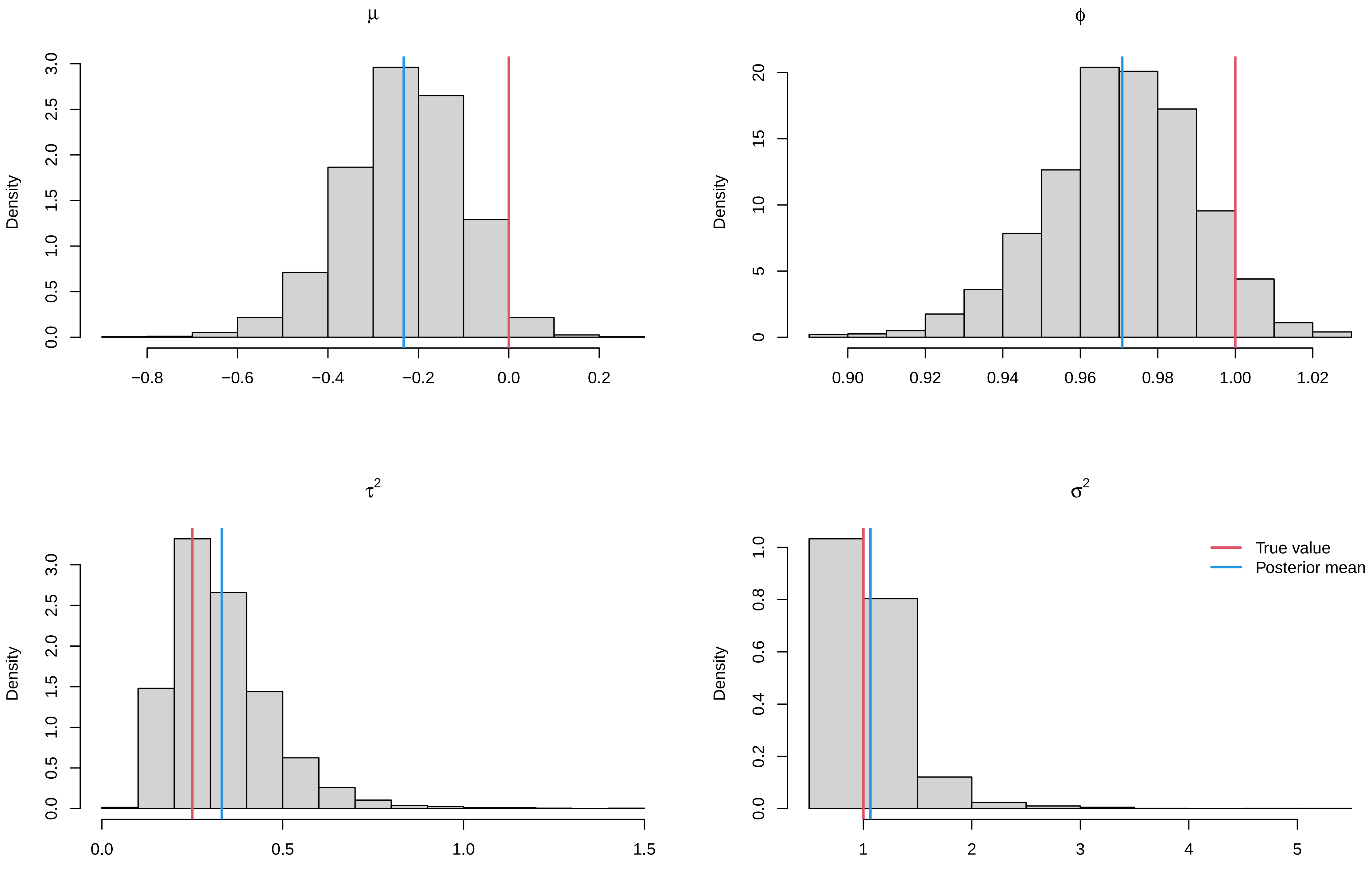


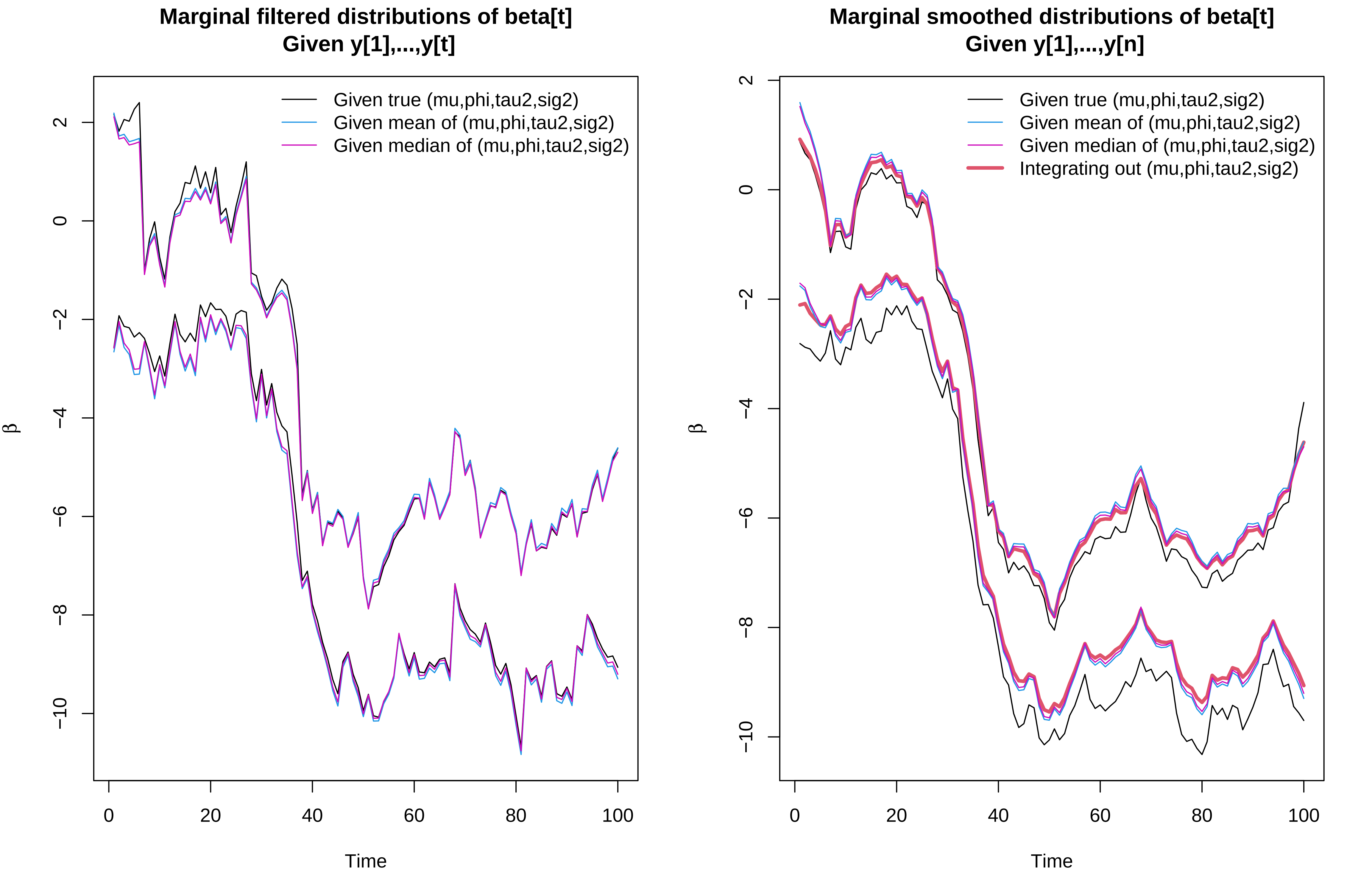
Time−varying regression coefficient
β
Time
0
−2
−4
−6
−8
0
20
40
60
80
100
Y
X
10
5
0
−5
−10
−15
−2
−1
0
1
2



