Average value for each performance metric of different estimators for shape and scale parameters of the GPD.

This Supplemental Material gives simulation results for comparison on the performance of twenty-one estimators in parameter estimation of both the scale and shape with (POT Framework) and without the POT (NOT-POT Framework). The value of the shape parameter used are $\xi = -3, -2, -1, -0.5, 0, 1, 2, 3, 5$ and that of the scale parameter are $1, 10$. Number of observations considered ranged from small to large, that is $n = 10, 20, 30, 50, 100, 200, 500, 1000$.

I. To find the best estimator for varying the shape parameter at a particular value of scale parameter, the average value of both ξ and σ for each performance metric across all sample sizes are computed using:

$$\begin{cases} B_\xi = \dfrac{\sum_{i=1}^{m} \delta_i}{m} \\ B_\sigma = \dfrac{\sum_{i=1}^{m} \omega_i}{m} \end{cases} \quad (1)$$

where δ is the value of $\hat{\xi}$ for each method, ω is the value of $\hat{\sigma}$ for each method and m is the number of sample size.

II. To find the best estimator for varying sample sizes, compute the average for each performance metric across all values of the shape parameter at a particular value of scale parameter.

$$\begin{cases} B_\xi = \dfrac{\sum_{i=1}^{k} \delta_i}{k} \\ B_\sigma = \dfrac{\sum_{i=1}^{k} \omega_i}{k} \end{cases} \quad (2)$$

where k is the total number of the shape parameter

Table 1. Results for the NON-POT framework when varying shape parameter with true scale = 1

METHOD	PARAMETERS	-3				-2				-1			
		RMSE	MSE	MAE	MDAE	RMSE	MSE	MAE	MDAE	RMSE	MSE	MAE	MDAE
MLEn	$\hat{\sigma}$	4.06751	16.5771	4.04739	4.023416	3.18964	10.2415	3.17793	3.16348	2.3084	5.4558	2.2982	2.3116
	$\hat{\xi}$	4.01761	16.1443	4.01528	4.007375	3.08882	9.55566	3.0856	3.0784	2.2659	5.2236	2.2561	2.269
NLS-P	$\hat{\sigma}$	0.9984	0.9968	0.99839	0.999159	0.98871	0.97758	0.9886	0.99186	0.9108	0.8307	0.9075	0.924
	$\hat{\xi}$	1.40974	2.91821	1.23434	1.164351	1.06849	1.6562	0.90662	0.80802	0.8078	0.889	0.6481	0.5336
NLS-S	$\hat{\sigma}$	0.31509	0.18378	0.27496	0.252173	0.26115	0.15236	0.23596	0.22303	0.2951	0.1697	0.2564	0.2325
	$\hat{\xi}$	0.91755	1.62036	0.76881	0.675364	0.51933	0.62545	0.46722	0.43807	0.3228	0.2029	0.2775	0.2471
WNLS-P	$\hat{\sigma}$	0.9984	0.99681	0.9984	0.999158	0.98865	0.97745	0.98853	0.9918	0.9072	0.8242	0.9039	0.9185
	$\hat{\xi}$	1.35852	2.73999	1.20105	1.146701	1.00491	1.50543	0.8641	0.79466	0.7311	0.7714	0.5874	0.4894
ZHANG	$\hat{\sigma}$	0.3633	0.14969	0.36006	0.359648	0.26379	0.0866	0.25493	0.2549	0.1646	0.0393	0.1405	0.1326
	$\hat{\xi}$	1.18684	1.64798	1.17862	1.176367	0.6121	0.49277	0.59741	0.59538	0.2257	0.0837	0.2004	0.192
LME	$\hat{\sigma}$	0.77772	0.60484	0.77761	0.777184	0.71253	0.50771	0.71229	0.71188	0.5807	0.3373	0.5799	0.5792
	$\hat{\xi}$	3.20234	10.255	3.20229	3.202763	2.24112	5.02261	2.24097	2.24137	1.2611	1.5905	1.2601	1.2612
MDPD	$\hat{\sigma}$	0.65919	0.43453	0.65681	0.667014	0.48064	0.23104	0.47317	0.50025	0.3832	0.1697	0.1209	0.0848
	$\hat{\xi}$	1.97844	3.91425	1.97128	2.00223	0.95948	0.92068	0.94446	0.99973	0.368	0.1559	0.1074	0.0641
MED	$\hat{\sigma}$	0.39669	0.15745	0.38856	0.396232	0.25121	0.06365	0.23254	0.22621	0.1885	0.0501	0.1512	0.1292
	$\hat{\xi}$	1.84784	3.42379	1.80646	1.960523	0.9125	0.8337	0.86481	0.94164	0.341	0.1792	0.1712	0.0953
MLE	$\hat{\sigma}$	0.6533	0.42739	0.63026	0.649204	0.50242	0.25296	0.48155	0.49401	**0.1485**	**0.0237**	**0.106**	**0.0795**
	$\hat{\xi}$	1.96062	3.84939	1.89145	1.948288	1.00384	1.00978	0.96138	0.98653	*0.1488*	*0.024*	*0.0952*	*0.0592*
MOMENTS	$\hat{\sigma}$	1.00067	3.94138	0.37128	0.197612	0.47356	0.5535	0.25753	0.17211	0.2889	0.1509	0.1956	0.1473
	$\hat{\xi}$	3.189	38.9009	1.22805	0.667246	1.07711	2.77987	0.60293	0.40949	0.3952	0.2804	0.2708	0.207
MPLE	$\hat{\sigma}$	0.65116	0.4245	0.63245	0.653319	0.50492	0.25543	0.48255	0.49892	0.1504	0.0244	0.1085	0.081
	$\hat{\xi}$	1.95417	3.82329	1.898	1.960668	1.00854	1.01898	0.96332	0.99676	0.1519	0.0252	0.0993	0.0615
PICKANDS	$\hat{\sigma}$	0.21772	0.0671	0.17408	0.149779	0.23711	0.07942	0.18911	0.1629	0.2758	0.1087	0.2165	0.1846
	$\hat{\xi}$	0.6993	0.70367	0.55672	0.47023	0.57449	0.47693	0.45735	0.38739	0.5026	0.3676	0.399	0.3354
PWMB	$\hat{\sigma}$	0.29145	0.13124	0.21098	0.166574	0.26257	0.10515	0.19344	0.15506	0.2407	0.0882	0.1802	0.1451
	$\hat{\xi}$	0.90802	1.24966	0.66886	0.538301	0.57666	0.49722	0.43309	0.35348	0.3229	0.1557	0.2465	0.2022

METHOD	PARAMETERS												
PWMU	$\hat\sigma$	0.3691	0.265	0.24005	0.174368	0.29605	0.14923	0.20817	0.16087	0.2521	0.101	0.1865	0.1494
	$\hat\xi$	1.15986	2.57607	0.76764	0.56742	0.65621	0.72186	0.47104	0.37084	0.3424	0.1841	0.2591	0.2123
AD	$\hat\sigma$	0.22485	0.05137	0.20307	0.198371	0.16391	0.03117	0.13379	**0.11625**	0.1852	0.0529	0.1471	0.124
	$\hat\xi$	0.68637	0.48233	0.61444	0.596333	0.34847	0.14853	0.27663	*0.2335*	0.2381	0.0969	0.1832	0.1479
ADR	$\hat\sigma$	0.22869	0.05258	0.20915	0.207113	**0.15965**	**0.02818**	**0.1325**	0.11766	0.1789	0.0503	0.1412	0.1183
	$\hat\xi$	0.6904	0.47971	0.62998	0.622797	*0.327*	*0.1203*	*0.2685*	0.23557	0.2111	0.0747	0.1662	0.1372
AD2R	$\hat\sigma$	0.25878	0.06703	0.24447	0.245334	0.18037	0.03303	0.15683	0.14755	0.1888	0.0566	0.147	0.1198
	$\hat\xi$	0.77969	0.60845	0.73657	0.73922	0.36386	0.13482	0.31483	0.29519	0.212	0.0759	0.1666	0.1369
ADL	$\hat\sigma$	0.19886	0.05445	0.15063	0.119766	0.23226	0.08577	0.17929	0.14728	0.2649	0.1163	0.2003	0.1612
	$\hat\xi$	0.64941	0.62005	0.48159	0.369887	0.54584	0.51322	0.41236	0.32334	0.4427	0.362	0.3255	0.2454
AD2L	$\hat\sigma$	0.39366	0.24068	0.28177	0.216898	0.38358	0.22273	0.27853	0.21916	0.4394	0.3207	0.3067	0.2355
	$\hat\xi$	1.77634	5.03849	1.13889	0.735781	1.44982	2.90819	0.88085	0.55847	1.3531	2.6827	0.7914	0.465
CM	$\hat\sigma$	**0.16104**	**0.03104**	**0.12837**	**0.110861**	0.19256	0.05622	0.15193	0.12863	0.2257	0.0811	0.1737	0.1412
	$\hat\xi$	*0.49978*	*0.30737*	*0.39365*	*0.33528*	0.42015	0.28015	0.32813	0.27229	0.3222	0.1758	0.2458	0.1949
KS	$\hat\sigma$	0.6992	0.48895	0.6946	0.715541	0.5507	0.30336	0.52551	0.59033	0.2663	0.0767	0.2134	0.1865
	$\hat\xi$	2.84643	8.1047	2.81801	2.961318	1.66538	2.78144	1.56558	1.83016	0.5322	0.3121	0.4133	0.3549

		-0.5				0				1			
METHOD	PARAMETERS	RMSE	MSE	MAE	MDAE	RMSE	MSE	MAE	MDAE	RMSE	MSE	MAE	MDAE
MLEn	$\hat\sigma$	1.74724	3.18313	1.72122	1.735019	1.18014	1.47487	1.13698	1.08922	0.3448	0.2127	0.2548	0.2079
	$\hat\xi$	1.80084	3.44805	1.75643	1.750195	1.29743	1.95991	1.19613	1.08729	0.4894	0.6043	0.2987	0.1942
NLS-P	$\hat\sigma$	0.75791	0.58352	0.73848	0.768911	0.72502	0.71462	0.54418	0.47097	29.276	1846.2	10.809	6.1194
	$\hat\xi$	0.70831	0.67944	0.53965	0.412672	0.67575	0.64667	0.51615	0.40262	0.9385	1.1981	0.7891	0.6778
NLS-S	$\hat\sigma$	0.3482	0.21524	0.28903	0.249168	0.56811	0.52189	0.44055	0.35323	5.3322	118.66	2.0314	1.0904
	$\hat\xi$	0.24837	0.1017	0.20433	0.172998	0.28744	0.12255	0.23871	0.21857	0.5724	0.4676	0.5084	0.4844
WNLS-P	$\hat\sigma$	0.74744	0.5686	0.72771	0.758398	0.73834	0.7412	0.54229	0.45545	31.192	2012.5	11.719	6.6606
	$\hat\xi$	0.63789	0.5866	0.4843	0.364416	0.62274	0.58303	0.47309	0.36614	0.9174	1.1797	0.7781	0.6797

