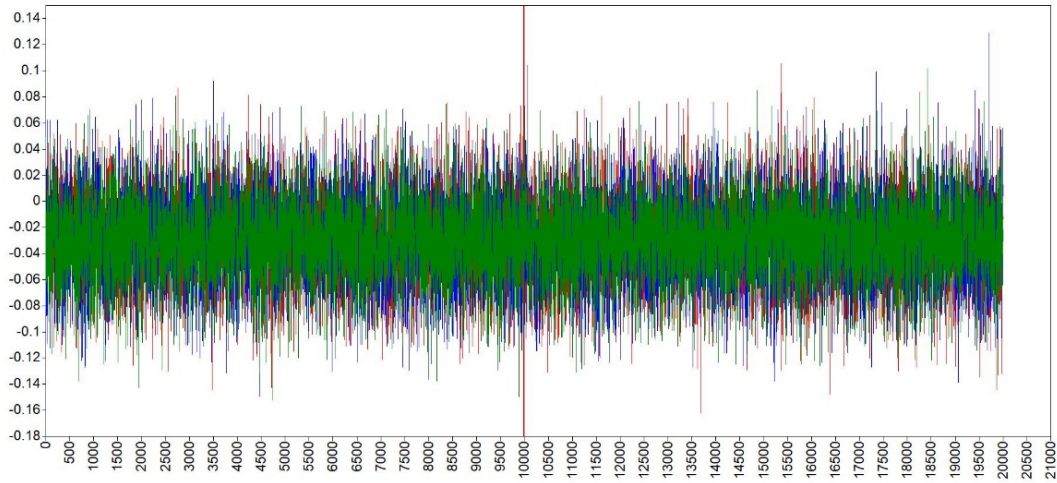
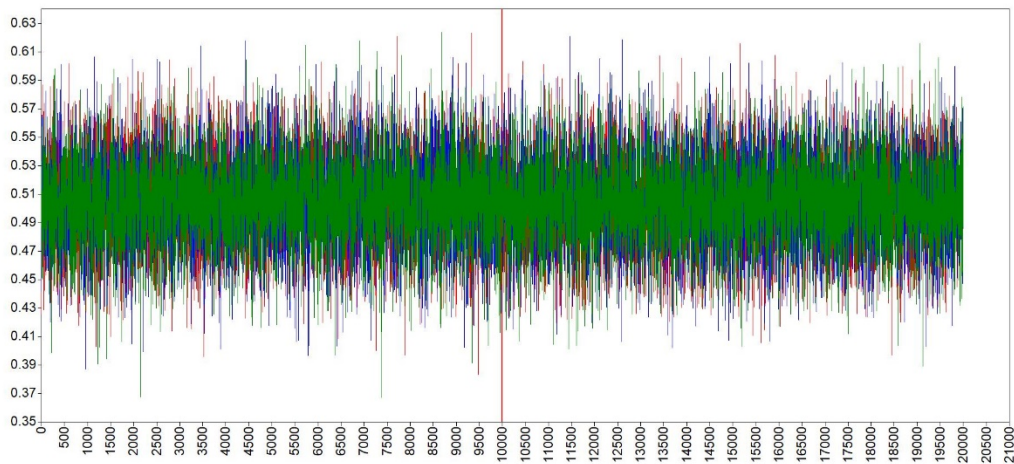


## Trace Plots for Parameters in the Empirical Example

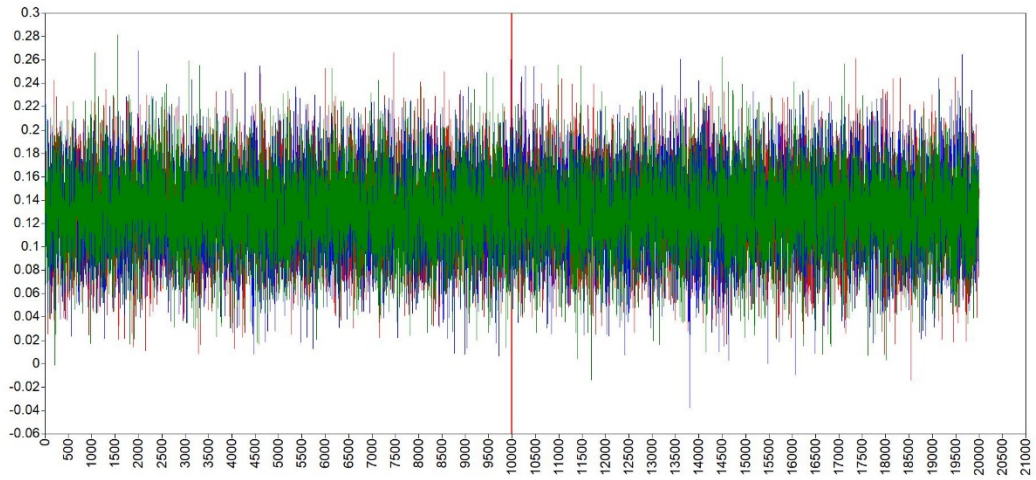
The following trace plots display the convergence of the chains for the 17 parameters of the 2moME model. The plots show that the values of the parameters converge to the same posterior distribution while they vary because of randomness.



