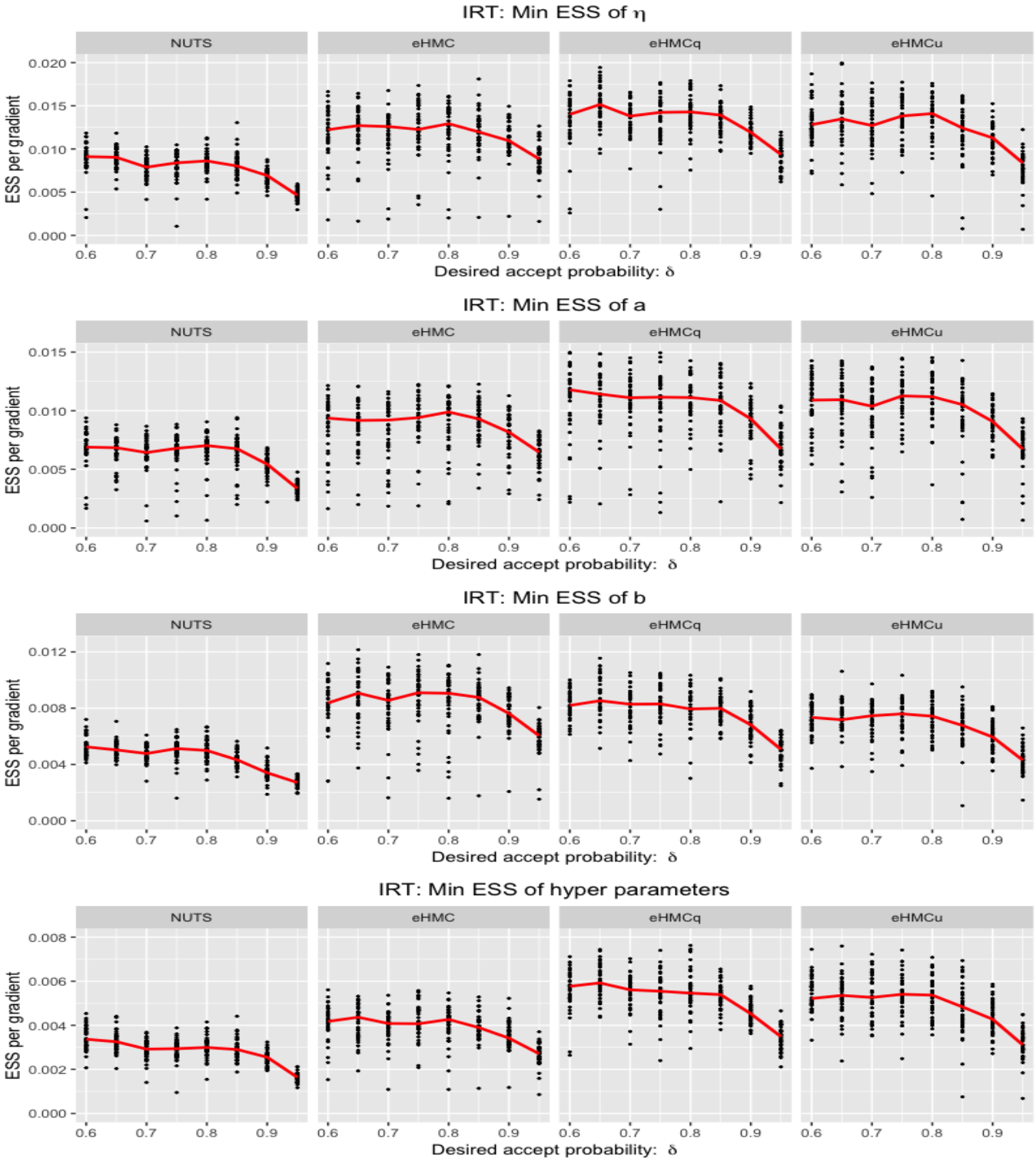

Figure 1: Comparison between NUTS and our samplers for IRT model with identity covariance matrix: The x-axis in each plot corresponds to the desired accept probability δ of the primal-dual averaging algorithm.The y-axis is the minimum ESS per gradient for each parameter group. ESS of samples of NUTS, eHMC, eHMCq and eHMCu is estimated by `ess` of `R package mcmcse`.