ZHANG	$\hat{\sigma}$	**0.15482**	**0.03385**	**0.12617**	**0.110625**	**0.19322**	**0.05165**	**0.15454**	0.13306	**0.3098**	**0.1471**	**0.2298**	**0.1813**
	$\hat{\xi}$	*0.14167*	*0.03369*	*0.11218*	*0.094423*	0.15552	0.03573	0.1218	0.10044	*0.2786*	0.1106	*0.2243*	0.1901
LME	$\hat{\sigma}$	0.39796	0.15852	0.3917	0.394119	0.20867	0.06172	0.16309	0.13683	0.4098	0.3377	0.2599	0.1898
	$\hat{\xi}$	0.64154	0.41216	0.62879	0.647078	*0.1459*	*0.0293*	*0.1177*	0.10241	0.2809	0.1103	0.2349	0.2027
MDPD	$\hat{\sigma}$	0.26617	0.13277	0.18163	0.15187	0.36388	0.32946	0.22025	0.16374	935.44	1E+06	18.962	0.1832
	$\hat{\xi}$	0.21468	0.08886	0.16134	0.147001	0.23753	0.11296	0.17613	0.14058	6.3003	44.032	1.2576	*0.1868*
MED	$\hat{\sigma}$	0.22739	0.07556	0.18003	0.151287	0.2696	0.10733	0.20845	0.17221	0.3417	0.1557	0.2941	0.2217
	$\hat{\xi}$	0.30039	0.14492	0.20498	0.14951	0.34879	0.17839	0.25994	0.20483	0.5469	0.4107	0.4328	0.3834
MLE	$\hat{\sigma}$	0.23124	0.08526	0.18318	0.155645	0.30685	0.17818	0.22614	0.16769	1244.1	2E+06	18.618	0.1963
	$\hat{\xi}$	0.19566	0.06645	0.16218	0.149145	0.22359	0.09241	0.17623	0.14205	3.0362	17.732	0.4039	0.2077
MOMENTS	$\hat{\sigma}$	0.23896	0.09411	0.17225	0.134789	0.22851	0.08367	0.16822	**0.13017**	476.8	364102	13.748	1.9924
	$\hat{\xi}$	0.22969	0.08915	0.1642	0.126258	0.16504	0.04518	0.11857	0.08734	0.6011	0.3679	0.6011	0.5801
MPLE	$\hat{\sigma}$	0.23545	0.08871	0.18525	0.155651	0.30459	0.17678	0.22127	0.15844	1239.9	2E+06	18.293	0.3024
	$\hat{\xi}$	0.19734	0.06738	0.16308	0.149123	0.21522	0.08587	0.16095	0.12217	0.4198	0.2286	0.3962	0.3663
PICKANDS	$\hat{\sigma}$	0.30165	0.13011	0.23411	0.197988	0.34218	0.16877	0.25919	0.21591	0.4276	0.2535	0.3414	0.2655
	$\hat{\xi}$	0.49251	0.35021	0.39098	0.328655	0.50597	0.36866	0.40188	0.33874	0.6461	0.6489	0.4841	0.4044
PWMB	$\hat{\sigma}$	0.23284	0.08259	0.17553	0.141739	0.23899	0.08825	0.17955	0.14318	11.692	338.33	0.9986	0.3222
	$\hat{\xi}$	0.23011	0.0801	0.1756	0.141568	0.18179	0.05158	0.13714	0.10897	0.3218	0.1195	0.2954	0.2795
PWMU	$\hat{\sigma}$	0.2366	0.0867	0.17844	0.145623	0.23534	0.08507	0.17834	0.14624	0.5643	0.5601	0.3394	0.2494
	$\hat{\xi}$	0.23724	0.0874	0.18161	0.148145	0.18086	0.05117	0.13771	0.11205	0.3019	*0.1023*	0.2728	0.2565
AD	$\hat{\sigma}$	0.20518	0.06561	0.16129	0.134352	0.23948	0.08783	0.18603	0.15446	1245.2	2E+06	23.478	2.3463
	$\hat{\xi}$	0.213	0.07934	0.16079	0.125972	0.22918	0.08615	0.17479	0.13971	0.7101	0.5499	0.6051	0.5805
ADR	$\hat{\sigma}$	0.20016	0.06397	0.15593	0.128942	0.23897	0.09093	0.18272	0.14862	1245.4	2E+06	24.102	2.3466
	$\hat{\xi}$	0.18409	0.05876	0.14288	0.11538	0.19909	0.06436	0.15568	0.1278	0.6743	0.5047	0.5827	0.5666
AD2R	$\hat{\sigma}$	0.23913	0.10953	0.16746	0.132216	1.49043	4.87797	0.34662	0.15717	1245.4	2E+06	16.626	3.3775
	$\hat{\xi}$	0.1987	0.08185	0.14311	0.113477	5.96864	52.7277	0.7417	0.13209	48.377	3795	30.372	14.251
ADL	$\hat{\sigma}$	0.28121	0.12728	0.2121	0.170269	0.30745	0.14969	0.23119	0.18529	1235.9	2E+06	19.703	0.2301
	$\hat{\xi}$	0.41064	0.29254	0.30275	0.229021	0.41081	0.27834	0.30983	0.24273	98.12	18266	4.6931	0.3473
AD2L	$\hat{\sigma}$	0.42375	0.26382	0.31075	0.246533	0.46282	0.32067	0.32647	0.25776	38960	1E+10	166.23	0.2934

	$\hat{\xi}$	1.31409	2.24473	0.75695	0.451789	1.324	2.18099	0.75163	0.459	4598.2	9E+07	41.945	0.6025
CM	$\hat{\sigma}$	0.24675	0.09696	0.18807	0.152658	0.27621	0.119	0.20878	0.16762	1245.4	2E+06	22.017	0.2206
	$\hat{\xi}$	0.2983	0.14809	0.22713	0.178484	0.30333	0.14489	0.23471	0.18974	10.649	162.92	2.1772	0.2868
KS	$\hat{\sigma}$	0.21919	0.06574	0.17095	0.146438	0.24831	0.09173	0.18415	0.1445	1245.4	2E+06	25.177	2.2752
	$\hat{\xi}$	0.2794	0.10527	0.2319	0.222776	0.22198	0.06973	0.14676	0.0835	2.7879	8.2823	1.9984	1.8904

METHOD	PARAMETERS	2				3				5			
		RMSE	MSE	MAE	MDAE	RMSE	MSE	MAE	MDAE	RMSE	MSE	MAE	MDAE
MLEn	$\hat{\sigma}$	1.07208	1.15742	0.9748	0.933247	2.04092	4.16787	1.93421	1.89873	4.0476	16.386	3.92	3.8695
	$\hat{\xi}$	1.33837	2.55304	1.00923	0.99645	2.14238	4.81841	1.94039	1.98047	5.5709	50.425	3.9087	3.9702
NLS-P	$\hat{\sigma}$	1475.87	7340559	242.067	64.41747	2818097	6.3E+13	54947.7	588.134	1E+10	1E+21	1E+08	29083
	$\hat{\xi}$	1.36957	2.43149	1.20777	1.149905	1.79835	4.21808	1.61356	1.55637	3.0749	11.514	2.8198	2.8447
NLS-S	$\hat{\sigma}$	282.428	500699	31.8086	4.190281	1737587	2.4E+13	21811.8	19.6323	3E+09	4E+19	7E+07	697.94
	$\hat{\xi}$	1.02626	1.47432	0.93193	0.91664	1.48666	3.09724	1.35637	1.33773	2.4251	8.1691	2.2146	2.1992
WNLS-P	$\hat{\sigma}$	1592.36	8550152	268.194	70.72609	2794211	6.2E+13	55495.9	657.769	1E+10	1E+21	1E+08	31588
	$\hat{\xi}$	1.3629	2.4517	1.21339	1.153767	1.80542	4.29787	1.63513	1.60973	3.0843	11.633	2.8438	2.8608
ZHANG	$\hat{\sigma}$	**0.47787**	**0.41585**	**0.31398**	**0.224203**	**0.70078**	**1.12075**	**0.39841**	**0.25457**	4.6121	131.49	**0.7131**	**0.3133**
	$\hat{\xi}$	*0.41578*	*0.2476*	*0.33268*	*0.283393*	*0.5509*	*0.4338*	*0.4423*	*0.3781*	*0.827*	*0.9753*	*0.6634*	*0.5679*
LME	$\hat{\sigma}$	0.62508	0.81823	0.3902	0.250747	1.24829	4.90691	0.56888	0.30488	3.5201	49.019	1.1892	0.4182
	$\hat{\xi}$	0.44557	0.28635	0.35902	0.310308	0.60691	0.52819	0.48971	0.4269	0.9403	1.2525	0.7571	0.6563
MDPD	$\hat{\sigma}$	5.4E+08	9.6E+17	6121702	330.3605	2.4E+17	2E+35	2.9E+15	214100	8E+32	2E+66	8E+30	2E+11
	$\hat{\xi}$	55.1463	3889.09	32.4373	19.91946	110.699	16826.5	69.7061	56.782	186.96	57700	93.342	82.263
MED	$\hat{\sigma}$	0.63141	0.73751	0.40478	0.272378	1.15681	3.7687	0.57167	0.31402	**3.1113**	41.231	1.3381	0.4786
	$\hat{\xi}$	0.73356	0.7328	0.58586	0.506272	0.89065	1.07264	0.7138	0.60717	1.283	2.3157	1.0589	0.9507
MLE	$\hat{\sigma}$	7014597	1.6E+14	748871	0.354649	9.7E+10	7.5E+22	1.4E+10	366093	6E+08	7E+17	4E+08	4E+08
	$\hat{\xi}$	25.6049	1198.75	7.51719	0.39204	56.5082	5590.12	33.0002	11.9212	64.678	7510.4	55.081	55.081

