

Table 9

Sample Size N=128									
Model: $y_t = \phi y_{t-1} + \epsilon_t - \theta \epsilon_{t-1}, \epsilon_t = u_t \sqrt{h_t}, h_t = \gamma_0 + \gamma_1 \epsilon_{t-1}^2$									
Estimator	ϕ	γ_1	Empirical Quantiles			Mean	MAE	Var	Rel Eff
			.05	.5	.95				
ϕ_{OLS}	-0.9	0.9	-0.964	-0.901	-0.762	-0.88836	0.04695	0.00476	1.00000
$\tilde{\phi}(\hat{a})$			-0.954	-0.891	-0.741	-0.87558	0.04945	0.00749	1.57368
ϕ_{OLS}	-0.6	0.9	-0.788	-0.597	-0.304	-0.57550	0.11934	0.02536	1.00000
$\tilde{\phi}(\hat{a})$			-0.764	-0.583	-0.300	-0.56016	0.11695	0.02535	0.99986
ϕ_{OLS}	-0.3	0.9	-0.655	-0.325	0.095	-0.30558	0.18018	0.05363	1.00000
$\tilde{\phi}(\hat{a})$			-0.632	-0.306	0.198	-0.27958	0.18776	0.06423	1.19764
ϕ_{OLS}	-0.0	0.9	-0.566	-0.101	0.563	-0.06072	0.28451	0.11567	1.00000
$\tilde{\phi}(\hat{a})$			-0.634	-0.024	0.696	0.01791	0.31965	0.15689	1.35645
ϕ_{OLS}	0.3	0.9	-0.802	-0.043	0.803	-0.00546	0.46551	0.22407	1.00000
$\tilde{\phi}(\hat{a})$			-0.888	0.027	0.849	0.02475	0.51060	0.30231	1.34916
ϕ_{OLS}	0.6	0.9	-0.694	0.353	0.873	0.25985	0.43672	0.23114	1.00000
$\tilde{\phi}(\hat{a})$			-0.803	0.410	0.927	0.26366	0.46681	0.29674	1.28385
ϕ_{OLS}	0.9	0.9	0.666	0.900	0.971	0.86855	0.06929	0.01656	1.00000
$\tilde{\phi}(\hat{a})$			0.671	0.887	0.960	0.85722	0.06991	0.01630	0.98470

Table 10

Sample Size N=1024									
Model: $y_t = \phi y_{t-1} + \epsilon_t - \theta \epsilon_{t-1}, \epsilon_t = u_t \sqrt{h_t}, h_t = \gamma_0 + \gamma_1 \epsilon_{t-1}^2$									
Estimator	ϕ	γ_1	Empirical Quantiles			Mean	MAE	Var	Rel Eff
			.05	.5	.95				
ϕ_{OLS}	-0.9	0.9	-0.935	-0.896	-0.835	-0.89059	0.02529	0.00156	1.00000
$\tilde{\phi}(\hat{a})$			-0.923	-0.897	-0.854	-0.89303	0.01758	0.00085	0.54529
ϕ_{OLS}	-0.6	0.9	-0.722	-0.596	-0.428	-0.58535	0.07120	0.01131	1.00000
$\tilde{\phi}(\hat{a})$			-0.699	-0.590	-0.414	-0.57568	0.06816	0.01044	0.92283
ϕ_{OLS}	-0.3	0.9	-0.528	-0.304	-0.048	-0.29612	0.10936	0.02170	1.00000
$\tilde{\phi}(\hat{a})$			-0.516	-0.302	-0.042	-0.28974	0.10834	0.02295	1.05780
ϕ_{OLS}	-0.0	0.9	-0.380	-0.011	0.362	-0.02150	0.17684	0.05202	1.00000
$\tilde{\phi}(\hat{a})$			-0.429	-0.014	0.456	-0.01504	0.18942	0.06910	1.32823
ϕ_{OLS}	0.3	0.9	-0.634	0.078	0.712	0.07017	0.38590	0.17436	1.00000
$\tilde{\phi}(\hat{a})$			-0.818	0.117	0.860	0.08200	0.42794	0.24032	1.37831
ϕ_{OLS}	0.6	0.9	-0.411	0.561	0.804	0.44205	0.25274	0.12562	1.00000
$\tilde{\phi}(\hat{a})$			-0.465	0.562	0.882	0.46006	0.25725	0.14264	1.13547
ϕ_{OLS}	0.9	0.9	0.825	0.899	0.935	0.88425	0.03438	0.01096	1.00000
$\tilde{\phi}(\hat{a})$			0.846	0.898	0.928	0.88390	0.02930	0.01109	1.01215