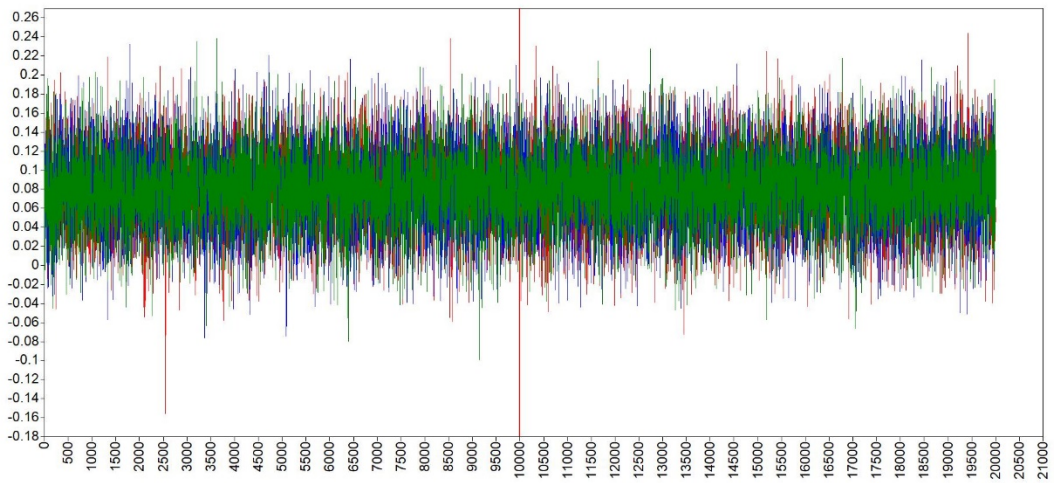
Intercept of SCREAD ( $\gamma_{d_{M_0}}$ )



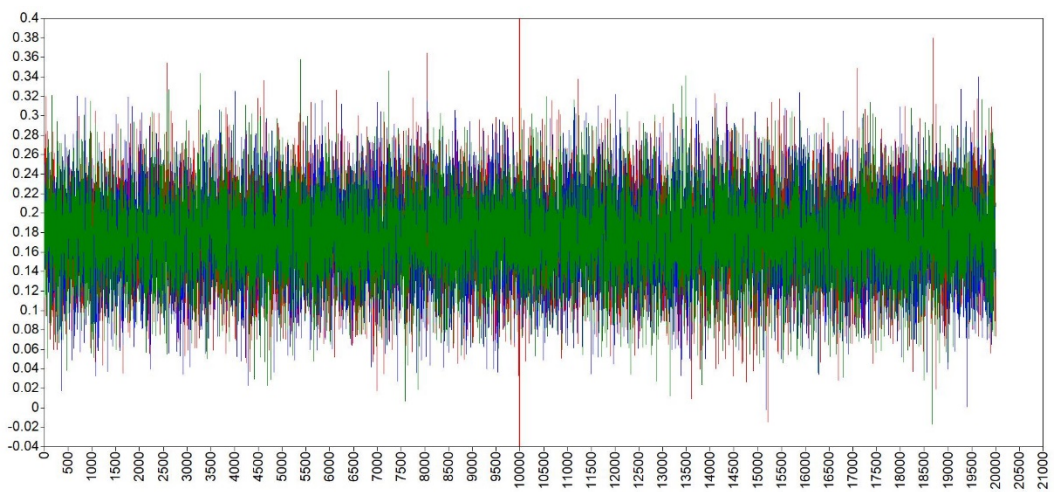
Intercept of READ ( $\gamma_{d_{Y_0}}$ )