Method	Param												
MOMENTS	$\hat{\sigma}$	2.8E+08	2.5E+17	3132040	211.9204	1.2E+17	4.9E+34	1.5E+15	107387	4E+32	6E+65	4E+30	1E+11
	$\hat{\xi}$	1.54448	2.38802	1.54349	1.530868	2.52957	6.39998	2.5293	2.52063	4.5211	20.441	4.5211	4.5152
MPLE	$\hat{\sigma}$	4.7E+07	5.5E+15	1025046	49.82178	1.4E+11	1.4E+23	2.7E+10	301765	1E+11	3E+22	8E+10	5E+10
	$\hat{\xi}$	1.30468	1.71899	1.29079	1.249045	2.34393	5.50274	2.34205	2.36281	4.403	19.399	4.4029	4.4026
PICKANDS	$\hat{\sigma}$	0.79148	1.16642	0.4647	0.326953	1.66066	7.46665	0.67738	0.39513	20.151	2442.7	2.29	0.5377
	$\hat{\xi}$	0.7777	0.87121	0.61351	0.510814	0.98632	1.41346	0.77303	0.641	1.4929	3.2643	1.1621	0.9599
PWMB	$\hat{\sigma}$	9707275	3.9E+14	105575	4.965872	6.4E+14	2E+30	6.9E+12	452.106	2E+30	2E+61	2E+28	2E+08
	$\hat{\xi}$	1.10301	1.22691	1.09817	1.072994	2.0575	4.23776	2.0563	2.0392	4.0355	16.287	4.0353	4.0238
PWMU	$\hat{\sigma}$	450.295	623650	11.6119	3.044298	968201	2.6E+12	22070.4	126.828	7E+13	2E+28	1E+12	9E+06
	$\hat{\xi}$	1.08165	1.17578	1.07668	1.051642	2.03651	4.14914	2.03532	2.01846	4.0148	16.119	4.0147	4.0034
AD	$\hat{\sigma}$	5.4E+08	9.6E+17	6121746	397.0145	2.4E+17	2E+35	2.9E+15	214053	8E+32	2E+66	8E+30	2E+11
	$\hat{\xi}$	1.52355	2.51867	1.38494	1.332494	2.56764	6.8074	2.44589	2.69022	4.7584	22.732	4.3777	4.4762
ADR	$\hat{\sigma}$	5.4E+08	9.6E+17	6121766	397.7495	2.4E+17	2E+35	2.9E+15	214150	8E+32	2E+66	8E+30	2E+11
	$\hat{\xi}$	1.52516	2.52125	1.41117	1.414192	2.65057	7.16919	2.58776	2.7549	4.7504	22.653	4.4369	4.5023
AD2R	$\hat{\sigma}$	5.4E+08	9.6E+17	1005854	416.8814	2.4E+17	2E+35	3.8E+14	201225	8E+32	2E+66	6E+29	2E+11
	$\hat{\xi}$	41.3404	4017.94	28.1375	21.36657	36.514	3806.05	27.0069	22.3654	33.214	3690.2	41.558	40.812
ADL	$\hat{\sigma}$	5.4E+08	9.6E+17	6121683	259.8539	2.4E+17	2E+35	2.9E+15	214057	8E+32	2E+66	8E+30	2E+11
	$\hat{\xi}$	40022.4	1.1E+10	720.777	178.2195	21440.6	6.7E+08	737.631	59.1105	58208	1E+10	1214.6	14.51
AD2L	$\hat{\sigma}$	1.9E+07	1.7E+15	6339451	0.921524	3E+15	2E+31	2.9E+15	212721	8E+27	2E+56	8E+30	2E+11
	$\hat{\xi}$	9995285	7.5E+14	144622	119.2955	2.4E+07	1.9E+15	2459396	26258.2	4E+07	7E+15	1E+07	181.87
CM	$\hat{\sigma}$	5.4E+08	9.6E+17	6121773	413.341	2.4E+17	2E+35	2.9E+15	214154	8E+32	2E+66	8E+30	2E+11
	$\hat{\xi}$	139.4	39540.4	42.761	27.30852	278.368	187112	27.1052	12.1485	518.53	522396	18.784	7.0822
KS	$\hat{\sigma}$	5.4E+08	9.6E+17	6121779	420.5987	2.4E+17	2E+35	2.9E+15	214157	8E+32	2E+66	8E+30	2E+11
	$\hat{\xi}$	347.244	218899	14.6649	2.341712	480.693	379961	26.8076	3.08358	460.23	533028	17.871	4.7812

Table 2. Results for the NON-POT framework when varying shape parameter with true scale = 10

METHOD	PARAMETERS	-3				-2				-1			
		RMSE	MSE	MAE	MDAE	RMSE	MSE	MAE	MDAE	RMSE	MSE	MAE	MDAE
MLEn	$\hat{\sigma}$	13.054	170.461	13.0474	13.02342	12.1811	148.55	12.1779	12.1635	11.301	128.06	11.298	11.312
	$\hat{\xi}$	13.223	175.197	13.1528	13.07375	12.9296	168.749	12.856	12.784	13.711	197.26	13.564	13.69
NLS-P	$\hat{\sigma}$	9.98398	99.6705	9.98391	9.991615	9.88737	97.7291	9.88624	9.91859	9.1254	83.416	9.094	9.2475
	$\hat{\xi}$	1.41171	2.94053	1.23927	1.165153	1.0647	1.64471	0.90344	0.80745	0.798	0.8715	0.6367	0.5225
NLS-S	$\hat{\sigma}$	6.10613	40.1615	5.34024	4.758389	2.85593	16.8891	2.47929	2.27834	2.7352	16.236	2.4245	2.2423
	$\hat{\xi}$	1.98646	4.24681	1.66718	1.382716	0.64079	0.93899	0.53923	0.48554	0.3604	0.3555	0.3219	0.2996
WNLS-P	$\hat{\sigma}$	9.98402	99.6708	9.98395	9.991574	9.88669	97.7078	9.88558	9.91796	9.0975	82.84	9.0661	9.2167
	$\hat{\xi}$	1.36084	2.76197	1.20537	1.148574	1.00355	1.50579	0.86428	0.79477	0.7215	0.7571	0.5806	0.4852
ZHANG	$\hat{\sigma}$	3.63213	15.6874	3.60063	3.596476	2.63788	9.03795	2.54934	2.54896	1.647	4.0626	1.4045	1.326
	$\hat{\xi}$	1.18659	1.64756	1.17862	1.176367	0.6121	0.49277	0.59741	0.59538	0.2258	0.0837	0.2004	0.192
LME	$\hat{\sigma}$	8.66102	75.0118	8.66072	8.661331	8.32257	69.258	8.31674	8.3502	7.2864	52.842	7.1511	7.6166
	$\hat{\xi}$	4.03643	16.2928	4.03406	4.046304	3.10917	9.66725	3.09941	3.12955	2.0302	4.1232	1.9519	2.1025
MDPD	$\hat{\sigma}$	6.95815	48.5885	6.36989	6.640247	5.68266	32.8988	4.6178	5.00566	4.1869	18.587	1.1868	0.8642
	$\hat{\xi}$	2.07443	4.30874	1.90811	1.992202	1.09884	1.20897	0.91756	0.99924	0.3296	0.1146	0.1124	0.0762
MED	$\hat{\sigma}$	3.90289	15.2778	3.80446	3.919802	2.48439	6.25059	2.27068	2.20506	1.949	5.5713	1.5609	1.325
	$\hat{\xi}$	1.81353	3.30541	1.76156	1.930195	0.88785	0.79156	0.82705	0.90713	0.3805	0.2062	0.1866	0.1114
MLE	$\hat{\sigma}$	6.24763	41.1078	5.97379	6.542674	4.62896	22.4496	4.36848	4.76657	**1.4384**	**2.1353**	**1.065**	0.811
	$\hat{\xi}$	1.87407	3.52238	1.79187	1.962631	0.9234	0.85577	0.87109	0.95096	***0.1489***	***0.0241***	0.1039	0.0699
MOMENTS	$\hat{\sigma}$	10.0048	394.709	3.71277	1.976124	4.73561	55.7516	2.57525	1.72113	2.8874	15.362	1.9559	1.4733
	$\hat{\xi}$	3.18816	38.9	1.22805	0.667246	1.07711	2.77987	0.60293	0.40949	0.3948	0.2802	0.2708	0.207
MPLE	$\hat{\sigma}$	6.2384	40.9065	5.97584	6.547492	4.66299	22.6792	4.39313	4.78707	1.4555	2.212	1.0685	**0.8108**
	$\hat{\xi}$	1.87132	3.51127	1.79248	1.964022	0.93018	0.86913	0.87602	0.95526	0.1501	0.0246	*0.1039*	*0.0696*
PICKANDS	$\hat{\sigma}$	2.17877	6.96633	1.74083	1.497795	2.37112	8.24243	1.89106	1.629	2.757	11.26	2.1654	1.8456
	$\hat{\xi}$	0.69978	0.70401	0.55672	0.47023	0.57449	0.47693	0.45735	0.38739	0.5024	0.3674	0.399	0.3354
PWMB	$\hat{\sigma}$	2.91361	13.4903	2.10981	1.665741	2.62573	10.822	1.9344	1.55062	2.4056	9.0815	1.802	1.4514
	$\hat{\xi}$	0.90763	1.24932	0.66886	0.538301	0.57666	0.49722	0.43309	0.35348	0.3225	0.1555	0.2465	0.2022

