
```

% Let's take a closer look at the prior and posterior distributions
%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
load c:\klaus\AAEC6564\mlab\worksp\mod2s1a betamat sig2mat;

rand('state',37); % set arbitrary seed for uniform draws
randn('state',37); % set arbitrary seed for normal draws

R=10000; %number of retained draws from S5_main

%repeat prior settings
mu0=zeros(k,1); %diffuse prior for mean of betas
V0=eye(k)*100; % diffuse prior for varcov of beta
% elements for sig2
v0=1/2;
tau0=1/2; % diffuse prior shape and scale

%draw from priors
%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
sig2prior=1./gamrnd(v0,1/tau0,R,1);
%focus on last beta
b3prior=mu0(end)+sqrt(V0(end,end)).*randn(R,1);

%posteriors
%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
b3post=betamat(end,:);
sig2post=sig2mat;

[f1,x1]=ksdensity(sig2prior,'kernel','epanechnikov','npoints',200);
[f2,x2]=ksdensity(b3prior,'kernel','epanechnikov','npoints',200);

[f3,x3]=ksdensity(sig2post,'kernel','epanechnikov','npoints',200);
[f4,x4]=ksdensity(b3post,'kernel','epanechnikov','npoints',200);

figure(1);

% compare prior and posterior for sig2
%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
subplot(2,1,1);
plot(x1,f1,':k',x3,f3,'-k');
title('prior and posterior for $
\sigma^2$', 'interpreter', 'latex', 'fontsize', 14');
set(gca, 'Xlim', [1 2]);
set(gca, 'Ylim', [0 20]);
legend('prior', 'posterior');

% compare prior and posterior for beta3
%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
subplot(2,1,2);
plot(x2,f2,':k',x4,f4,'-k');
title('prior and posterior for $
\beta_3$', 'interpreter', 'latex', 'fontsize', 14');

```

```
set(gca, 'Xlim', [0.5 1]);  
set(gca, 'Ylim', [0 70]);  
legend('prior', 'posterior');
```

Published with MATLAB® R2022b