Table 11

Sample Size N=128									
Model: $y_t = \phi y_{t-1} + \epsilon_t - \theta \epsilon_{t-1}, \epsilon_t = u_t \sqrt{h_t}, h_t = \gamma_0 + \gamma_1 \epsilon_{t-1}^2$									
Estimator	ϕ	γ_1	Empirical Quantiles			Mean	MAE	Var	Rel Eff
			.05	.5	.95				
θ_{OLS}	-0.9	0.9	0.044	0.418	0.669	0.40180	1.30180	0.03522	1.00000
$\tilde{\theta}(\hat{a})$			0.038	0.383	0.644	0.37136	1.27136	0.03442	0.97721
θ_{OLS}	-0.6	0.9	0.059	0.435	0.691	0.41803	1.01803	0.03609	1.00000
$\tilde{\theta}(\hat{a})$			0.079	0.424	0.678	0.40597	1.00600	0.03573	0.99013
θ_{OLS}	-0.3	0.9	-0.002	0.422	0.736	0.39102	0.69490	0.05848	1.00000
$\tilde{\theta}(\hat{a})$			-0.023	0.420	0.819	0.40625	0.71376	0.06689	1.14376
θ_{OLS}	-0.0	0.9	-0.247	0.387	0.798	0.32805	0.39550	0.12138	1.00000
$\tilde{\theta}(\hat{a})$			-0.361	0.467	0.983	0.41819	0.50436	0.15506	1.27749
θ_{OLS}	0.3	0.9	-0.861	0.000	0.897	0.08420	0.45621	0.26032	1.00000
$\tilde{\theta}(\hat{a})$			-0.938	0.161	0.960	0.11867	0.51094	0.34732	1.33417
θ_{OLS}	0.6	0.9	-0.754	0.000	0.733	0.05398	0.57760	0.19134	1.00000
$\tilde{\theta}(\hat{a})$			-0.876	0.060	0.840	0.04871	0.61071	0.26748	1.39792
θ_{OLS}	0.9	0.9	-0.054	0.381	0.691	0.35942	0.54070	0.05352	1.00000
$\tilde{\theta}(\hat{a})$			-0.135	0.340	0.635	0.30786	0.59214	0.06996	1.30708