METHOD	PARAMETERS	RMSE	MSE	MAE	MDAE	RMSE	MSE	MAE	MDAE	RMSE	MSE	MAE	MDAE
PWMU	$\hat{\sigma}$	3.69018	26.8846	2.4005	1.743679	2.96048	15.2396	2.08167	1.6087	2.5194	10.357	1.8646	1.4943
	$\hat{\xi}$	1.15949	2.57575	0.76764	0.56742	0.65621	0.72186	0.47104	0.37084	0.3421	0.1839	0.2591	0.2123
AD	$\hat{\sigma}$	1.86072	3.75544	1.57829	1.47655	1.5711	3.21366	1.25773	1.06705	1.8311	5.2818	1.4596	1.2358
	$\hat{\xi}$	0.57035	0.35157	0.47788	0.443049	0.33472	0.15043	0.26103	0.21539	0.2362	0.0951	0.1819	0.1475
ADR	$\hat{\sigma}$	1.84614	3.59865	1.59599	1.532395	**1.48343**	**2.75576**	**1.19293**	**1.02355**	1.7508	4.8614	1.3919	1.1772
	$\hat{\xi}$	0.5574	*0.32339*	0.48017	0.459674	*0.3045*	*0.1159*	*0.2425*	*0.2053*	0.2073	0.0711	0.164	0.1366
AD2R	$\hat{\sigma}$	2.16253	4.7961	1.95078	1.964396	1.6496	2.9361	1.38587	1.28661	1.718	4.6527	1.3679	1.1588
	$\hat{\xi}$	0.65026	0.4272	0.5862	0.590203	0.33273	0.11783	0.27831	0.25718	0.1939	0.0622	0.1553	0.1324
ADL	$\hat{\sigma}$	1.99621	5.95218	1.50745	1.207674	2.21383	7.95718	1.72145	1.42779	2.5691	10.874	1.9724	1.6149
	$\hat{\xi}$	0.65086	0.6626	0.48073	0.371744	0.52173	0.47105	0.39534	0.31211	0.4322	0.3377	0.3209	0.2451
AD2L	$\hat{\sigma}$	4.17985	30.4535	2.76154	2.118197	3.82314	22.3681	2.85294	2.20992	4.0951	25.992	2.9469	2.3329
	$\hat{\xi}$	1.87749	5.84291	1.12867	0.71657	1.50361	3.12476	0.92309	0.5654	1.2868	2.2216	0.7604	0.4592
CM	$\hat{\sigma}$	**1.59747**	**3.40402**	**1.26435**	**1.071004**	1.83366	5.1689	1.44561	1.22548	2.1715	7.4477	1.6872	1.3853
	$\hat{\xi}$	*0.49425*	0.32625	*0.38739*	*0.324314*	0.39936	0.25059	0.31149	0.25904	0.3066	0.1537	0.2357	0.1889
KS	$\hat{\sigma}$	6.26782	39.2603	6.12867	6.508074	5.65097	31.9049	5.45013	6.07787	3.9862	16.107	3.6738	4.1136
	$\hat{\xi}$	2.45008	6.01066	2.35806	2.476773	1.72351	2.97553	1.62966	1.8762	0.8871	0.7999	0.8035	0.9195

METHOD	PARAMETERS	-0.5				0				1			
		RMSE	MSE	MAE	MDAE	RMSE	MSE	MAE	MDAE	RMSE	MSE	MAE	MDAE
MLEN	$\hat{\sigma}$	10.7387	115.531	10.733	10.74728	10.1484	103.109	10.1413	10.0892	9.0853	82.598	9.076	9.0718
	$\hat{\xi}$	13.8659	217.936	13.2497	13.0478	13.1653	205.851	12.0654	10.8736	12.212	182.08	10.445	9.4041
NLS-P	$\hat{\sigma}$	7.579	58.714	7.38139	7.691881	7.37285	76.7724	5.50495	4.73717	290.48	182713	107.7	61.212
	$\hat{\xi}$	0.70892	0.68008	0.53909	0.4124	0.67847	0.65949	0.51388	0.40786	0.9552	1.2175	0.8091	0.7191
NLS-S	$\hat{\sigma}$	3.46036	21.5456	2.90014	2.516546	5.52243	49.7105	4.32799	3.47816	53.106	11683	20.259	10.75
	$\hat{\xi}$	0.31088	0.20773	0.2653	0.245154	0.27663	0.11364	0.21944	0.17754	0.5964	0.5032	0.5357	0.5147
WNLS-P	$\hat{\sigma}$	7.47119	56.9314	7.27249	7.583068	7.54391	80.9955	5.50761	4.59277	315.68	204362	117.12	66.488
	$\hat{\xi}$	0.64095	0.59104	0.48571	0.36818	0.62875	0.59594	0.4732	0.36571	0.9326	1.1955	0.7959	0.7135

ZHANG	$\hat{\sigma}$	**1.54846**	**3.51563**	**1.26169**	**1.106252**	1.93222	5.37875	1.54542	1.33056	**3.1358**	**15.727**	**2.2978**	**1.8126**
	$\hat{\xi}$	*0.14169*	*0.03369*	*0.11218*	*0.094423*	***0.1555***	***0.0357***	0.1218	0.10044	*0.2806*	*0.1132*	*0.2243*	*0.1901*
LME	$\hat{\sigma}$	4.40202	21.1861	3.55339	3.11683	2.24987	7.57064	1.81224	1.57839	3.3299	17.674	2.432	1.8827
	$\hat{\xi}$	1.00978	1.10919	0.72925	0.438554	0.35061	0.22648	0.22595	0.12604	0.2931	0.1264	0.2349	0.2009
MDPD	$\hat{\sigma}$	2.61159	11.9689	1.72065	1.471593	2.70101	13.2613	2.01157	1.57527	11943	2E+08	242	19.295
	$\hat{\xi}$	0.20477	0.07629	0.15481	0.144876	0.2164	0.08657	0.16605	0.13373	5.2594	27.8	1.3655	0.4601
MED	$\hat{\sigma}$	2.2842	7.91759	1.80426	1.513093	2.70681	11.1668	2.09223	1.72834	4.1505	28.638	2.9373	2.2199
	$\hat{\xi}$	0.31067	0.15796	0.2075	0.148512	0.35377	0.18373	0.26305	0.20683	0.5482	0.4109	0.4352	0.3851
MLE	$\hat{\sigma}$	2.21969	7.899	1.77872	1.53563	3.02985	17.4054	2.24187	1.67532	11935	2E+08	200.9	2.0414
	$\hat{\xi}$	0.1902	0.06218	0.15906	0.148922	0.22216	0.09071	0.17542	0.14183	3.0196	17.768	0.4003	0.201
MOMENTS	$\hat{\sigma}$	2.38963	9.62856	1.72254	1.347892	2.28512	8.58313	1.68225	1.30172	6205.1	6E+07	137.48	19.924
	$\hat{\xi}$	0.22966	0.08915	0.1642	0.126258	0.16504	0.04518	*0.1186*	*0.0873*	0.6084	0.3792	0.6011	0.5801
MPLE	$\hat{\sigma}$	2.22798	8.01277	1.78358	1.536824	2.99997	17.1387	2.19022	1.58236	11935	2E+08	207.99	3.26
	$\hat{\xi}$	0.18988	0.06196	0.15884	0.149091	0.21329	0.08365	0.15993	0.12194	0.4264	0.2338	0.404	0.3731
PICKANDS	$\hat{\sigma}$	3.01602	13.4881	2.34113	1.979877	3.42185	17.4861	2.59187	2.15912	4.9695	40.581	3.4136	2.6548
	$\hat{\xi}$	0.49237	0.35017	0.39098	0.328655	0.50597	0.36866	0.40188	0.33874	0.6116	0.5424	0.4841	0.4044
PWMB	$\hat{\sigma}$	2.32849	8.50058	1.75529	1.417387	2.38994	9.07989	1.7955	1.4318	346.33	468905	9.9856	3.222
	$\hat{\xi}$	0.23008	0.08009	0.1756	0.141568	0.18179	0.05158	0.13714	0.10897	0.3358	0.1357	0.2954	0.2795
PWMU	$\hat{\sigma}$	2.36606	8.91155	1.78437	1.456235	2.35341	8.75794	1.78337	1.46235	5.0626	39.034	3.3943	2.4944
	$\hat{\xi}$	0.23721	0.08739	0.18161	0.148145	0.18086	0.05117	0.13771	0.11205	0.3164	0.117	0.2728	0.2565
AD	$\hat{\sigma}$	2.04828	6.70809	1.61163	1.344078	2.39603	9.05488	1.85937	1.54431	12454	2E+08	244.2	23.596
	$\hat{\xi}$	0.21277	0.07913	0.16066	0.125948	0.22851	0.08535	0.17473	0.13966	0.7065	0.5406	0.6113	0.5871
ADR	$\hat{\sigma}$	1.98893	6.42835	1.55352	1.288073	2.3624	8.98223	1.81416	1.48534	12454	2E+08	249.91	23.757
	$\hat{\xi}$	0.18342	0.05802	0.14254	0.115321	0.1987	0.06379	0.15489	0.12747	0.6689	0.4966	0.5838	0.5718
AD2R	$\hat{\sigma}$	2.13403	7.67775	1.6365	1.320277	2.80446	12.9727	2.03555	1.5441	12454	2E+08	160.24	34.33
	$\hat{\xi}$	0.20396	0.08969	0.1424	0.113382	6.60359	67.5402	0.7628	0.13196	47.184	3772.1	28.324	11.151
ADL	$\hat{\sigma}$	2.69741	11.6292	2.06262	1.684013	2.97272	13.9237	2.27205	1.83824	12450	2E+08	235.59	2.7855
	$\hat{\xi}$	0.39003	0.25589	0.29054	0.223841	0.40089	0.25918	0.30518	0.24384	629.49	2E+06	21.268	0.4216
AD2L	$\hat{\sigma}$	4.20499	26.7574	3.10095	2.487853	4.43782	29.7272	3.2376	2.57021	10817	5E+08	111.49	3.9999

		RMSE	MSE	MAE	MDAE	RMSE	MSE	MAE	MDAE	RMSE	MSE	MAE	MDAE
	$\hat{\xi}$	1.34834	2.39847	0.76644	0.458839	1.3404	2.25241	0.75948	0.46387	14634	5E+08	192.98	1.3624
CM	$\hat{\sigma}$	2.32809	8.35473	1.81118	1.504733	2.61979	10.4634	2.02671	1.66219	12454	2E+08	237.92	2.8936
	$\hat{\xi}$	0.28081	0.12361	0.21728	0.173891	0.29508	0.13375	0.22999	0.18678	13.188	231.85	3.6461	0.3574
KS	$\hat{\sigma}$	2.85671	8.3427	2.57609	2.823467	**1.57673**	**3.62126**	**1.21862**	**0.99803**	12454	2E+08	268.94	41.817
	$\hat{\xi}$	0.55907	0.32037	0.50922	0.590177	0.16032	0.03815	0.12406	0.10218	4.7411	34.986	2.8932	2.6153

