1 Comparison with ML

In order to make sure that the posterior moments are sensible, we compare the results with a simple ML (not SUR). The posterior means are expected to be reasonably similar to the ML estimates. The results below are for the following model: MOM + Mkt.RF + HML + RMW + CMA + QMJ + ME + ROE. Below are plots of different elements.

1.1 Tight Prior

First, we explore the vector of factor loadings γ. The first picture plots posterior means and ML estimates. They are not identical but close enough. The posterior means are
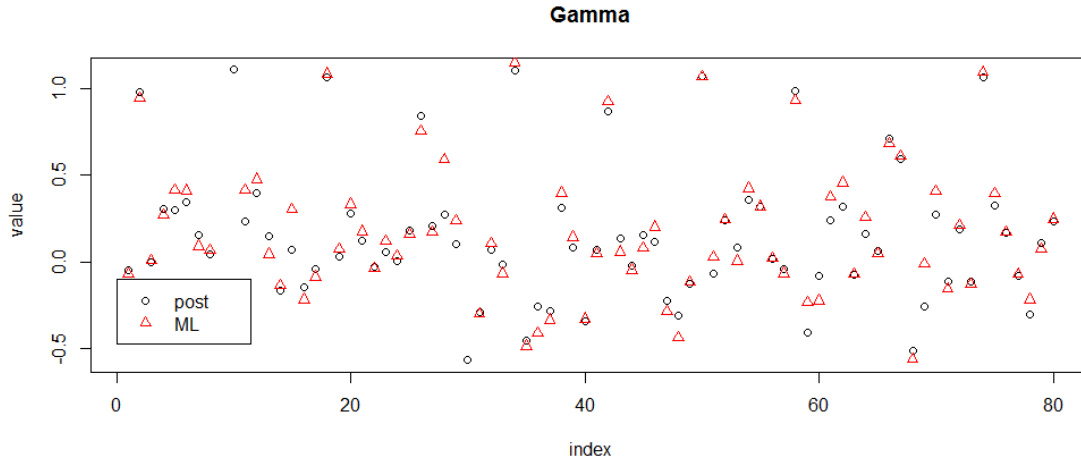

Figure 1: γ: posterior means vs. ML estimates

significantly updated in comparison with the priors but the values are in the same range. We can conclude that the draws of the parameter vector are reasonable.

Finally, compare the draws for the errors covariance matrix (Σ). Note that for Student-t distribution with 6 degrees of freedom the covariance matrix is a scaled version of the scale matrix Ω: $\Sigma = \frac{\nu}{\nu-2}\Omega = \frac{6}{4}\Omega$. We approximate the scale matrix Ω as the inverse of the posterior means of sample draws of Ω^{-1}. Again, the results from two methods are similar, so we conclude that the procedure produces reasonable estimates of the parameters of interest.
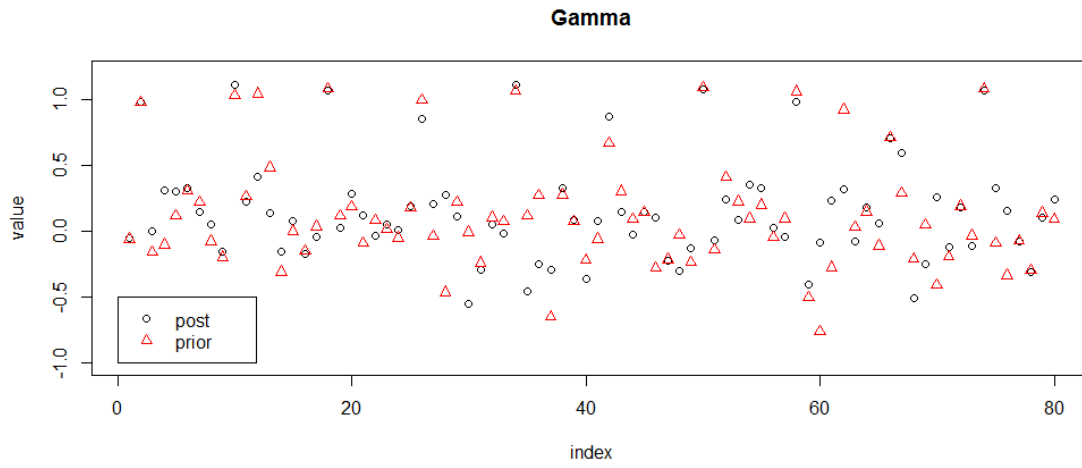
1