Table 12

Sample Size N=1024									
Model: $y_t = \phi y_{t-1} + \epsilon_t - \theta \epsilon_{t-1}, \epsilon_t = u_t \sqrt{h_t}, h_t = \gamma_0 + \gamma_1 \epsilon_{t-1}^2$									
Estimator	ϕ	γ_1	Empirical Quantiles			Mean	MAE	Var	Rel Eff
			.05	.5	.95				
θ_{OLS}	-0.9	0.9	0.233	0.415	0.573	0.40805	1.30805	0.01110	1.00000
$\tilde{\theta}(\hat{a})$			0.230	0.408	0.543	0.39928	1.29928	0.01092	0.98366
θ_{OLS}	-0.6	0.9	0.223	0.422	0.602	0.41426	1.01426	0.01556	1.00000
$\tilde{\theta}(\hat{a})$			0.232	0.420	0.596	0.41312	1.01312	0.01407	0.90390
θ_{OLS}	-0.3	0.9	0.167	0.412	0.609	0.40255	0.70347	0.02108	1.00000
$\tilde{\theta}(\hat{a})$			0.173	0.412	0.607	0.40622	0.70808	0.02321	1.10115
θ_{OLS}	-0.0	0.9	0.000	0.405	0.681	0.38372	0.39370	0.04101	1.00000
$\tilde{\theta}(\hat{a})$			0.046	0.407	0.823	0.39951	0.42819	0.06348	1.54795
θ_{OLS}	0.3	0.9	-0.576	0.190	0.781	0.17724	0.36237	0.17877	1.00000
$\tilde{\theta}(\hat{a})$			-0.782	0.272	0.979	0.19430	0.41488	0.25855	1.44628
θ_{OLS}	0.6	0.9	-0.450	0.302	0.668	0.24072	0.37724	0.11355	1.00000
$\tilde{\theta}(\hat{a})$			-0.527	0.309	0.790	0.24991	0.39349	0.14176	1.24839
θ_{OLS}	0.9	0.9	0.135	0.400	0.589	0.37980	0.52020	0.02637	1.00000
$\tilde{\theta}(\hat{a})$			0.106	0.392	0.552	0.35371	0.54629	0.04809	1.82383

