Shock Processes

Level TFP: $lnA_t^l = \rho_A^l lnA_{t-1}^l + \varepsilon_{a,t}^l$

Trend TFP: $g_{a,t} - \mu_a = \rho_{ga}(g_{a,t-1} - \mu_a) + \varepsilon_{ga,t}$

Level Investment-specific technology: $lnV_t^l = \rho_V^l lnV_{t-1}^l + \varepsilon_{Vt}^l$

Trend Investment-specific technology: $g_{v,t} - \mu_v = \rho_g(g_{v,t-1} - \mu_v) + \varepsilon_{gv,t}$;

Intertemporal Preference: $ln\xi_t = \rho_\xi ln\xi_{t-1} + \varepsilon_{\xi,t}$

Observation Equations (demeaned series is used for estimation)

$$g\_y_t = \Delta logY_t = logY_t - logY_{t-1}$$

$$g\_y_t = log\hat{y}_t Z_{t-1} - log\hat{y}_{t-1} Z_{t-2}$$

$$g\_y_t = log\hat{y}_t + \log\left(A_{t-1}^g\right)^{\frac{1}{1-\alpha}} + log(V_{t-1})^{\frac{\alpha}{1-\alpha}} - log\hat{y}_{t-1} - \log\left(A_{t-2}^g\right)^{\frac{1}{1-\alpha}} - log(V_{t-2})^{\frac{\alpha}{1-\alpha}}$$

$$g\_y_t = log\frac{\hat{y}_t}{\hat{y}_{t-1}} + \frac{1}{1-\alpha}\log\left(\frac{A_{t-1}^g}{A_{t-2}^g}\right) + \frac{\alpha}{1-\alpha}\log\left(\frac{V_{t-1}^g}{V_{t-2}^g}\right)$$

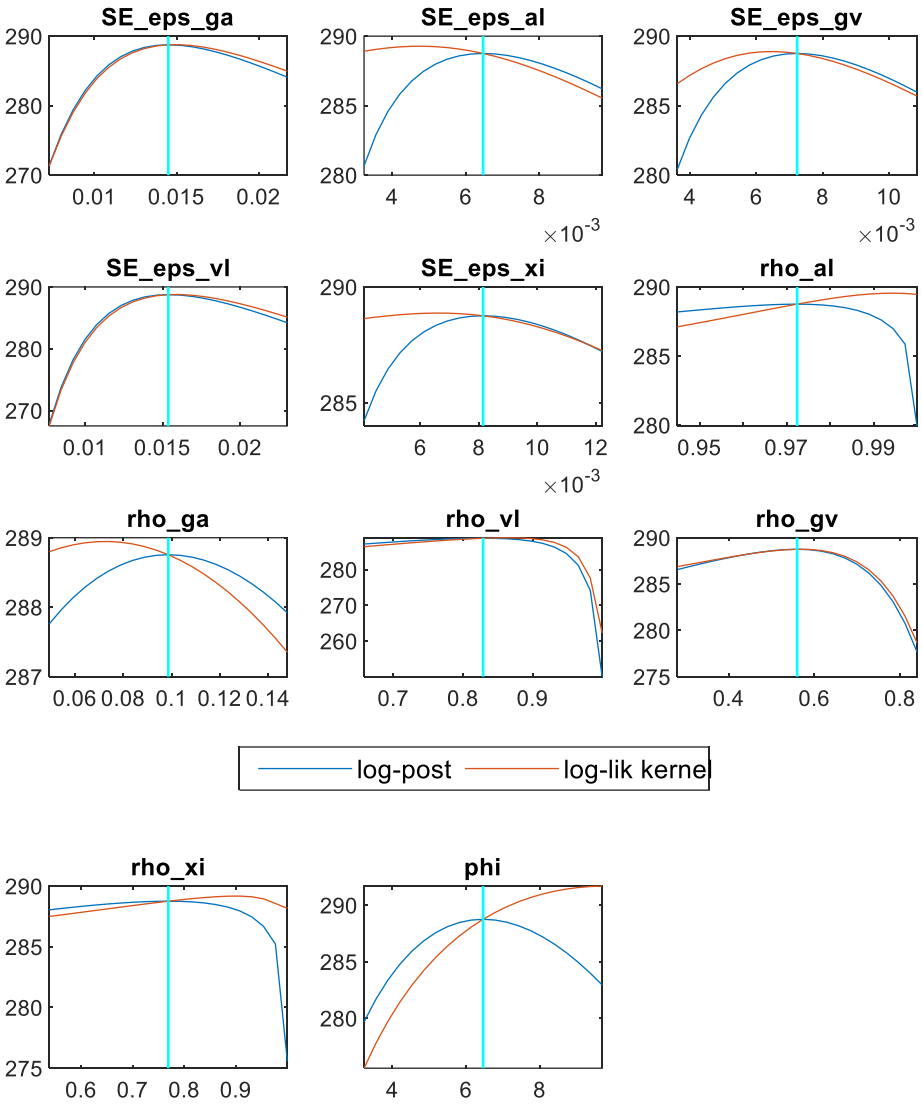
$$g\_y_t = log\frac{\hat{y}_t}{\hat{y}_{t-1}} + \frac{1}{1-\alpha}\log(e^{g_{a,t-1}}) + \frac{\alpha}{1-\alpha}\log(e^{g_{v,t-1}})$$