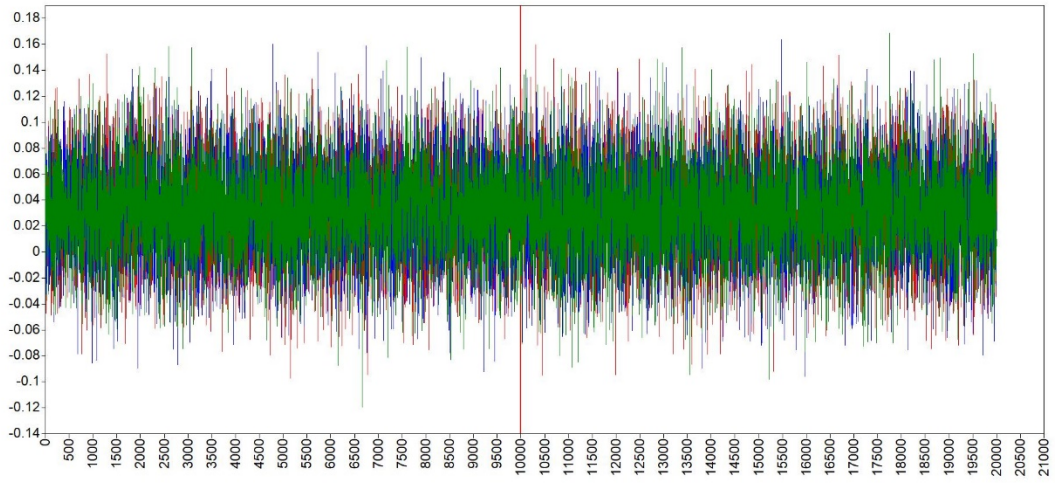
EMOSUP  $\rightarrow$  SCREAD ( $\gamma_{dM1}$ )



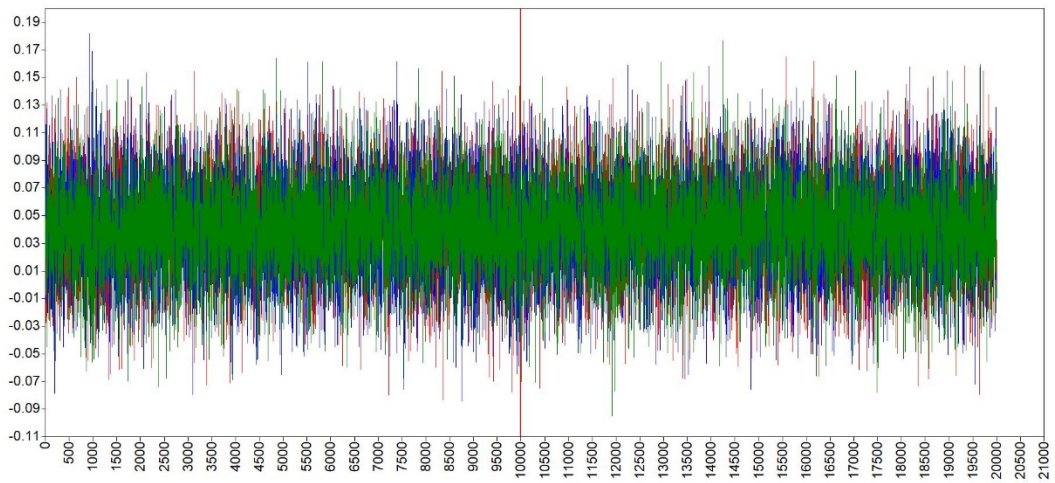
ESCS  $\rightarrow$  SCREAD ( $\gamma_{a0}$ )