Table 13

Sample Size N=128									
Model: $y_t = \phi y_{t-1} + \epsilon_t - \theta \epsilon_{t-1}, \epsilon_t = u_t \sqrt{h_t}, h_t = \gamma_0 + \gamma_1 \epsilon_{t-1}^2$									
Estimator	ϕ	γ_1	Empirical Quantiles			Mean	MAE	Var	Rel Eff
			.05	.5	.95				
ϕ_{OLS}	-0.9	0.9	-0.964	-0.901	-0.762	-0.88836	0.04695	0.00476	1.00000
$\tilde{\phi}(\hat{a}(5))$			-0.954	-0.894	-0.769	-0.88235	0.04380	0.00394	0.82849
$\tilde{\phi}(\hat{a}(10))$			-0.957	-0.897	-0.771	-0.88557	0.04333	0.00409	0.86038
$\tilde{\phi}(\hat{a}(\sqrt{n}))$			-0.958	-0.899	-0.766	-0.88580	0.04371	0.00436	0.91599
$\tilde{\phi}(\hat{a}(n^{2/5}))$			-0.955	-0.893	-0.760	-0.88218	0.04382	0.00395	0.83112
ϕ_{OLS}	-0.6	0.9	-0.788	-0.597	-0.304	-0.57550	0.11934	0.02536	1.00000
$\tilde{\phi}(\hat{a}(5))$			-0.774	-0.591	-0.306	-0.57354	0.11351	0.02318	0.91401
$\tilde{\phi}(\hat{a}(10))$			-0.798	-0.598	-0.303	-0.57566	0.12016	0.02720	1.07259
$\tilde{\phi}(\hat{a}(\sqrt{n}))$			-0.806	-0.597	-0.289	-0.57584	0.12228	0.02789	1.10009
$\tilde{\phi}(\hat{a}(n^{2/5}))$			-0.786	-0.594	-0.313	-0.57641	0.11590	0.02372	0.93545
ϕ_{OLS}	-0.3	0.9	-0.655	-0.325	0.095	-0.30558	0.18018	0.05363	1.00000
$\tilde{\phi}(\hat{a}(5))$			-0.658	-0.317	0.168	-0.28846	0.19963	0.06817	1.27108
$\tilde{\phi}(\hat{a}(10))$			-0.693	-0.334	0.161	-0.30548	0.20283	0.06905	1.28740
$\tilde{\phi}(\hat{a}(\sqrt{n}))$			-0.684	-0.326	0.160	-0.30483	0.20372	0.07137	1.33071
$\tilde{\phi}(\hat{a}(n^{2/5}))$			-0.672	-0.331	0.155	-0.29839	0.20032	0.06925	1.29124
ϕ_{OLS}	-0.0	0.9	-0.566	-0.101	0.563	-0.06072	0.28451	0.11567	1.00000
$\tilde{\phi}(\hat{a}(5))$			-0.659	-0.016	0.717	0.00268	0.31791	0.15796	1.36564
$\tilde{\phi}(\hat{a}(10))$			-0.669	-0.020	0.715	-0.00275	0.32457	0.16570	1.43257
$\tilde{\phi}(\hat{a}(\sqrt{n}))$			-0.691	-0.031	0.724	-0.00744	0.32853	0.16998	1.46957
$\tilde{\phi}(\hat{a}(n^{2/5}))$			-0.653	-0.012	0.722	0.00136	0.32373	0.16383	1.41638
ϕ_{OLS}	0.3	0.9	-0.802	-0.043	0.803	-0.00546	0.46551	0.22407	1.00000
$\tilde{\phi}(\hat{a}(5))$			-0.910	0.025	0.878	0.01619	0.51561	0.31100	1.38794
$\tilde{\phi}(\hat{a}(10))$			-0.904	0.032	0.905	0.03180	0.52015	0.32095	1.43235
$\tilde{\phi}(\hat{a}(\sqrt{n}))$			-0.912	0.032	0.898	0.02124	0.52711	0.32340	1.44327
$\tilde{\phi}(\hat{a}(n^{2/5}))$			-0.912	0.022	0.874	0.00477	0.51857	0.31130	1.38931
ϕ_{OLS}	0.6	0.9	-0.694	0.353	0.873	0.25985	0.43672	0.23114	1.00000
$\tilde{\phi}(\hat{a}(5))$			-0.856	0.425	0.912	0.27147	0.45780	0.29939	1.29531
$\tilde{\phi}(\hat{a}(10))$			-0.877	0.450	0.925	0.28060	0.45167	0.30225	1.30767
$\tilde{\phi}(\hat{a}(\sqrt{n}))$			-0.863	0.448	0.925	0.27751	0.45410	0.30223	1.30761
$\tilde{\phi}(\hat{a}(n^{2/5}))$			-0.861	0.433	0.913	0.27514	0.45301	0.29688	1.28445
ϕ_{OLS}	0.9	0.9	0.666	0.900	0.971	0.86855	0.06929	0.01656	1.00000
$\tilde{\phi}(\hat{a}(5))$			0.696	0.890	0.960	0.86267	0.06643	0.01593	0.96201
$\tilde{\phi}(\hat{a}(10))$			0.694	0.893	0.964	0.86668	0.06401	0.01398	0.84436
$\tilde{\phi}(\hat{a}(\sqrt{n}))$			0.693	0.895	0.964	0.86727	0.06413	0.01472	0.88883
$\tilde{\phi}(\hat{a}(n^{2/5}))$			0.701	0.890	0.958	0.86363	0.06510	0.01411	0.85241