$$g\_y_t = log\frac{\hat{y}_t}{\hat{y}_{t-1}} + \frac{1}{1-\alpha}g_{a,t-1} + \frac{\alpha}{1-\alpha}g_{v,t-1}$$

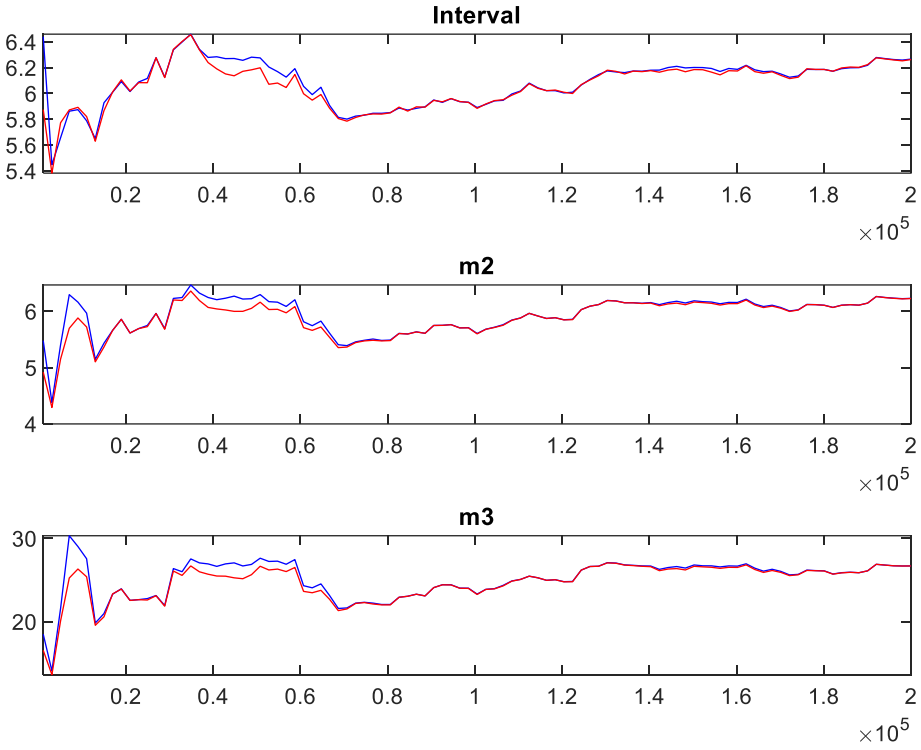
Steady-state

$$g\_y = \frac{1}{1-\alpha}g_a + \frac{\alpha}{1-\alpha}g_v$$

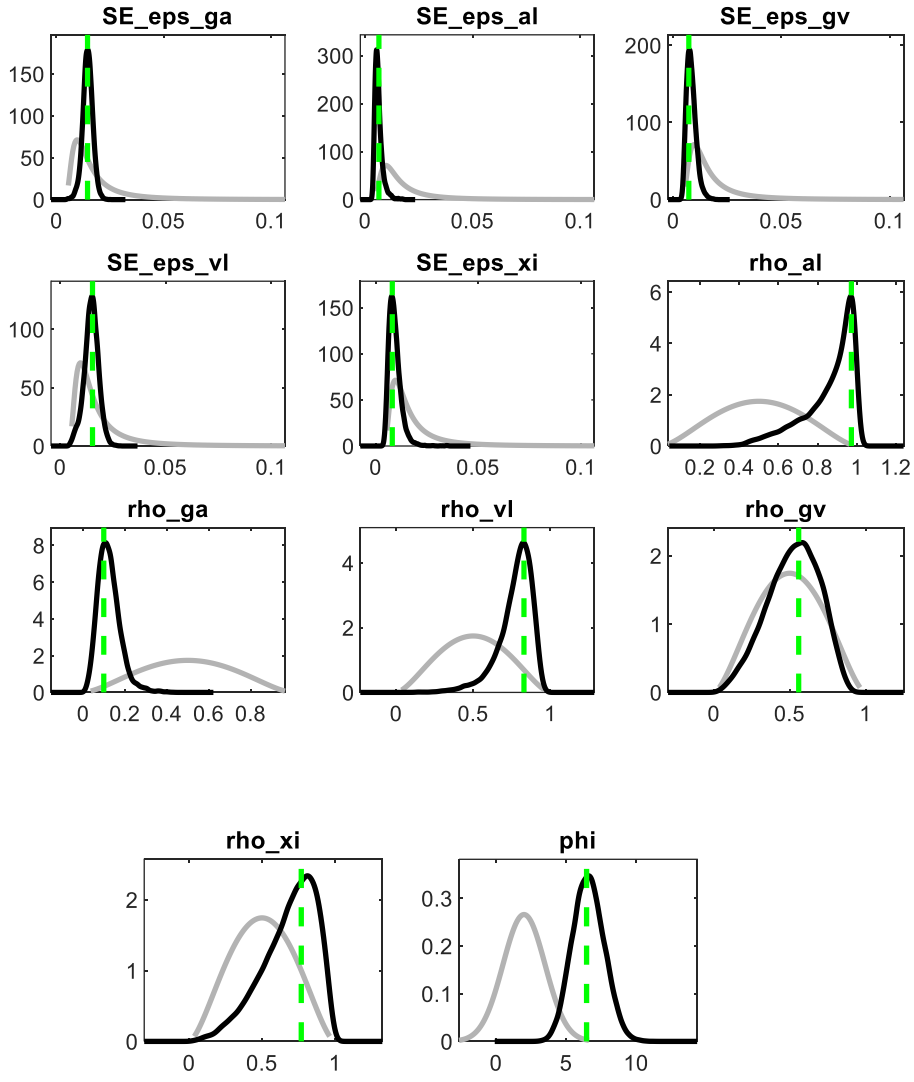
Mode-check plots



Multivariate convergence diagnostics



Priors and Posteriors



Trace Plots