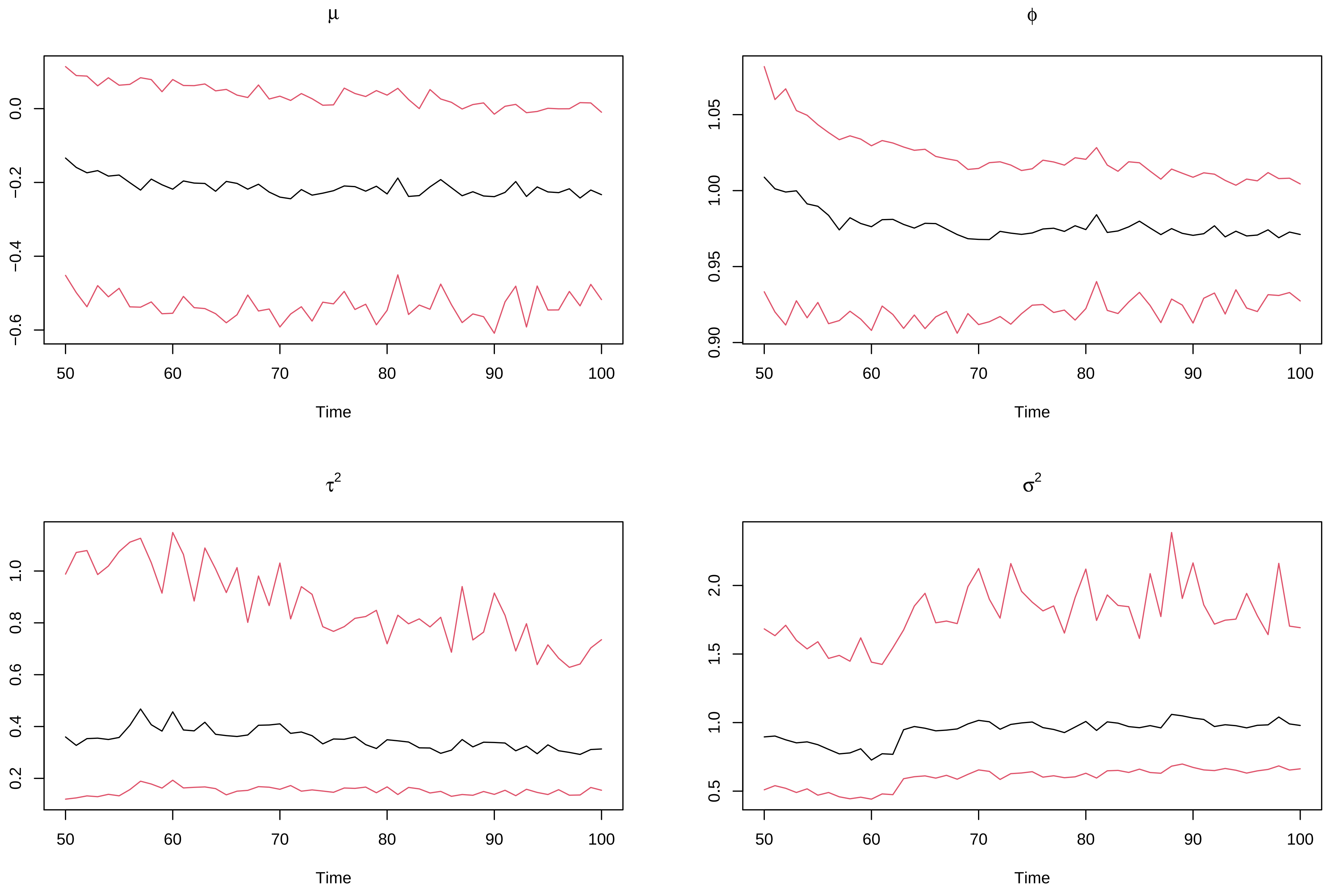
Kalman filter
Kalman smoother
beta
Time
2
0
−2
−4
−6
−8
−10
0
20
40
60
80
100