Table 14

Sample Size N=1024									
Model: $y_t = \phi y_{t-1} + \epsilon_t - \theta \epsilon_{t-1}, \epsilon_t = u_t \sqrt{h_t}, h_t = \gamma_0 + \gamma_1 \epsilon_{t-1}^2$									
Estimator	ϕ	γ_1	Empirical Quantiles			Mean	MAE	Var	Rel Eff
			.05	.5	.95				
ϕ_{OLS}	-0.9	0.9	-0.935	-0.896	-0.835	-0.89059	0.02529	0.00156	1.00000
$\tilde{\phi}(\hat{a}(5))$			-0.926	-0.897	-0.851	-0.89319	0.01861	0.00096	0.61672
$\tilde{\phi}(\hat{a}(10))$			-0.924	-0.898	-0.859	-0.89490	0.01636	0.00067	0.43063
$\tilde{\phi}(\hat{a}(\sqrt{n}))$			-0.925	-0.898	-0.861	-0.89589	0.01570	0.00054	0.34304
$\tilde{\phi}(\hat{a}(n^{2/5}))$			-0.923	-0.899	-0.861	-0.89542	0.01583	0.00061	0.39164
ϕ_{OLS}	-0.6	0.9	-0.722	-0.596	-0.428	-0.58535	0.07120	0.01131	1.00000
$\tilde{\phi}(\hat{a}(5))$			-0.708	-0.595	-0.432	-0.58244	0.06813	0.01205	1.06506
$\tilde{\phi}(\hat{a}(10))$			-0.714	-0.595	-0.444	-0.58759	0.06560	0.01097	0.97029
$\tilde{\phi}(\hat{a}(\sqrt{n}))$			-0.711	-0.599	-0.461	-0.59052	0.06407	0.01100	0.97238
$\tilde{\phi}(\hat{a}(n^{2/5}))$			-0.715	-0.594	-0.448	-0.58863	0.06692	0.01239	1.09504
ϕ_{OLS}	-0.3	0.9	-0.528	-0.304	-0.048	-0.29612	0.10936	0.02170	1.00000
$\tilde{\phi}(\hat{a}(5))$			-0.537	-0.307	-0.051	-0.30032	0.11110	0.02440	1.12428
$\tilde{\phi}(\hat{a}(10))$			-0.553	-0.310	-0.078	-0.30623	0.11161	0.02427	1.11832
$\tilde{\phi}(\hat{a}(\sqrt{n}))$			-0.539	-0.312	-0.065	-0.30454	0.10751	0.02210	1.01857
$\tilde{\phi}(\hat{a}(n^{2/5}))$			-0.545	-0.312	-0.081	-0.30522	0.11028	0.02494	1.14945
ϕ_{OLS}	-0.0	0.9	-0.380	-0.011	0.362	-0.02150	0.17684	0.05202	1.00000
