

QMLE

DGP:

$$y_t = \varphi y_{t-1} + v_t + \theta v_{t-1}, \quad \varphi = 0.7, \quad \theta = -0.4, \quad v_t = \text{WN}$$

Sample size = 1000

Error sequence (i.i.d.)

MODEL (Gaussian)	Estimates/Diagnostics	U(-1,1)	Gamma (2,0.5)	t(5)	t(35)
ARMA(1,0)	phi (p-val)	0.387625 (0.000)	0.343297 (0.00)	0.382613(0.00)	0.263073(0.00)
	theta (p-val)	-	-	-	-
	log-likelihood value	-891.34	-1091.155	-1708.520	-1416.085
	AIC	1,786.69	2,188.31	3,423.04	2,838.17
ARMA(0,1)	phi (p-val)	-	-	-	-
	theta (p-val)	0.305012 (0.00)	0.263978 (0.00)	0.301993(0.00)	0.200489(0.00)
	log-likelihood value	-911.11	-1107.148	-1728.164	-1425.181
	AIC	1,826.23	2,220.30	3,462.33	2,856.36
ARMA(2,1)	phi-1 (p-val)	0.795295 (0.00)	0.325433 (0.1342)	0.891919 (0.00)	0.199704 (0.2251)
	phi-2 (p-val)	-0.0669457(0.4553)	0.124619 (0.1231)	-0.0844240(0.1870)	0.153534(0.00340)
	theta (p-val)	-0.455556 (0.0163)	-0.0274342 (0.9001)	-0.573038(0.00)	0.025316(0.8783)
	log-likelihood value	-884.1324	-1082.215	-1696.054	-1405.163
	AIC	1,776.27	2,174.43	3,402.11	2,820.33
ARMA(1,1)	phi (p-val)	0.648377 (0.00)	0.62374 (0.00)	0.725776(0.00)	0.597262(0.00)
	theta (p-val)	-0.313269 (0.00)	-0.317426 (0.00)	-0.418817(0.00)	-0.354187(0.00)
	log-likelihood value	-884.3928	-1083.162	-1696.829	-1408.039
	AIC	1,774.79	2,174.33	3,401.66	2,824.08

Note 1: For the case where the Error sequence is Gamma(2,0.5), one should specify also a constant term in the model, or first subtract from the generated i.i.d. series its mean, and then create the **y**-process and run ARIMA estimation.

Note 2: The above simulation used artificial data coming from a random-number generator. Therefore they cannot be replicated exactly.

Note 3: The software used was Gretl