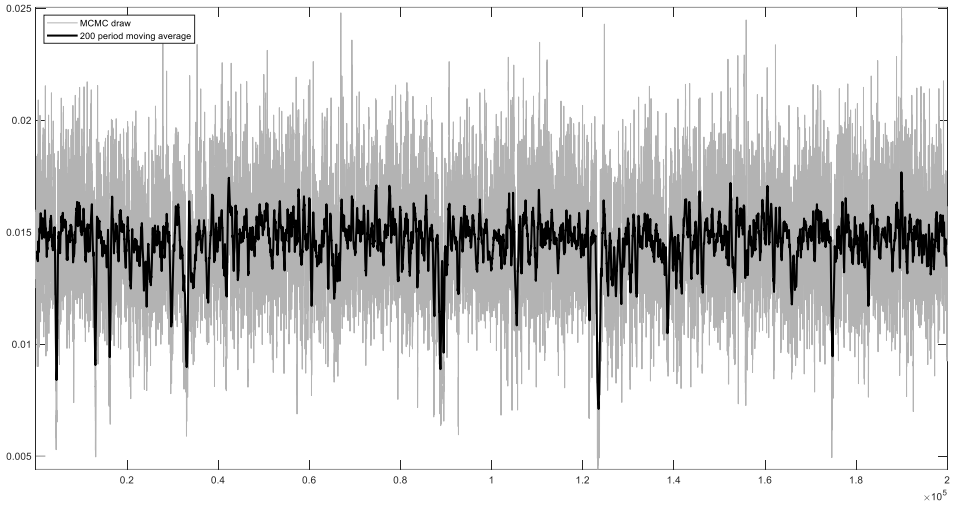


Figure 1: eps_ga

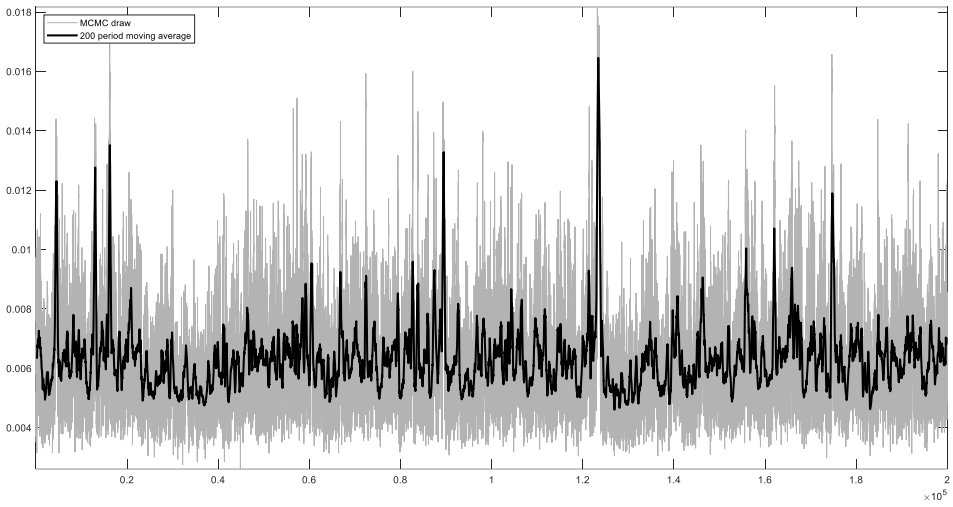


Figure 2: eps_al

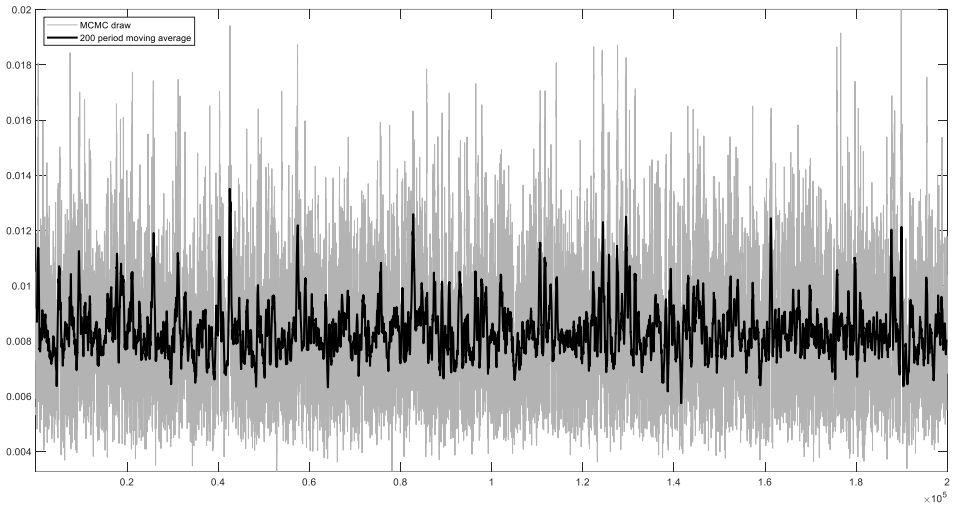


Figure 3: eps_gv

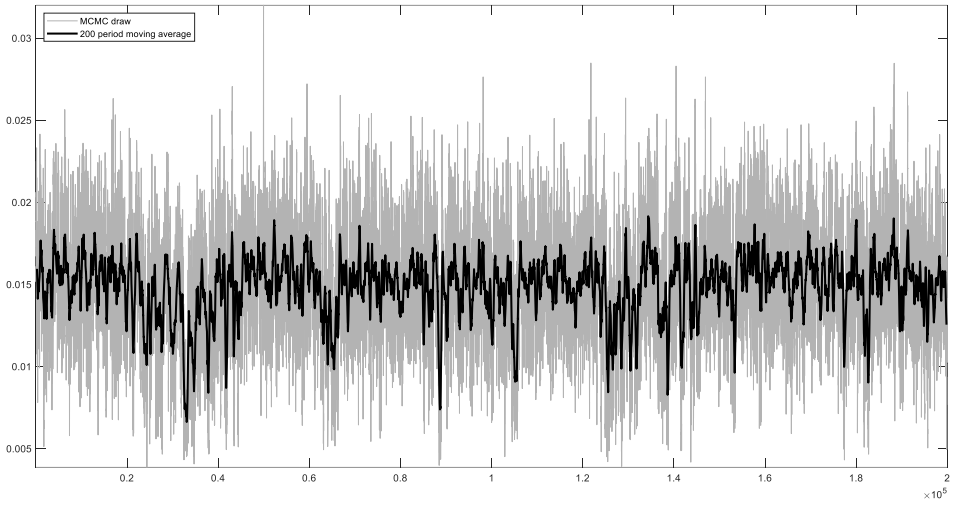


Figure 4: eps_vl

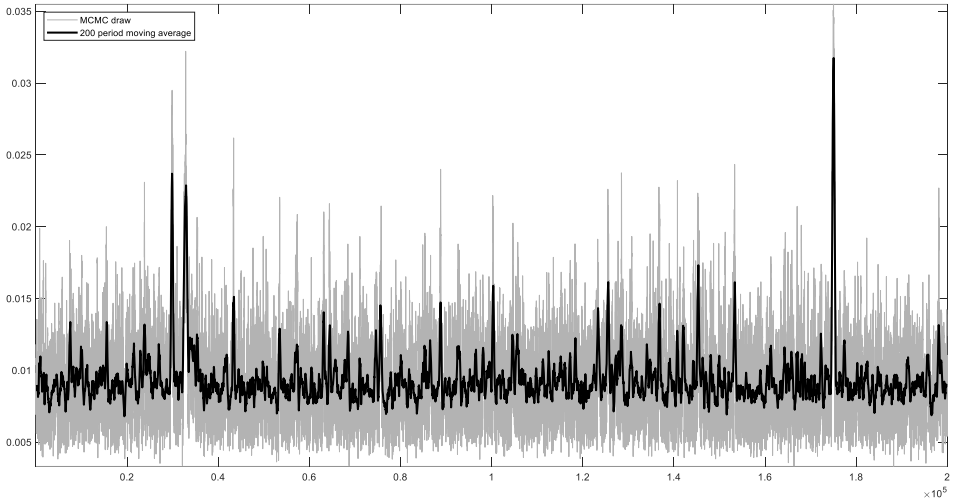


Figure 5: eps_xi

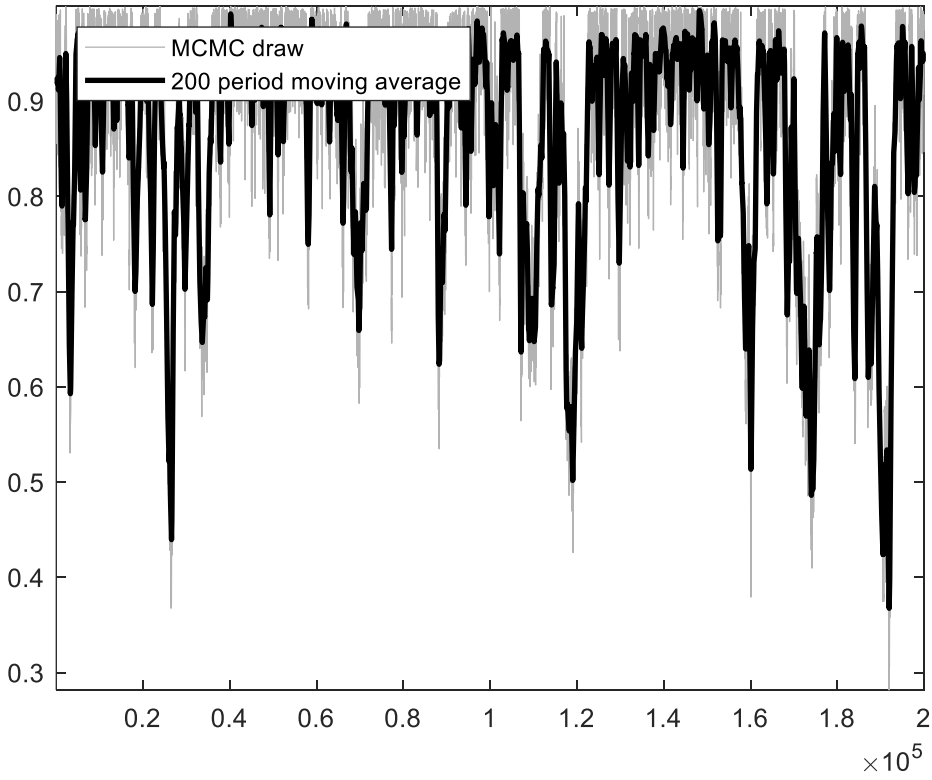


Figure 6: rho_al