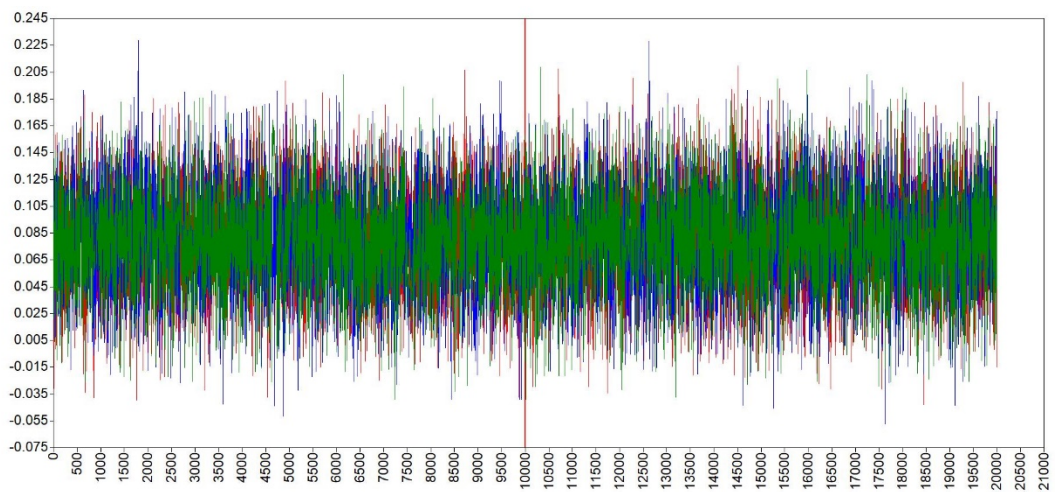
ESCS  $\times$  EMOSUP  $\rightarrow$  SCREAD ( $\gamma_{a1}$ )



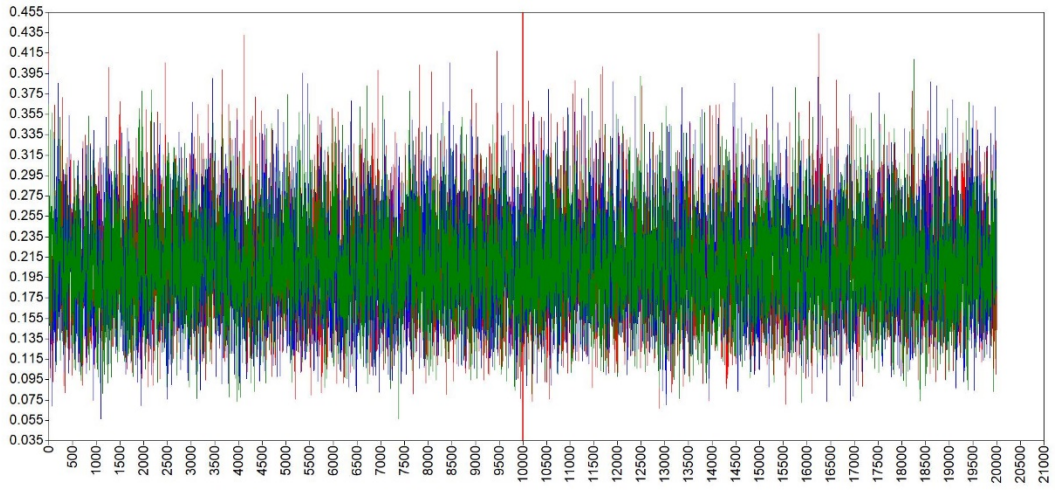
EMOSUP  $\rightarrow$  READ ( $\gamma_{d_{y_1}}$ )



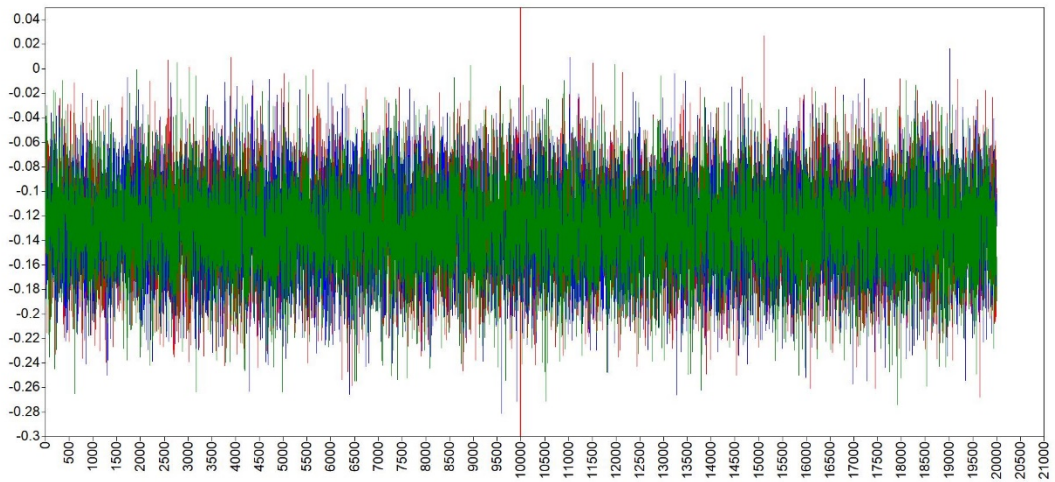
TSREAD  $\rightarrow$  READ ( $\gamma_{d_{y_2}}$ )