		2				3				5			
METHOD	PARAMETERS	RMSE	MSE	MAE	MDAE	RMSE	MSE	MAE	MDAE	RMSE	MSE	MAE	MDAE
MLEn	$\hat{\sigma}$	8.08854	65.4797	8.07102	8.085879	7.11059	**50.6318**	7.07843	7.10254	**5.1808**	**26.944**	**5.0842**	5.1306
	$\hat{\xi}$	14.0107	330.14	9.81333	8.456327	13.0307	271.197	9.21095	7.43133	29.804	3816.5	9.0843	5.5105
NLS-P	$\hat{\sigma}$	12294.2	6.3E+08	1928.41	632.4088	1.8E+07	2.6E+15	205005	5015.94	3E+09	4E+19	2E+07	69868
	$\hat{\xi}$	1.36668	2.41315	1.20485	1.152067	1.76466	4.00243	1.58982	1.51757	3.9251	15.789	3.6648	3.9557
NLS-S	$\hat{\sigma}$	2833.64	5E+07	314.411	41.5587	1.4E+07	1.6E+15	180389	193.074	9E+11	7E+24	1E+10	6364.2
	$\hat{\xi}$	1.02897	1.4831	0.93559	0.912115	1.48247	3.07345	1.35146	1.3318	2.4131	8.0679	2.2007	2.1886
WNLS-P	$\hat{\sigma}$	13285.6	7.2E+08	2177.83	693.3549	1.8E+07	2.6E+15	209218	5555.71	3E+09	4E+19	2E+07	72356
	$\hat{\xi}$	1.35865	2.4275	1.20946	1.15595	1.76896	4.06672	1.60771	1.53699	3.9293	15.829	3.6745	3.9524
ZHANG	$\hat{\sigma}$	**4.77865**	**42.2935**	**3.13984**	**2.242031**	**7.00779**	113.088	**3.9841**	**2.54572**	46.157	13152	7.1314	**3.1327**
	$\hat{\xi}$	*0.41578*	*0.2476*	*0.33268*	*0.283393*	*0.5509*	*0.4338*	*0.4423*	*0.3781*	*0.8256*	*0.9718*	*0.6634*	*0.5679*
LME	$\hat{\sigma}$	5.59126	57.7781	3.67933	2.462226	8.79948	163.334	5.11769	2.97911	20.487	1106.9	9.3486	4.0771
	$\hat{\xi}$	0.43886	0.27375	0.35355	0.3061	0.6001	0.51279	0.48386	0.42144	0.9302	1.2289	0.7496	0.6489
MDPD	$\hat{\sigma}$	5.4E+09	9.6E+19	6.1E+07	4173.501	2.4E+18	1.7E+37	2.9E+16	2141573	4E+33	2E+67	8E+31	2E+12
	$\hat{\xi}$	43.5357	2452.19	25.9462	15.10799	83.3494	9155.99	64.4656	53.157	231.21	96714	92.021	79.728
MED	$\hat{\sigma}$	6.28119	74.3729	4.02722	2.720226	11.41	375.482	5.63046	3.10822	30.977	4122.4	13.269	4.7604
	$\hat{\xi}$	0.73744	0.74004	0.58807	0.507906	0.88203	1.0589	0.70599	0.59371	1.2762	2.3027	1.0472	0.9259
MLE	$\hat{\sigma}$	9.2E+07	1.7E+16	3088488	3674.752	4E+07	3E+15	8775297	2848493	5E+09	1E+18	5E+09	5E+09
	$\hat{\xi}$	24.0787	1033.5	7.7573	0.860322	56.4996	5590.37	33.3252	12.2402	51.432	4645	41.673	41.673
MOMENTS	$\hat{\sigma}$	2.8E+09	2.5E+19	3.1E+07	2119.204	1.2E+18	4.3E+36	1.5E+16	1073865	2E+33	6E+66	4E+31	1E+12
	$\hat{\xi}$	1.54448	2.38802	1.54349	1.530868	2.52957	6.39998	2.5293	2.52063	4.5211	20.441	4.5211	4.5152

METHOD	PARAMETERS	RMSE	MSE	MAE	MDAE	RMSE	MSE	MAE	MDAE	RMSE	MSE	MAE	MDAE
MPLE	$\hat{\sigma}$	1.4E+08	6.8E+16	7009397	3399.204	2.8E+07	3.6E+15	7010588	3251791	7E+11	3E+24	4E+11	8E+09
	$\hat{\xi}$	1.4113	2.00619	1.40651	1.414519	2.3963	5.75625	2.38589	2.38519	4.4332	19.669	4.4332	4.4351
PICKANDS	$\hat{\sigma}$	7.91479	118.505	4.64695	3.269527	16.6066	750.345	6.77379	3.95132	201.01	244231	22.9	5.377
	$\hat{\xi}$	0.7777	0.87121	0.61351	0.510814	0.98632	1.41346	0.77303	0.641	1.492	3.2604	1.1621	0.9599
PWMB	$\hat{\sigma}$	9.7E+07	3.9E+16	1055746	49.65872	6.4E+15	1.9E+32	6.9E+13	4521.06	8E+30	2E+62	2E+29	2E+09
	$\hat{\xi}$	1.10301	1.22691	1.09817	1.072994	2.0575	4.23776	2.0563	2.0392	4.0354	16.286	4.0353	4.0238
PWMU	$\hat{\sigma}$	4502.95	6.3E+07	116.119	30.44298	9682014	1.8E+14	220704	1268.28	6E+14	2E+30	1E+13	9E+07
	$\hat{\xi}$	1.08165	1.17578	1.07668	1.051642	2.03651	4.14914	2.03532	2.01846	4.0148	16.119	4.0147	4.0034
AD	$\hat{\sigma}$	5.4E+09	9.6E+19	6.1E+07	4071.261	2.4E+18	1.7E+37	2.9E+16	2141535	8E+33	2E+68	8E+31	2E+12
	$\hat{\xi}$	1.65359	2.83808	1.55327	1.715933	2.77364	7.75914	2.74117	2.84571	4.8127	23.211	4.8082	4.835
ADR	$\hat{\sigma}$	5.4E+09	9.6E+19	6.1E+07	4188.109	2.4E+18	1.7E+37	2.9E+16	2141574	8E+33	2E+68	8E+31	2E+12
	$\hat{\xi}$	1.7235	3.03824	1.67448	1.77966	2.78324	7.80392	2.77475	2.81949	4.7719	22.842	4.7698	4.7744
AD2R	$\hat{\sigma}$	5.4E+09	9.6E+19	1E+07	4231.134	2.4E+18	1.7E+37	3.8E+15	2012270	8E+33	2E+68	6E+30	2E+12
	$\hat{\xi}$	41.3831	4035.86	28.1693	21.3425	36.5333	3811.45	27.0464	22.3832	33.224	3693.4	26.696	24.886
ADL	$\hat{\sigma}$	5.4E+09	9.6E+19	6.1E+07	4171.674	2.4E+18	1.7E+37	2.9E+16	2141554	8E+33	2E+68	8E+31	2E+12
	$\hat{\xi}$	19160.8	1.5E+09	674.749	209.8551	13446.9	2.7E+08	610.839	59.7929	33629	2E+09	1214	15.851
AD2L	$\hat{\sigma}$	5.6E+07	1.1E+16	6.2E+07	619.9608	3E+16	2E+33	2.9E+16	1781934	8E+28	2E+58	8E+31	2E+12
	$\hat{\xi}$	3267636	2E+13	2111551	3488.137	4.3E+07	5E+15	1.4E+07	173960	9E+08	3E+18	3E+07	349.31
CM	$\hat{\sigma}$	5.4E+09	9.6E+19	6.1E+07	4202.669	2.4E+18	1.7E+37	2.9E+16	2141573	8E+33	2E+68	8E+31	2E+12
	$\hat{\xi}$	152.669	43955.4	43.8688	28.22538	497.701	583859	30.7801	12.2566	516.73	520777	20.067	7.528
KS	$\hat{\sigma}$	5.4E+09	9.6E+19	6.1E+07	4207.804	2.4E+18	1.7E+37	2.9E+16	2141575	8E+33	2E+68	8E+31	2E+12
	$\hat{\xi}$	574.889	902216	16.9125	2.38529	1623.26	1.3E+07	37.2032	3.09001	477.11	560884	19.59	5.0054

Table 3. Results for the POT (q = 0.9) framework when varying shape parameter with true scale = 1

METHOD	PARAMETERS	-3				-2				-1			
		RMSE	MSE	MAE	MDAE	RMSE	MSE	MAE	MDAE	RMSE	MSE	MAE	MDAE
MLEn	$\hat{\sigma}$	10.3571	107.269	10.3462	10.34756	7.61636	58.0198	7.60635	7.59571	4.5784	21.06	4.5734	4.5655
	$\hat{\xi}$	6.11746	37.4233	6.11541	6.115863	5.30668	28.1635	5.30308	5.29772	4.5677	20.955	4.5628	4.5547