$\tilde{\phi}(\hat{a}(5))$			-0.382	-0.005	0.408	-0.00261	0.17966	0.06359	1.22232
$\tilde{\phi}(\hat{a}(10))$			-0.394	-0.010	0.389	-0.01181	0.18239	0.06365	1.22342
$\tilde{\phi}(\hat{a}(\sqrt{n}))$			-0.378	-0.010	0.372	-0.00747	0.17511	0.05681	1.09194
$\tilde{\phi}(\hat{a}(n^{2/5}))$			-0.402	-0.017	0.388	-0.01280	0.17760	0.05803	1.11542
ϕ_{OLS}	0.3	0.9	-0.634	0.078	0.712	0.07017	0.38590	0.17436	1.00000
$\tilde{\phi}(\hat{a}(5))$			-0.795	0.115	0.780	0.07422	0.42084	0.22712	1.30261
$\tilde{\phi}(\hat{a}(10))$			-0.710	0.119	0.790	0.09218	0.41545	0.22203	1.27340
$\tilde{\phi}(\hat{a}(\sqrt{n}))$			-0.761	0.092	0.787	0.06617	0.42322	0.22473	1.28890
$\tilde{\phi}(\hat{a}(n^{2/5}))$			-0.726	0.113	0.786	0.08006	0.41749	0.22100	1.26748
ϕ_{OLS}	0.6	0.9	-0.411	0.561	0.804	0.44205	0.25274	0.12562	1.00000
$\tilde{\phi}(\hat{a}(5))$			-0.398	0.556	0.842	0.46026	0.24409	0.13161	1.04768
$\tilde{\phi}(\hat{a}(10))$			-0.350	0.575	0.824	0.46960	0.22965	0.12594	1.00258
$\tilde{\phi}(\hat{a}(\sqrt{n}))$			-0.339	0.579	0.842	0.48342	0.22682	0.12541	0.99836
$\tilde{\phi}(\hat{a}(n^{2/5}))$			-0.368	0.579	0.844	0.47948	0.22952	0.12302	0.97935
ϕ_{OLS}	0.9	0.9	0.825	0.899	0.935	0.88425	0.03438	0.01096	1.00000
$\tilde{\phi}(\hat{a}(5))$			0.846	0.899	0.930	0.88607	0.02841	0.01361	1.24219
$\tilde{\phi}(\hat{a}(10))$			0.850	0.899	0.927	0.88684	0.02581	0.01088	0.99238
$\tilde{\phi}(\hat{a}(\sqrt{n}))$			0.851	0.900	0.928	0.88970	0.02435	0.01014	0.92517
$\tilde{\phi}(\hat{a}(n^{2/5}))$			0.852	0.899	0.927	0.88685	0.02610	0.01219	1.11239