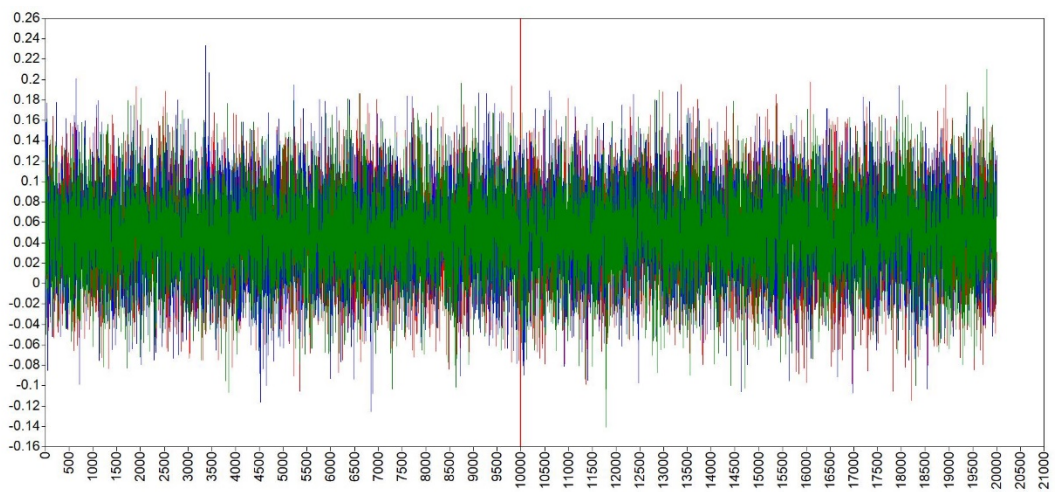
ESCS  $\rightarrow$  READ ( $\gamma_{c_0}$ )



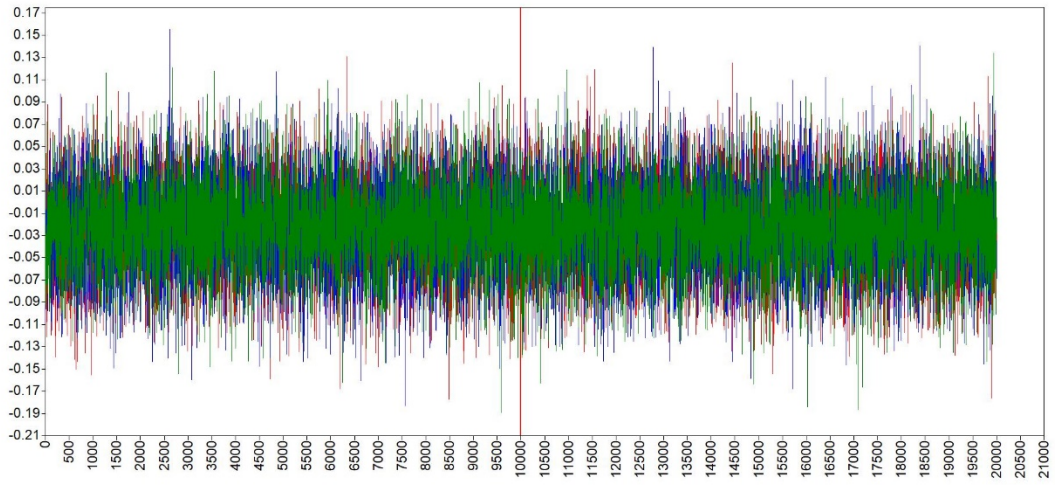
SCREAD  $\rightarrow$  READ ( $\gamma_{b_0}$ )