Figure 2: γ: posterior means vs. second stage prior means coming from the training sample
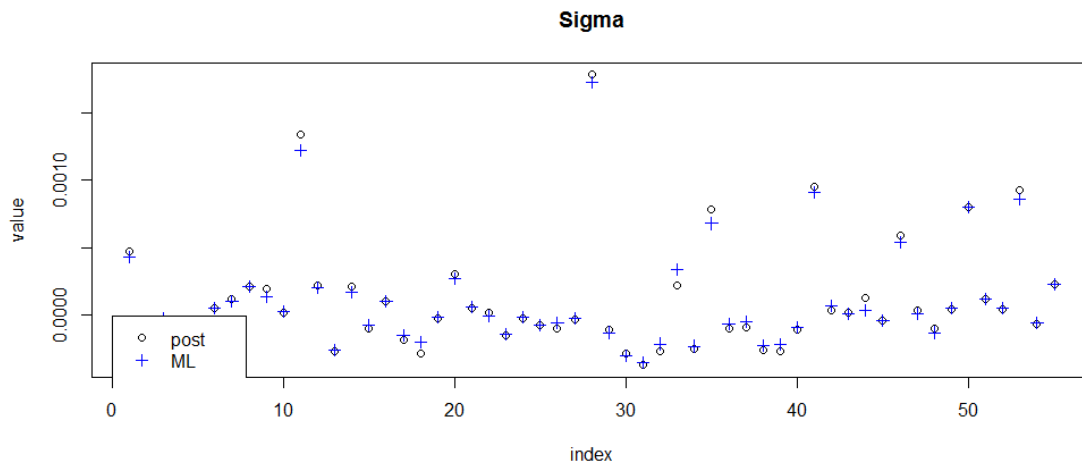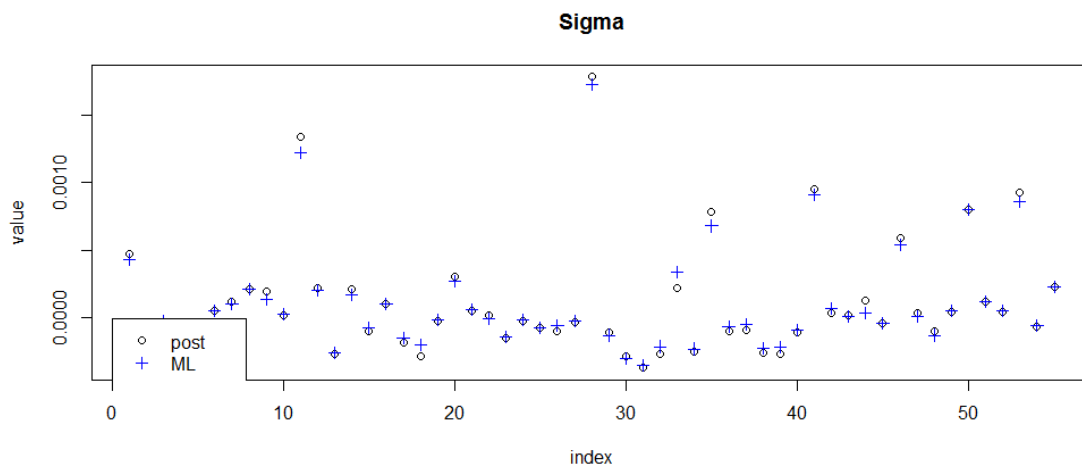

Figure 3: Σ: posterior means vs. ML

Figure 4: Σ: posterior means vs. second stage prior means