NLS-P	$\hat{\sigma}$	0.9995	0.999	0.99947	0.962616	0.99988	0.99976	0.99988	0.9343	0.9907	0.9814	0.9906	0.9164
	$\hat{\xi}$	1.4136	2.92132	1.23314	1.133273	1.05853	1.60653	0.89345	0.77946	0.8033	0.8828	0.644	0.5128
NLS-S	$\hat{\sigma}$	0.99929	0.99858	0.99929	0.999307	0.99147	0.98303	0.99147	0.99176	0.9091	0.8276	0.9087	0.9112
	$\hat{\xi}$	1.37241	*2.38326*	1.01111	0.750302	*0.5392*	*0.6355*	0.46744	0.43255	0.314	0.1916	0.2696	0.2394
WNLS-P	$\hat{\sigma}$	0.9995	0.99899	0.99947	0.999999	0.99988	0.99976	0.99988	0.99992	0.9904	0.9809	0.9903	0.9921
	$\hat{\xi}$	1.35833	2.72853	1.19765	1.146186	0.99348	1.45699	0.85234	0.78491	0.7205	0.7488	0.5787	0.4862
ZHANG	$\hat{\sigma}$	**0.41021**	**0.27137**	**0.4102**	**0.410221**	**0.81523**	**0.96778**	**0.81478**	**0.81527**	1.6273	2.8691	1.6255	1.627
	$\hat{\xi}$	*1.29947*	*2.5371*	1.29945	1.299534	1.58693	3.70426	1.58666	1.5878	1.5094	2.6162	1.5075	1.5088
LME	$\hat{\sigma}$	0.96381	0.93797	0.99971	0.99974	0.99645	0.99291	0.99645	0.99659	0.9507	0.9038	0.9506	0.9511
	$\hat{\xi}$	3.03619	9.22745	3.00027	3.000259	2.0026	4.0104	2.00244	2.00341	1.0462	1.0944	1.0461	1.0454
MDPD	$\hat{\sigma}$					0.99577	0.99155	0.99582	0.996	0.92	0.8465	0.9198	0.9209
	$\hat{\xi}$					1.31991	1.74366	1.3163	1.30901	0.235	0.0558	0.2077	0.2038
MED	$\hat{\sigma}$	0.9151	0.88708	0.99929	0.999366	0.99158	0.98324	0.99158	0.99202	0.9	0.81	0.8995	0.9012
	$\hat{\xi}$	1.88993	3.57556	1.80679	1.960988	0.90552	0.82117	0.86821	0.94482	0.3089	0.152	0.1641	*0.0927*
MLE	$\hat{\sigma}$	0.95808	0.93006	0.99971	0.99974	0.99641	0.99282	0.9964	0.99658	0.9223	0.8506	0.9221	0.924
	$\hat{\xi}$	2.87521	8.37584	3	3	1.98824	3.95361	1.9855	2	0.2599	0.0682	0.2359	0.2262
MOMENTS	$\hat{\sigma}$	3.2E+07	8.2E+15	0.99867	0.998958	0.98856	0.97726	0.98852	0.98981	**0.8952**	**0.8014**	**0.8942**	0.9001
	$\hat{\xi}$	9.6E+07	7.4E+16	1.09692	0.64986	1.15923	3.74699	0.57315	0.40479	0.3774	0.2474	0.2623	0.2041
MPLE	$\hat{\sigma}$	0.90285	0.88084	0.99971	0.99974	0.99641	0.99283	0.99641	0.99658	0.9219	0.8499	0.9217	0.9238
	$\hat{\xi}$	2.70937	7.93195	3	3	1.98777	3.95177	1.98501	2	0.2643	0.0707	0.2373	0.2262
PICKANDS	$\hat{\sigma}$	1.29285	2.27624	0.99887	0.999013	0.98946	0.97902	0.98944	0.99022	0.8994	0.8089	0.8986	0.9036
	$\hat{\xi}$	1.75652	13.0136	*0.55593*	*0.471174*	0.57314	0.47459	0.45604	0.38325	0.5005	0.3609	0.3966	0.3319
PWMB	$\hat{\sigma}$	2.08576	12.6192	0.99883	0.998992	0.98916	0.97844	0.98914	0.98998	0.8968	0.8043	0.8961	0.9007
	$\hat{\xi}$	4.1204	99.2368	0.64389	0.528017	0.55575	0.45287	0.42245	0.35028	0.3143	0.1454	0.2418	0.2006
PWMU	$\hat{\sigma}$	809.948	5236812	0.99879	0.998974	0.989	0.97811	0.98898	0.98992	0.897	0.8046	0.8963	0.9012
	$\hat{\xi}$	2427.92	4.7E+07	0.72603	0.557465	0.63096	0.65431	0.45688	0.36739	0.3326	0.1705	0.2539	0.211
AD	$\hat{\sigma}$	0.99965	0.99931	0.99965	0.999695	0.9932	0.98644	0.99319	0.99366	0.9011	0.8119	0.9007	0.9026
	$\hat{\xi}$	3.02009	9.12866	3.00818	2.999473	0.99724	0.99945	0.9467	0.89769	0.2227	0.082	0.1694	0.138
ADR	$\hat{\sigma}$	0.99969	0.99938	0.99969	0.999726	0.99373	0.98749	0.99372	0.99418	0.9004	0.8107	0.9	0.9021

			-0.5				0				1		
	$\hat{\xi}$	3.01177	9.07181	2.99924	2.999814	1.12636	1.27169	1.08396	1.04109	0.1969	0.0593	0.1574	0.1356
AD2R	$\hat{\sigma}$	0.99969	0.99938	0.99969	0.999724	0.99432	0.98866	0.99427	0.99475	0.9021	0.8139	0.902	0.9041
	$\hat{\xi}$	3.00119	9.00857	2.98816	2.999976	1.2624	1.59577	1.22463	1.16387	*0.1878*	*0.0468*	*0.157*	0.1416
ADL	$\hat{\sigma}$	0.99965	0.9993	0.99965	0.999698	0.98984	0.97979	0.98983	0.99047	0.8956	0.8022	0.8948	0.8992
	$\hat{\xi}$	3.04077	9.25922	3.03039	2.999088	0.55254	*0.3839*	*0.4188*	*0.3255*	0.4287	0.3259	0.3173	0.2407
AD2L	$\hat{\sigma}$	0.9996	0.9992	0.99961	0.999654	0.98963	0.97937	0.98964	0.99057	0.9013	0.8124	0.8999	0.9056
	$\hat{\xi}$	3.0481	9.30806	3.0422	2.981593	1.28251	2.03829	0.82288	0.54587	1.2574	2.045	0.7722	0.4681
CM	$\hat{\sigma}$	0.99968	0.99936	0.99968	0.999725	0.99065	0.98139	0.99064	0.9912	0.8952	0.8014	0.8946	**0.8982**
	$\hat{\xi}$	3.0093	9.05752	2.99267	2.999357	0.61607	0.43799	0.47989	0.39205	0.3166	0.1679	0.2432	0.1944
KS	$\hat{\sigma}$	0.99971	0.99942	0.99971	0.99974	0.99609	0.99219	0.99609	0.99622	0.9361	0.8762	0.9359	0.9405
	$\hat{\xi}$	3.0114	9.06942	3.00009	3	1.99696	3.98802	1.99456	2.00467	0.87	0.7574	0.8337	0.9391

		-0.5				0				1			
METHOD	PARAMETERS	RMSE	MSE	MAE	MDAE	RMSE	MSE	MAE	MDAE	RMSE	MSE	MAE	MDAE
MLEn	$\hat{\sigma}$	3.14004	10.0661	3.13545	3.121743	1.98195	4.25479	1.9649	1.98115	**0.7226**	**0.6211**	**0.6453**	**0.6045**
	$\hat{\xi}$	4.58653	21.5818	4.57827	4.559812	6.2015	43.4192	6.13193	6.17209	33.038	1253.9	30.055	27.787
NLS-P	$\hat{\sigma}$	0.91415	0.83673	0.91137	0.850245	0.73684	0.74809	0.54878	0.47261	236.19	97520	112.86	58.348
	$\hat{\xi}$	0.71685	0.69527	0.54408	0.398731	0.68334	0.66205	0.51988	0.38817	0.9516	1.2082	0.8058	0.6919
NLS-S	$\hat{\sigma}$	0.71002	0.51621	0.70333	0.713349	0.56877	0.52898	0.44077	0.35253	42.021	5073	24.575	15.789
	$\hat{\xi}$	0.24543	0.09641	0.19936	0.166574	0.28703	0.12318	0.23864	0.21796	0.5924	0.4954	0.5319	0.5121
WNLS-P	$\hat{\sigma}$	0.91053	0.83022	0.90772	0.921486	0.75252	0.77841	0.54705	0.45607	250.05	106635	121.65	73.823
	$\hat{\xi}$	0.64655	0.60041	0.4897	0.365156	0.62696	0.59277	0.47516	0.36359	0.9279	1.1827	0.7927	0.7124
ZHANG	$\hat{\sigma}$	2.17672	4.79443	2.17066	2.168206	3.65356	13.4057	3.62937	3.6103	28.25	802.84	27.382	26.495
	$\hat{\xi}$	1.05512	1.1473	1.0508	1.047651	0.62907	0.40824	0.61218	0.60904	0.6233	0.4034	0.5797	0.5777
LME	$\hat{\sigma}$	0.80686	0.65102	0.80647	0.806936	**0.20403**	**0.05853**	**0.15997**	0.13425	10.593	114.97	9.7479	9.0982
	$\hat{\xi}$	0.6231	0.38828	0.62252	0.621239	*0.1442*	*0.0285*	0.11609	0.1002	*0.2926*	0.1262	*0.2329*	*0.197*
MDPD	$\hat{\sigma}$	0.66351	0.44063	0.65836	0.660805	0.33601	0.24358	0.21192	0.16	8533.6	1E+08	180.54	27.543