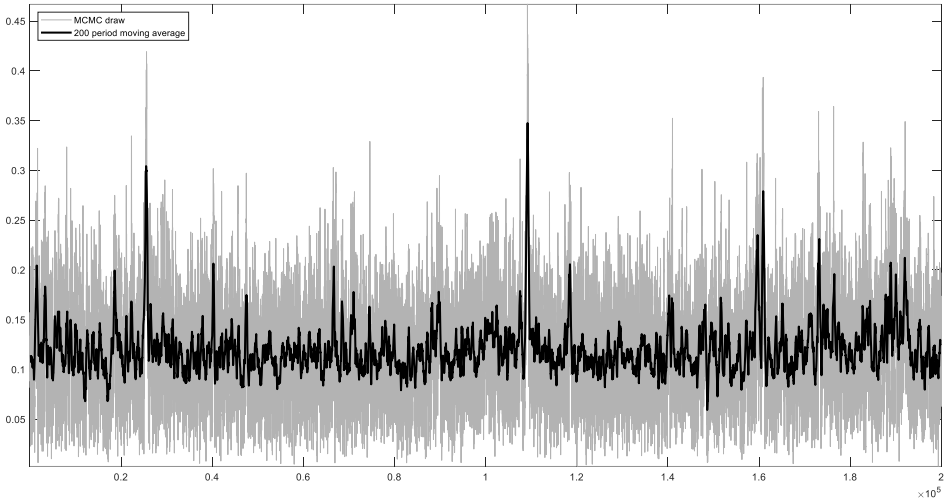


Figure 7: rho_ga

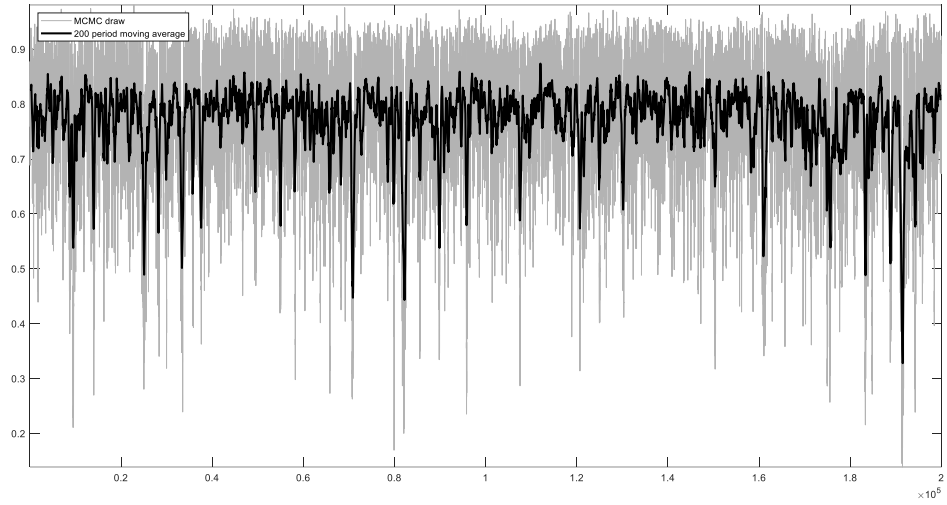


Figure 8: rho_vl

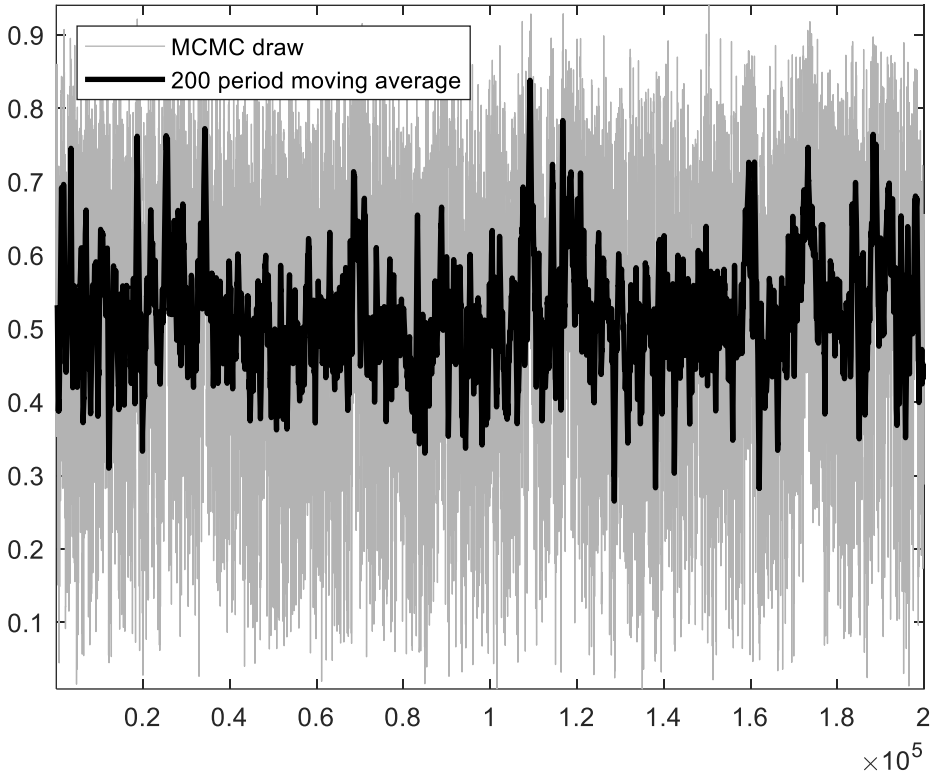


Figure 9: rho_gv

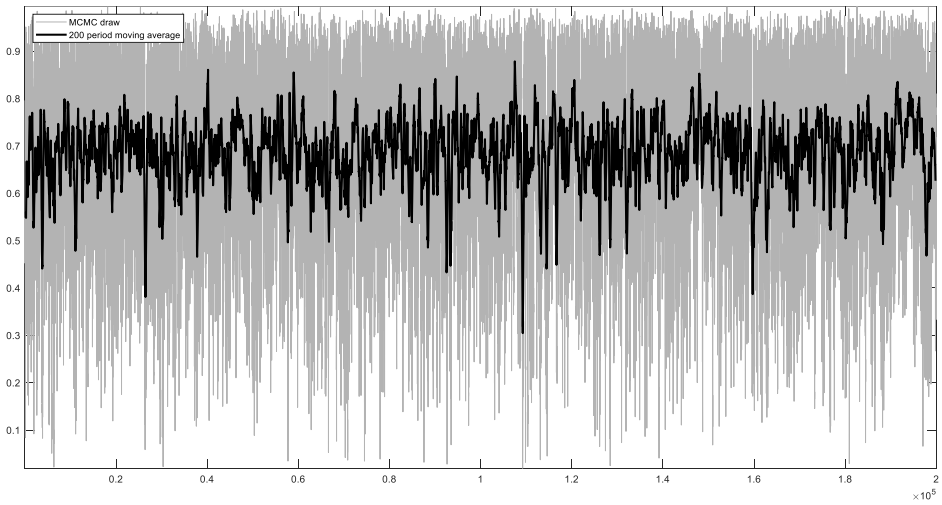


Figure 10: rho_xi

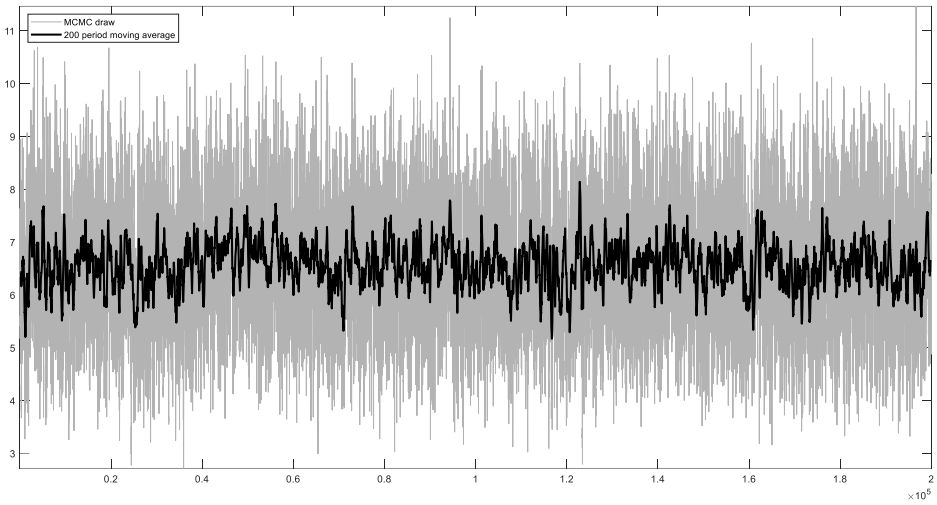


Figure 11: phi

ESTIMATION RESULTS

Log data density is 254.837459.