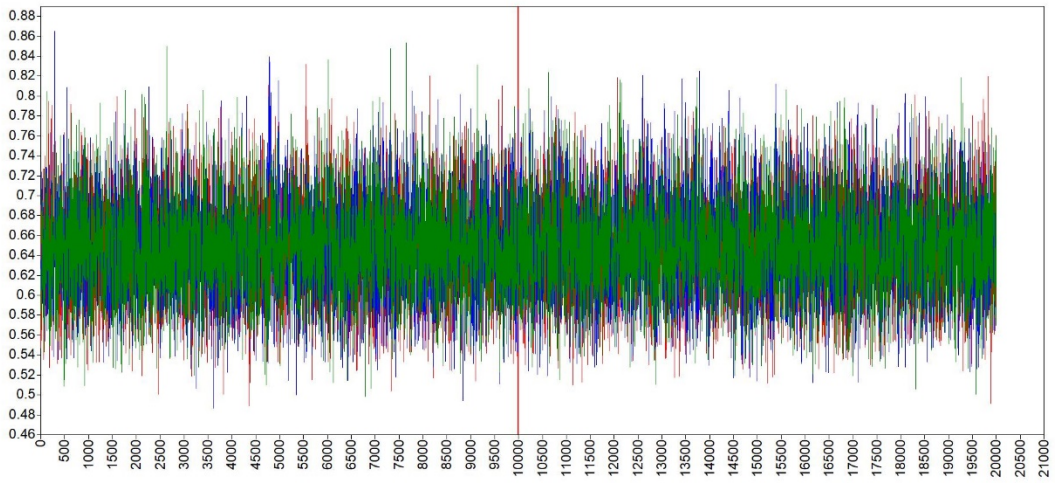
SCREAD  $\times$  TSREAD  $\rightarrow$  READ ( $\gamma_{b_1}$ )



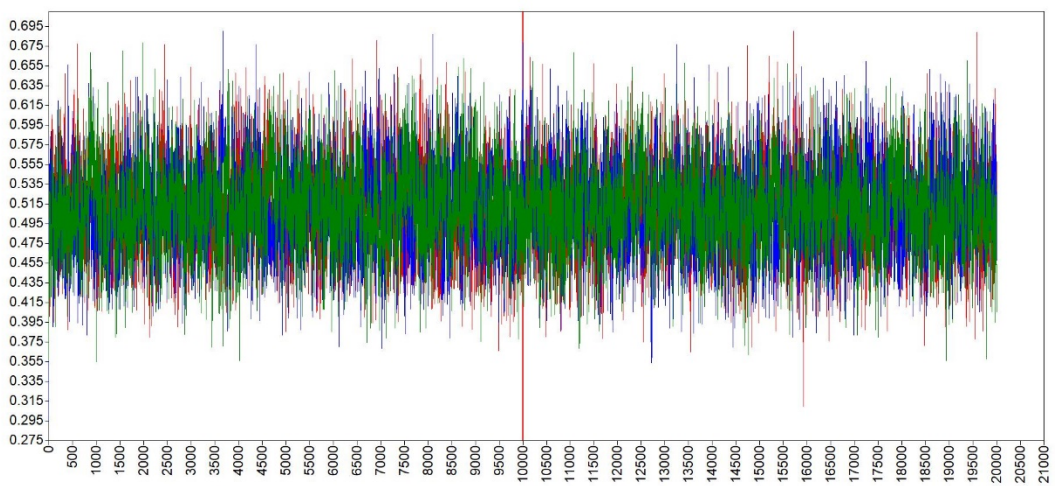
ESCS  $\times$  EMOSUP  $\rightarrow$  READ ( $\gamma_{c_1}$ )



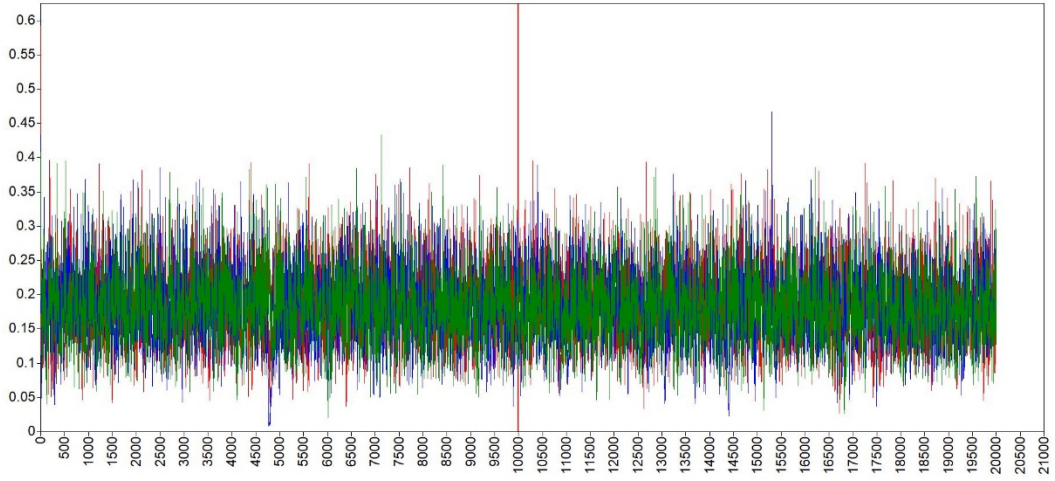
ESCS $\times$ TSREAD  $\rightarrow$  READ ( $\gamma_{c_2}$ )