Table 15

Sample Size N=128									
Model: $y_t = \phi y_{t-1} + \epsilon_t - \theta \epsilon_{t-1}, \epsilon_t = u_t \sqrt{h_t}, h_t = \gamma_0 + \gamma_1 \epsilon_{t-1}^2$									
Estimator	ϕ	γ_1	Empirical Quantiles			Mean	MAE	Var	Rel Eff
			.05	.5	.95				
θ_{OLS}	-0.9	0.9	0.044	0.418	0.669	0.40180	1.30180	0.03522	1.00000
$\tilde{\theta}(\hat{a}(5))$			0.071	0.375	0.623	0.36419	1.26419	0.03028	0.85959
$\tilde{\theta}(\hat{a}(10))$			0.048	0.379	0.631	0.36321	1.26321	0.03285	0.93254
$\tilde{\theta}(\hat{a}(\sqrt{n}))$			0.045	0.380	0.634	0.36492	1.26492	0.03361	0.95431
$\tilde{\theta}(\hat{a}(n^{2/5}))$			0.072	0.375	0.623	0.36566	1.26566	0.03019	0.85717
θ_{OLS}	-0.6	0.9	0.059	0.435	0.691	0.41803	1.01803	0.03609	1.00000
$\tilde{\theta}(\hat{a}(5))$			0.071	0.419	0.646	0.39840	0.99840	0.03418	0.94719
$\tilde{\theta}(\hat{a}(10))$			0.067	0.422	0.662	0.40022	1.00053	0.03707	1.02737
$\tilde{\theta}(\hat{a}(\sqrt{n}))$			0.058	0.419	0.660	0.39900	0.99927	0.03849	1.06654
$\tilde{\theta}(\hat{a}(n^{2/5}))$			0.063	0.424	0.659	0.39946	0.99946	0.03357	0.93022
θ_{OLS}	-0.3	0.9	-0.002	0.422	0.736	0.39102	0.69490	0.05848	1.00000
$\tilde{\theta}(\hat{a}(5))$			-0.024	0.418	0.753	0.39907	0.70441	0.05798	0.99137
$\tilde{\theta}(\hat{a}(10))$			-0.051	0.406	0.732	0.38259	0.69113	0.06219	1.06332
$\tilde{\theta}(\hat{a}(\sqrt{n}))$			-0.058	0.406	0.740	0.38550	0.69196	0.06039	1.03263
$\tilde{\theta}(\hat{a}(n^{2/5}))$			-0.037	0.413	0.728	0.38993	0.69799	0.06167	1.05449
θ_{OLS}	-0.0	0.9	-0.247	0.387	0.798	0.32805	0.39550	0.12138	1.00000
$\tilde{\theta}(\hat{a}(5))$			-0.349	0.447	0.937	0.39612	0.47836	0.13846	1.14069
$\tilde{\theta}(\hat{a}(10))$			-0.318	0.447	0.905	0.39184	0.47600	0.13858	1.14168
$\tilde{\theta}(\hat{a}(\sqrt{n}))$			-0.334	0.443	0.899	0.38667	0.47786	0.14473	1.19231
$\tilde{\theta}(\hat{a}(n^{2/5}))$			-0.333	0.451	0.917	0.39314	0.47882	0.14104	1.16195
θ_{OLS}	0.3	0.9	-0.861	0.000	0.897	0.08420	0.45621	0.26032	1.00000
$\tilde{\theta}(\hat{a}(5))$			-0.922	0.142	0.951	0.10510	0.51525	0.34639	1.33062
$\tilde{\theta}(\hat{a}(10))$			-0.903	0.173	0.959	0.12372	0.50760	0.34346	1.31935
$\tilde{\theta}(\hat{a}(\sqrt{n}))$			-0.915	0.162	0.944	0.11617	0.51105	0.34302	1.31767
$\tilde{\theta}(\hat{a}(n^{2/5}))$			-0.920	0.143	0.938	0.09891	0.50757	0.33753	1.29657
θ_{OLS}	0.6	0.9	-0.754	0.000	0.733	0.05398	0.57760	0.19134	1.00000
$\tilde{\theta}(\hat{a}(5))$			-0.845	0.079	0.790	0.05564	0.59080	0.24324	1.27127
$\tilde{\theta}(\hat{a}(10))$			-0.820	0.103	0.814	0.06648	0.58534	0.24378	1.27406
$\tilde{\theta}(\hat{a}(\sqrt{n}))$			-0.837	0.103	0.822	0.06374	0.58680	0.24442	1.27742
$\tilde{\theta}(\hat{a}(n^{2/5}))$			-0.842	0.087	0.803	0.05891	0.59068	0.24342	1.27220
θ_{OLS}	0.9	0.9	-0.054	0.381	0.691	0.35942	0.54070	0.05352	1.00000
$\tilde{\theta}(\hat{a}(5))$			-0.067	0.345	0.640	0.32677	0.57328	0.04907	0.91691
$\tilde{\theta}(\hat{a}(10))$			-0.045	0.338	0.638	0.32600	0.57400	0.04643	0.86759
$\tilde{\theta}(\hat{a}(\sqrt{n}))$			-0.058	0.337	0.638	0.32654	0.57346	0.04804	0.89755
$\tilde{\theta}(\hat{a}(n^{2/5}))$			-0.059	0.343	0.645	0.32543	0.57461	0.04787	0.89445