parameters

	prior mean	post. mean	90% HPD interval		prior	pstdev
rho_al	0.500	0.8572	0.6548	0.9993	beta	0.2000
rho_ga	0.500	0.1230	0.0426	0.2034	beta	0.2000
rho_vl	0.500	0.7704	0.6108	0.9280	beta	0.2000
rho_gv	0.500	0.5212	0.2424	0.7937	beta	0.2000
rho_xi	0.500	0.6837	0.4035	0.9588	beta	0.2000
phi	2.000	6.5840	4.6582	8.3350	norm	1.5000

standard deviation of shocks

	prior mean	post. mean	90% HPD interval		prior	pstdev
eps_ga	0.020	0.0146	0.0107	0.0184	invg	0.0500
eps_al	0.020	0.0063	0.0038	0.0088	invg	0.0500
eps_gv	0.020	0.0084	0.0050	0.0118	invg	0.0500
eps_vl	0.020	0.0148	0.0093	0.0205	invg	0.0500
eps_xi	0.020	0.0093	0.0051	0.0135	invg	0.0500

Estimation::mcmc: Posterior (dsge) IRFs...
Estimation::mcmc: Posterior IRFs, done!
Estimation::compute_moments_varendo: I'm computing endogenous moments (this may take a while)...

Posterior mean variance decomposition (in percent)

	eps_al	eps_vl	eps_ga	eps_gv	eps_xi
g_y	23.68	10.96	51.38	11.25	2.72
g_c	5.12	0.88	78.96	11.27	3.77
g_x	6.68	40.14	43.09	9.80	0.29

Identification Analysis

REDUCED-FORM:

All parameters are identified in the Jacobian of steady state and reduced-form solution matrices (rank(Tau) is full with tol = robust).

SPECTRUM (QU AND TKACHENKO, 2012):

All parameters are identified in the Jacobian of mean and spectrum (rank(Gbar) is full with tol = robust).

MOMENTS (ISKREV, 2010):

All parameters are identified in the Jacobian of first two moments (rank(J) is full with tol = robust).