

Table 1: Comparison of Monte Carlo Simulation Maximum Likelihood Estimates (BFGS) and Markov Chain Monte Carlo Estimates (MCMC) : for each number of observations, we used 1,000 number of simulations and the true parameter values are $\beta_0 = 1$, $\beta_1 = 3.5$, $\gamma_0 = -2$, $\gamma_1 = 2$ and $\gamma_2 = 3$.

#Obs.	Model	$\hat{\beta}_0$	SE($\hat{\beta}_0$)	MCSE($\hat{\beta}_0$)	RMSE($\hat{\beta}_0$)	$\hat{\beta}_1$	SE($\hat{\beta}_1$)	MCSE($\hat{\beta}_1$)	RMSE($\hat{\beta}_1$)
1,000	Exp	1.240	0.061		0.240	3.468	0.009		0.032
	Wei	1.314	0.072		0.314	3.466	0.011		0.034
	OF-Exp	1.008	0.067		0.052	3.499	0.010		0.008
	OF-Wei	1.007	0.067		0.053	3.499	0.010		0.008
	B-OF-Exp	0.972		0.038	0.086	3.503		0.004	0.011
	B-OF-Wei	0.008		7.16e-04	0.992	3.499		1.12e-04	0.008
1,500	Exp	1.247	0.049		0.247	3.466	0.008		0.034
	Wei	1.324	0.058		0.324	3.464	0.009		0.036
	OF-Exp	1.009	0.054		0.044	3.499	0.008		0.006
	OF-Wei	1.006	0.054		0.045	3.500	0.008		0.006
	B-OF-Exp	1.000		0.011	0.052	3.500		0.001	0.007
	B-OF-Wei	0.010		3.47e-04	0.990	3.499		5.30e-05	0.006
2,000	Exp	1.225	0.043		0.225	3.469	0.007		0.031
	Wei	1.291	0.050		0.291	3.468	0.008		0.032
	OF-Exp	1.007	0.047		0.037	3.499	0.007		0.005
	OF-Wei	1.006	0.048		0.037	3.499	0.007		0.005
	B-OF-Exp	0.966		0.051	0.081	3.503		0.005	0.010
	B-OF-Wei	0.008		7.78e-04	0.992	3.499		1.44e-04	0.005

#Obs.	Model	$\hat{\gamma}_0$	SE($\hat{\gamma}_0$)	MCSE($\hat{\gamma}_0$)	RMSE($\hat{\gamma}_0$)	$\hat{\gamma}_1$	SE($\hat{\gamma}_1$)	MCSE($\hat{\gamma}_1$)	RMSE($\hat{\gamma}_1$)	$\hat{\gamma}_2$	SE($\hat{\gamma}_2$)	MCSE($\hat{\gamma}_2$)	RMSE($\hat{\gamma}_2$)
1,000	OF-Exp	-1.763	1.235		0.964	2.152	0.497		0.406	3.446	0.721		0.619
	OF-Wei	-1.761	1.234		0.931	2.149	0.496		0.410	3.440	0.719		0.625
	B-OF-Exp	-1.409		0.172	0.962	2.012		0.154	0.477	3.339		0.222	0.664
	B-OF-Wei	-2.281		0.162	0.849	1.984		0.141	0.467	3.350		0.199	0.631
1,500	OF-Exp	-1.502	0.979		0.798	2.065	0.386		0.305	3.394	0.576		0.526
	OF-Wei	-1.505	0.976		0.796	2.055	0.384		0.308	3.371	0.571		0.530
	B-OF-Exp	-1.268		0.119	0.915	1.929		0.086	0.333	3.236		0.114	0.472
	B-OF-Wei	-2.140		0.087	0.610	1.887		0.053	0.310	3.219		0.067	0.431
2,000	OF-Exp	-1.560	0.914		0.777	2.064	0.362		0.292	3.362	0.517		0.474
	OF-Wei	-1.563	0.914		0.778	2.064	0.363		0.295	3.362	0.517		0.475
	B-OF-Exp	-1.806		0.453	1.325	2.524		0.381	0.839	4.142		0.609	1.321
	B-OF-Wei	-2.659		0.310	1.046	2.333		0.23	0.665	3.840		0.419	0.992

Table 2: Comparison of Monte Carlo Simulation Maximum Likelihood Estimates (BFGS) and Markov Chain Monte Carlo Estimates (MCMC) : for each number of observations, we used 1,000 number of simulations and the true parameter values are $\beta_0 = 1$ and $\beta_1 = 3.5$.

#Obs.	Model	$\hat{\beta}_0$	$SE(\hat{\beta}_0)$	$MCSE(\hat{\beta}_0)$	$RMSE(\hat{\beta}_0)$	$\hat{\beta}_1$	$SE(\hat{\beta}_1)$	$MCSE(\hat{\beta}_1)$	$RMSE(\hat{\beta}_1)$
1,000	Exp	0.999	0.066		0.051	3.500	0.010		0.007
	Wei	0.999	0.066		0.052	3.500	0.010		0.007
	OF-Exp	0.998	0.066		0.051	3.499	0.010		0.007
	OF-Wei	0.997	0.066		0.052	3.500	0.010		0.007
	B-OF-Exp	0.997		0.003	0.051	3.500		3.55e-04	0.007
	B-OF-Wei	-0.000		0.003	1.000	3.500		3.83e-04	0.007
1,500	Exp	1.002	0.053		0.042	3.500	0.008		0.006
	Wei	1.002	0.054		0.042	3.500	0.008		0.006
	OF-Exp	1.002	0.053		0.042	3.500	0.008		0.006
	OF-Wei	1.002	0.054		0.042	3.500	0.008		0.006
	B-OF-Exp	1.001		0.002	0.042	3.500		2.40e-04	0.006
	B-OF-Wei	0.002		0.002	0.998	3.500		2.62e-04	0.006
2,000	Exp	1.000	0.047		0.036	3.500	0.007		0.005
	Wei	0.999	0.047		0.036	3.500	0.007		0.005
	OF-Exp	1.000	0.047		0.036	3.500	0.007		0.005
	OF-Wei	1.006	0.048		0.036	3.500	0.007		0.005
	B-OF-Exp	0.999		0.001	0.036	3.500		1.82e-04	0.005
	B-OF-Wei	0.000		0.001	1.000	3.500		1.99e-04	0.005