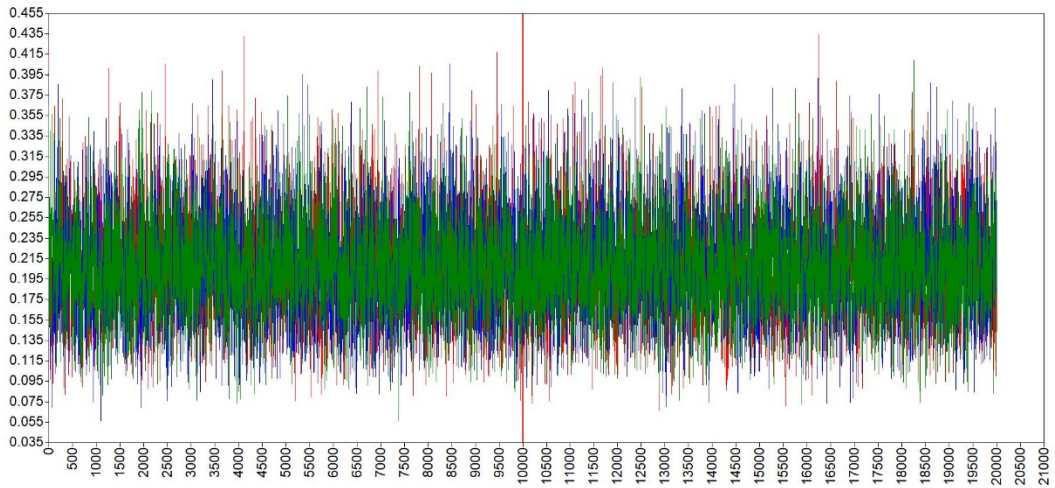
$\text{Var}(e_M)$



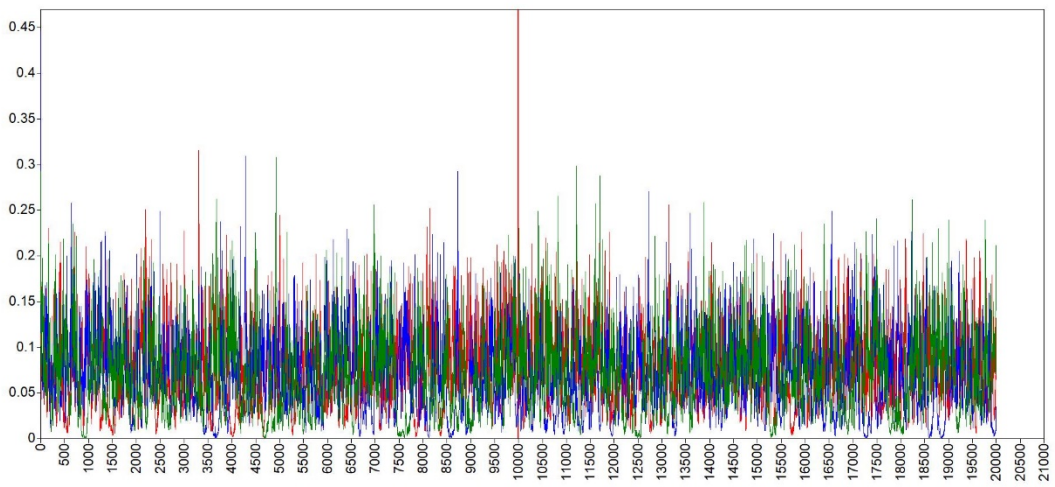
$\text{Var}(e_Y)$



$\text{Var}(u_{a_i})$



$\text{Var}(u_{b_i})$



$\text{Var}(u_{c_i})$