Method	Param												
	$\hat{\xi}$	0.18262	0.05528	0.14741	0.140993	0.23226	0.10533	0.17312	0.13738	5.1562	26.75	1.3652	0.4551
MED	$\hat{\sigma}$	0.68658	0.4714	0.68048	0.687436	0.26739	0.10528	0.20686	0.17057	11.066	128.68	9.8534	9.0076
	$\hat{\xi}$	0.30544	0.15064	0.20686	0.15136	0.35472	0.18394	0.2629	0.20568	0.552	0.4177	0.4368	0.3841
MLE	$\hat{\sigma}$	0.65719	0.43248	0.65215	**0.65492**	0.29537	0.16273	0.21844	0.16352	8507	1E+08	139.27	9.4273
	$\hat{\xi}$	0.18461	0.05741	0.15186	0.143623	0.21991	0.08944	0.1729	0.13942	2.9745	17.361	0.4087	0.1987
MOMENTS	$\hat{\sigma}$	0.67924	0.46138	0.6735	0.684317	0.21763	0.07385	0.16126	**0.12559**	4429	4E+07	110.19	28.703
	$\hat{\xi}$	0.22088	0.08143	0.15841	0.124418	0.15771	0.04028	*0.1141*	0.08557	0.6087	0.3798	0.6009	0.5794
MPLE	$\hat{\sigma}$	**0.65687**	**0.43206**	**0.65179**	0.655132	0.29322	0.1616	0.21353	0.15379	8521.3	1E+08	147.31	11.991
	$\hat{\xi}$	0.18143	*0.0533*	0.1508	0.143454	0.21106	0.08265	0.15704	0.11683	0.4266	0.235	0.4032	0.371
PICKANDS	$\hat{\sigma}$	0.69075	0.47727	0.68139	0.696457	0.3433	0.17162	0.26006	0.21605	11.214	131.99	9.4962	8.3249
	$\hat{\xi}$	0.49481	0.35426	0.39344	0.331179	0.51097	0.37852	0.40526	0.33959	0.6117	0.5387	0.4848	0.4067
PWMB	$\hat{\sigma}$	0.68112	0.46393	0.67539	0.685724	0.22853	0.07885	0.173	0.13932	237.97	150234	16.523	11.937
	$\hat{\xi}$	0.22254	0.07381	0.17093	0.14082	0.17498	0.04685	0.13289	0.10606	0.3354	0.1358	0.2944	0.2776
PWMU	$\hat{\sigma}$	0.68463	0.46872	0.6788	0.689698	0.22548	0.07633	0.17254	0.14247	12.615	163.61	11.566	10.73
	$\hat{\xi}$	0.23002	0.08107	0.1774	0.147811	0.17452	0.04673	0.13396	0.1096	0.3162	*0.1172*	0.2718	0.2546
AD	$\hat{\sigma}$	0.68523	0.46954	0.68009	0.686216	0.23263	0.08161	0.18138	0.15177	8535	1E+08	182.15	30.641
	$\hat{\xi}$	0.21258	0.07916	0.16012	0.125068	0.22746	0.08427	0.17346	0.13899	0.7064	0.5406	0.6094	0.586
ADR	$\hat{\sigma}$	0.68026	0.46281	0.67512	0.6819	0.23231	0.08469	0.17799	0.14569	8535.2	1E+08	187.7	31.098
	$\hat{\xi}$	*0.18116*	0.05669	0.14091	0.113868	0.1973	0.06278	0.15481	0.12716	0.6673	0.4946	0.581	0.5708
AD2R	$\hat{\sigma}$	0.67549	0.45636	0.66528	0.672839	1.56021	5.6228	0.3406	0.15461	8535.2	1E+08	113.77	42.365
	$\hat{\xi}$	0.18155	0.06063	*0.1407*	*0.113176*	6.05861	53.5313	0.72564	0.12905	47.531	3857.7	28.468	11.187
ADL	$\hat{\sigma}$	0.68156	0.46454	0.67345	0.683822	0.29552	0.13519	0.22429	0.18331	8533.3	1E+08	173.11	10.086
	$\hat{\xi}$	0.39856	0.27264	0.29614	0.22679	0.40633	0.26994	0.30591	0.2387	224.59	111078	16.589	0.4164
AD2L	$\hat{\sigma}$	0.70884	0.50257	0.69447	0.704867	0.42947	0.27001	0.31518	0.25687	937.41	2E+06	106.99	9.5782
	$\hat{\xi}$	1.30335	2.19246	0.7534	0.445037	1.275	2.04113	0.75955	0.45617	1199	3E+06	93.312	1.3336
CM	$\hat{\sigma}$	0.67779	0.45944	0.67097	0.680045	0.26974	0.11225	0.20446	0.16565	8534.6	1E+08	175.82	10.653
	$\hat{\xi}$	0.29448	0.14281	0.22474	0.178327	0.30108	0.1417	0.23298	0.18864	13.337	249.05	3.6272	0.3566
KS	$\hat{\sigma}$	0.71619	0.51295	0.7124	0.719276	0.24076	0.08517	0.17975	0.14234	8535.3	1E+08	208.13	50.342
	$\hat{\xi}$	0.3454	0.12542	0.29259	0.277546	0.21916	0.06753	0.14553	*0.0825*	3.4908	13.408	2.8851	2.6247

METHOD	PARAMETERS	2				3				5			
		RMSE	MSE	MAE	MDAE	RMSE	MSE	MAE	MDAE	RMSE	MSE	MAE	MDAE
MLEN	$\hat{\sigma}$	**0.59962**	**0.39123**	**0.50715**	**0.459242**	**1.51476**	**2.29888**	**1.41324**	**1.37626**	**3.4981**	**12.239**	**3.3777**	3.3355
	$\hat{\xi}$	329.545	145349	260.564	230.8264	4852.55	5.6E+07	2626.62	2100.93	1E+07	1E+15	488672	192688
NLS-P	$\hat{\sigma}$	100256	5.1E+10	12514.6	4709.482	1234986	3.6E+12	190935	83233.4	3E+07	4E+15	391572	1.35
	$\hat{\xi}$	1.30766	2.16646	1.15077	1.043447	2.19453	4.93881	2.07138	2.17551	4.4791	20.062	4.4788	4.5
NLS-S	$\hat{\sigma}$	40620	1.1E+10	3216.71	444.4576	6E+07	2.7E+16	2025526	16955.3	6E+13	3E+28	9E+11	3E+07
	$\hat{\xi}$	1.02025	1.44685	0.92578	0.901039	1.4671	2.97541	1.33309	1.31774	2.3181	7.3134	2.1015	2.0995
WNLS-P	$\hat{\sigma}$	110198	5.6E+10	14389.7	6202.624	1593824	5.6E+12	219115	86465.8	4E+07	7E+15	491859	**0.9**
	$\hat{\xi}$	1.30031	2.17947	1.1553	1.107816	2.19089	4.92437	2.06767	2.17156	4.4795	20.066	4.4792	4.5
ZHANG	$\hat{\sigma}$	279.531	82758.4	249.799	227.0952	4143.19	3.2E+07	2552.92	2079.52	1E+07	2E+15	577107	193359
	$\hat{\xi}$	*0.70622*	*0.53019*	0.63179	0.613949	*0.7971*	*0.7012*	*0.695*	0.66217	*1.0169*	*1.2262*	*0.8579*	*0.7895*
LME	$\hat{\sigma}$	77.5224	6197.57	66.9678	65.29238	28.8523	1237.72	15.8144	10.718	16.031	257.71	15.615	15.48
	$\hat{\xi}$	1.30559	2.17552	0.91135	0.533728	4.94041	24.409	4.84147	4.89042	9.494	90.137	9.4191	9.3864
MDPD	$\hat{\sigma}$	8.7E+12	3.3E+26	8.7E+10	41718.92	3.7E+18	2.7E+37	4.6E+16	2.3E+08	5E+34	1E+70	5E+32	2E+16
	$\hat{\xi}$	41.1904	2118.33	24.7943	14.49456	111.239	20970.6	61.1326	50.7911	253.85	121924	83.384	70.844
MED	$\hat{\sigma}$	154.446	30469.3	119.584	99.25726	3213.12	3E+07	1443.54	1015.23	4E+06	1E+14	553630	115591
	$\hat{\xi}$	0.74072	0.74643	*0.58971*	*0.508165*	0.92099	1.15629	0.73672	*0.6341*	1.2365	2.1237	1.0147	0.8874
MLE	$\hat{\sigma}$	2E+08	1.1E+17	9428527	42600.17	9.5E+10	6.2E+22	7.4E+10	7.4E+10	6E+09	4E+19	6E+09	6E+09
	$\hat{\xi}$	25.2025	1091.06	8.28393	1.16867	43.6889	5103.58	39.041	39.041	157.76	24890	157.76	157.76
MOMENTS	$\hat{\sigma}$	4.3E+12	8.3E+25	4.3E+10	21074.85	1.9E+18	7.3E+36	2.4E+16	1.1E+08	3E+34	3E+69	3E+32	9E+15
	$\hat{\xi}$	1.54418	2.38709	1.54312	1.530314	2.52931	6.39862	2.52904	2.52041	4.521	20.44	4.521	4.5151
MPLE	$\hat{\sigma}$	1.6E+08	7.5E+16	1.3E+07	46805.57	1.7E+08	7.8E+16	1.3E+11	1.3E+11	7E+09	5E+19	6E+09	6E+09
	$\hat{\xi}$	1.47058	2.1816	1.41733	1.411944	2.43697	5.95622	2.47188	2.47188	4.6023	21.201	4.6014	4.6014
PICKANDS	$\hat{\sigma}$	162.574	33901.8	114.791	89.71033	3505.23	3.1E+07	1444.83	887.766	2E+08	3E+17	3E+06	85584
	$\hat{\xi}$	0.78913	0.91091	0.62043	0.516593	0.99298	1.44133	0.77691	0.64122	1.4991	3.2938	1.1672	0.9689
PWMB	$\hat{\sigma}$	1E+10	5.6E+20	1E+08	596.325	8.5E+16	2.5E+34	9E+14	473083	3E+32	3E+65	3E+30	2E+13
	$\hat{\xi}$	1.10208	1.22475	1.0971	1.071574	2.05677	4.23466	2.05558	2.03868	4.0353	16.286	4.0351	4.0237
PWMU	$\hat{\sigma}$	15571.3	4.5E+08	977.632	399.6481	1.1E+09	3.4E+18	2.1E+07	129035	7E+20	2E+42	8E+18	8E+11