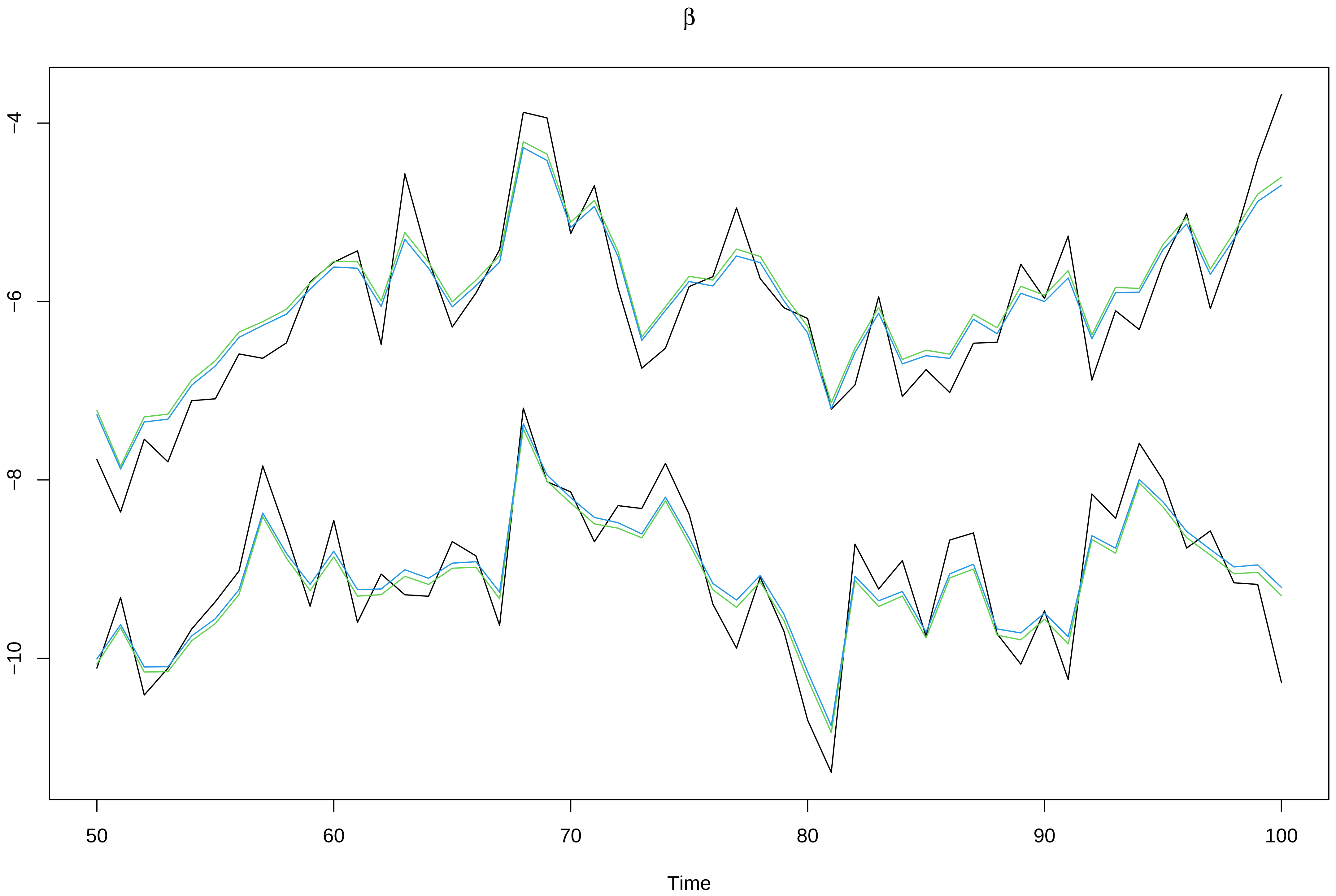

μ
ϕ
τ²
σ²
Iterations
Iterations
Iterations
Iterations
ACF
ACF
ACF
ACF
Lag
Lag
Lag
Lag


μ
ϕ
τ²
σ²
Density
True value
Posterior mean
−0.8
−0.6
−0.4
−0.2
0.0
0.2
0.90
0.92
0.94
0.96
0.98
1.00
1.02
0.0
0.5
1.0
1.5
1
2
3
4
5



Marginal filtered distributions of beta[t]
Given y[1],...,y[t]
Given true (mu,phi,tau2,sig2)
Given mean of (mu,phi,tau2,sig2)
Given median of (mu,phi,tau2,sig2)
β
Time
2
0
−2
−4
−6
−8
−10
0
20
40
60
80
100
Marginal smoothed distributions of beta[t]
Given y[1],...,y[n]
Given true (mu,phi,tau2,sig2)
Given mean of (mu,phi,tau2,sig2)
Given median of (mu,phi,tau2,sig2)
Integrating out (mu,phi,tau2,sig2)
β
Time


μ
0.0
−0.2
−0.4
−0.6
50
60
70
80
90
100
Time
ϕ
1.05
1.00
0.95
0.90
50
60
70
80
90
100
Time
τ²
1.0
0.8
0.6
0.4
0.2
50
60
70
80
90
100
Time
σ²
2.0
1.5
1.0
0.5
50
60
70
80
90
100
Time


β
−4
−6
−8
−10
50
60
70
80
90
100
Time