Table 16

Sample Size N=1024									
Model: $y_t = \phi y_{t-1} + \epsilon_t - \theta \epsilon_{t-1}, \epsilon_t = u_t \sqrt{h_t}, h_t = \gamma_0 + \gamma_1 \epsilon_{t-1}^2$									
Estimator	ϕ	γ_1	Empirical Quantiles			Mean	MAE	Var	Rel Eff
			.05	.5	.95				
θ_{OLS}	-0.9	0.9	0.233	0.415	0.573	0.40805	1.30805	0.01110	1.00000
$\tilde{\theta}(\hat{a}(5))$			0.230	0.399	0.525	0.39188	1.29188	0.01013	0.91260
$\tilde{\theta}(\hat{a}(10))$			0.228	0.399	0.527	0.39218	1.29218	0.00967	0.87088
$\tilde{\theta}(\hat{a}(\sqrt{n}))$			0.222	0.400	0.535	0.39152	1.29152	0.00990	0.89181
$\tilde{\theta}(\hat{a}(n^{2/5}))$			0.227	0.399	0.526	0.39020	1.29020	0.00980	0.88278
θ_{OLS}	-0.6	0.9	0.223	0.422	0.602	0.41426	1.01426	0.01556	1.00000
$\tilde{\theta}(\hat{a}(5))$			0.226	0.412	0.570	0.40676	1.00676	0.01327	0.85287
$\tilde{\theta}(\hat{a}(10))$			0.234	0.410	0.566	0.40629	1.00684	0.01325	0.85175
$\tilde{\theta}(\hat{a}(\sqrt{n}))$			0.227	0.410	0.561	0.40398	1.00398	0.01293	0.83079
$\tilde{\theta}(\hat{a}(n^{2/5}))$			0.233	0.411	0.565	0.40541	1.00541	0.01326	0.85192
θ_{OLS}	-0.3	0.9	0.167	0.412	0.609	0.40255	0.70347	0.02108	1.00000
$\tilde{\theta}(\hat{a}(5))$			0.174	0.404	0.597	0.39844	0.69983	0.02081	0.98709
$\tilde{\theta}(\hat{a}(10))$			0.163	0.401	0.583	0.39186	0.69336	0.01997	0.94731
$\tilde{\theta}(\hat{a}(\sqrt{n}))$			0.168	0.402	0.592	0.39328	0.69435	0.01879	0.89134
$\tilde{\theta}(\hat{a}(n^{2/5}))$			0.162	0.401	0.589	0.39351	0.69449	0.01929	0.91515
θ_{OLS}	-0.0	0.9	0.000	0.405	0.681	0.38372	0.39370	0.04101	1.00000
$\tilde{\theta}(\hat{a}(5))$			0.103	0.411	0.715	0.39918	0.41308	0.04194	1.02262
$\tilde{\theta}(\hat{a}(10))$			0.067	0.405	0.691	0.38781	0.40845	0.04429	1.08001
$\tilde{\theta}(\hat{a}(\sqrt{n}))$			0.066	0.407	0.671	0.38935	0.40776	0.04170	1.01690
$\tilde{\theta}(\hat{a}(n^{2/5}))$			0.051	0.403	0.687	0.38565	0.40358	0.04139	1.00924
θ_{OLS}	0.3	0.9	-0.576	0.190	0.781	0.17724	0.36237	0.17877	1.00000
$\tilde{\theta}(\hat{a}(5))$			-0.695	0.264	0.848	0.18789	0.39412	0.22795	1.27508
$\tilde{\theta}(\hat{a}(10))$			-0.631	0.279	0.844	0.20515	0.38374	0.21594	1.20791
$\tilde{\theta}(\hat{a}(\sqrt{n}))$			-0.700	0.258	0.830	0.17476	0.39340	0.22377	1.25169
$\tilde{\theta}(\hat{a}(n^{2/5}))$			-0.662	0.259	0.820	0.19533	0.38383	0.21528	1.20422
θ_{OLS}	0.6	0.9	-0.450	0.302	0.668	0.24072	0.37724	0.11355	1.00000
$\tilde{\theta}(\hat{a}(5))$			-0.515	0.301	0.700	0.24361	0.38368	0.12325	1.08542
$\tilde{\theta}(\hat{a}(10))$			-0.471	0.313	0.689	0.25269	0.37101	0.11653	1.02625
$\tilde{\theta}(\hat{a}(\sqrt{n}))$			-0.524	0.327	0.715	0.26442	0.36364	0.12319	1.08487
$\tilde{\theta}(\hat{a}(n^{2/5}))$			-0.434	0.321	0.714	0.26081	0.36605	0.11563	1.01827
θ_{OLS}	0.9	0.9	0.135	0.400	0.589	0.37980	0.52020	0.02637	1.00000
$\tilde{\theta}(\hat{a}(5))$			0.136	0.388	0.546	0.36656	0.53344	0.02223	0.84288
$\tilde{\theta}(\hat{a}(10))$			0.147	0.382	0.535	0.36397	0.53603	0.01975	0.74882
$\tilde{\theta}(\hat{a}(\sqrt{n}))$			0.158	0.384	0.548	0.36652	0.53348	0.02159	0.81879
$\tilde{\theta}(\hat{a}(n^{2/5}))$			0.155	0.382	0.543	0.36475	0.53525	0.02096	0.79488