METHOD	PARAMETERS												
	$\hat{\xi}$	1.08076	1.17379	1.07564	1.050256	2.03581	4.1462	2.03461	2.01796	4.0147	16.118	4.0145	4.0033
AD	$\hat{\sigma}$	8.7E+12	3.3E+26	8.7E+10	41644.86	3.7E+18	2.7E+37	4.6E+16	2.3E+08	5E+34	1E+70	5E+32	2E+16
	$\hat{\xi}$	1.87353	3.52766	1.86266	1.906867	2.86083	8.20869	2.85754	2.8895	4.8241	23.314	4.8217	4.8419
ADR	$\hat{\sigma}$	8.7E+12	3.3E+26	8.7E+10	41710.31	3.7E+18	2.7E+37	4.6E+16	2.3E+08	5E+34	1E+70	5E+32	2E+16
	$\hat{\xi}$	1.83999	3.41213	1.83396	1.858013	2.80994	7.93911	2.80622	2.83886	4.7753	22.872	4.7733	4.7758
AD2R	$\hat{\sigma}$	8.7E+12	3.3E+26	2.9E+08	41128.67	3.7E+18	2.7E+37	5.2E+18	2E+08	5E+34	1E+70	4E+41	2E+16
	$\hat{\xi}$	40.8906	4012.39	28.4088	21.55281	36.6184	3864.89	26.9048	22.1741	32.638	3575.7	26.808	24.87
ADL	$\hat{\sigma}$	8.7E+12	3.3E+26	8.7E+10	41714.1	3.7E+18	2.7E+37	4.6E+16	2.3E+08	5E+34	1E+70	5E+32	2E+16
	$\hat{\xi}$	11031.3	2.1E+08	655.463	207.3654	23024.9	1E+09	706.362	59.4272	41852	3E+09	1273.1	15.878
AD2L	$\hat{\sigma}$	1.9E+08	7E+16	8.7E+10	28490.74	1.4E+16	9.3E+32	4.6E+16	2.3E+08	2E+29	2E+59	5E+32	2E+16
	$\hat{\xi}$	3297824	3.8E+13	1672320	6123.466	3.2E+08	2.2E+17	2.6E+07	301915	3E+07	4E+15	3E+06	281.91
CM	$\hat{\sigma}$	8.7E+12	3.3E+26	8.7E+10	41716.7	3.7E+18	2.7E+37	4.6E+16	2.3E+08	5E+34	1E+70	5E+32	2E+16
	$\hat{\xi}$	193.492	92539.7	44.9831	28.57339	494.147	999885	30.9665	12.2667	193.83	95081	15.222	7.5798
KS	$\hat{\sigma}$	8.7E+12	3.3E+26	8.7E+10	41718.98	3.7E+18	2.7E+37	4.6E+16	2.3E+08	5E+34	1E+70	5E+32	2E+16
	$\hat{\xi}$	253.669	170263	12.6794	2.374042	619.13	1357596	27.2375	3.08602	346.48	241999	15.581	5.0052

Table 4. Results for the POT (q = 0.9) framework when varying shape parameter with true scale = 10

METHOD	PARAMETERS	-3				-2				-1			
		RMSE	MSE	MAE	MDAE	RMSE	MSE	MAE	MDAE	RMSE	MSE	MAE	MDAE
MLEn	$\hat{\sigma}$	19.352	374.501	19.3462	19.34756	16.611	275.934	16.6063	16.5957	13.575	184.38	13.573	13.566
	$\hat{\xi}$	34.1908	1169.01	34.1541	34.15863	35.0851	1231.24	35.0308	34.9772	36.689	1355.2	36.628	36.547
NLS-P	$\hat{\sigma}$	9.99989	99.9979	9.99989	9.999992	9.99879	99.9759	9.99879	9.99919	9.9066	98.143	9.9063	9.9238
	$\hat{\xi}$	1.4123	2.90618	1.23155	1.159931	1.05909	1.61691	0.89703	0.8029	0.8038	0.8802	0.6448	0.5315
NLS-S	$\hat{\sigma}$	9.99283	99.8566	9.99283	9.993022	9.91407	98.2898	9.91403	9.917	9.1087	83.079	9.1053	9.1279
	$\hat{\xi}$	1.35872	2.34855	0.99515	0.738468	0.52411	0.62824	0.46544	0.43359	0.3116	0.1974	0.269	0.2411
WNLS-P	$\hat{\sigma}$	9.99989	99.9979	9.99989	9.999992	9.99879	99.9757	9.99879	9.99918	9.9032	98.075	9.9028	9.9186
	$\hat{\xi}$	1.35404	2.71374	1.19372	1.14134	0.99669	1.47642	0.8567	0.7894	0.7257	0.7606	0.5843	0.4881
ZHANG	$\hat{\sigma}$	**4.10207**	**27.1367**	**4.10202**	**4.102212**	**8.15228**	**96.778**	**8.14779**	**8.15268**	16.273	286.91	16.255	16.27

	$\hat{\xi}$	1.29947	2.53711	1.29945	1.299534	1.58693	3.70426	1.58666	1.5878	1.5094	2.6162	1.5075	1.5088
LME	$\hat{\sigma}$	9.99714	99.9428	9.99714	9.997407	9.9652	99.3052	9.96519	9.96646	9.5734	91.651	9.5732	9.5756
	$\hat{\xi}$	3.00256	9.01539	3.00253	3.002592	2.03386	4.1366	2.03383	2.03267	1.2622	1.5933	1.2608	1.2588
MDPD	$\hat{\sigma}$	9.99626	99.9253	9.99626	9.996306	9.95067	99.0158	9.95065	9.95305	9.0414	81.748	9.0369	9.0687
	$\hat{\xi}$	2.35566	5.54946	2.35502	2.365071	1.09811	1.20584	1.09454	1.09739	0.3121	0.1034	0.1093	0.0708
MED	$\hat{\sigma}$	9.99289	99.8579	9.99289	9.993663	9.91579	98.323	9.91573	9.92012	9.0004	81.007	8.9958	9.0124
	$\hat{\xi}$	1.84793	3.425	1.80717	1.961051	0.90781	0.82553	0.86749	0.94357	0.3534	0.1942	0.1747	0.0982
MLE	$\hat{\sigma}$	9.99708	99.9417	9.99708	9.997404	9.93273	98.6593	9.93264	9.94082	9.0316	81.571	9.0285	9.0527
	$\hat{\xi}$	2.98241	8.89574	2.9798	3	1.10247	1.2173	0.99041	0.99988	0.1614	0.0293	*0.1037*	*0.0676*
MOMENTS	$\hat{\sigma}$	9.9867	99.7341	9.98667	9.989585	9.88562	97.7258	9.88522	9.89808	8.9518	80.138	8.9425	9.0009
	$\hat{\xi}$	2.745	27.0553	1.09692	0.64986	1.15923	3.74699	0.57315	0.40479	0.3774	0.2474	0.2623	0.2041
MPLE	$\hat{\sigma}$	9.99709	99.9418	9.99709	9.997404	9.93276	98.6599	9.93267	9.94084	9.027	81.49	9.024	9.0474
	$\hat{\xi}$	2.98161	8.89106	2.97892	3	1.10828	1.23003	0.99259	0.99777	*0.1612*	*0.0288*	0.1062	0.0698
PICKANDS	$\hat{\sigma}$	9.98875	99.7751	9.98875	9.990132	9.89456	97.9023	9.89443	9.90221	8.9941	80.895	8.9862	9.0358
	$\hat{\xi}$	*0.69675*	*0.6936*	*0.55593*	*0.471174*	0.57314	0.47459	0.45604	0.38325	0.5005	0.3609	0.3966	0.3319
PWMB	$\hat{\sigma}$	9.98834	99.767	9.98834	9.98992	9.89158	97.8436	9.89144	9.89984	8.968	80.427	8.9614	9.007
	$\hat{\xi}$	0.86185	1.08975	0.64386	0.528017	0.55575	0.45287	0.42245	0.35028	0.3143	0.1454	0.2418	0.2006
PWMU	$\hat{\sigma}$	9.98792	99.7585	9.98791	9.989744	9.88996	97.8114	9.88978	9.89919	8.9701	80.465	8.9629	9.0117
	$\hat{\xi}$	1.07655	2.10556	0.72598	0.557465	0.63096	0.65431	0.45688	0.36739	0.3326	0.1705	0.2539	0.211
AD	$\hat{\sigma}$	9.99417	99.8833	9.99416	9.994832	9.91189	98.2457	9.91183	9.91659	8.9833	80.701	8.9785	9.0048
	$\hat{\xi}$	1.92538	3.71075	1.8771	1.828148	0.47353	0.23371	0.41264	0.39092	0.2388	0.0975	0.1829	0.148
ADR	$\hat{\sigma}$	9.99462	99.8924	9.99462	9.995387	9.91272	98.2621	9.91266	9.91714	8.9694	80.454	8.9648	8.9907
	$\hat{\xi}$	2.06055	16.2187	2.0198	1.987809	0.4704	12.5159	0.42331	0.40413	0.2109	10.217	0.1654	0.1365
AD2R	$\hat{\sigma}$	9.995	99.9001	9.99499	9.995663	9.91825	98.3717	9.91765	9.92197	**8.9418**	**79.961**	**8.9396**	**8.9653**
	$\hat{\xi}$	2.18728	4.78552	2.14576	2.090323	0.56079	0.31463	0.52296	0.51483	0.2089	0.0735	0.1659	0.1381
ADL	$\hat{\sigma}$	9.99129	99.8259	9.99129	9.992454	9.89134	97.8388	9.89122	9.89835	8.9569	80.229	8.9486	8.9923
	$\hat{\xi}$	1.32144	1.81368	1.12263	1.053716	0.49933	0.39745	0.37596	0.29718	0.4314	0.3366	0.3175	0.2402
AD2L	$\hat{\sigma}$	9.98988	99.7976	9.99002	9.991474	9.89452	97.9017	9.89437	9.90401	9.0143	81.263	8.9984	9.056
	$\hat{\xi}$	1.54091	2.99497	1.0649	0.783866	1.48457	2.93862	0.89299	0.56917	1.333	2.3149	0.7942	0.4685

CM	$\hat{\sigma}$	9.99226	99.8453	9.99226	9.993318	9.89297	97.871	9.89287	9.89899	8.9529	80.158	8.9464	8.9827
	$\hat{\xi}$	1.53597	2.42	1.37271	1.328403	*0.3616*	*0.1911*	*0.279*	*0.2255*	0.318	0.1707	0.243	0.1923
KS	$\hat{\sigma}$	9.99681	99.9362	9.99681	9.997142	9.9595	99.1916	9.95948	9.96188	9.1243	83.254	9.1195	9.1392
	$\hat{\xi}$	3.00269	9.0162	3.00177	3.002526	1.94469	3.78204	1.93603	1.99169	0.5337	0.3129	0.4129	0.3515

		-0.5				0				1			
METHOD	PARAMETERS	RMSE	MSE	MAE	MDAE	RMSE	MSE	MAE	MDAE	RMSE	MSE	MAE	MDAE
MLEn	$\hat{\sigma}$	12.1686	148.312	12.1673	12.15355	10.9959	121.274	10.9921	11.0128	**9.658**	**93.335**	9.6472	9.604
	$\hat{\xi}$	41.964	1825.91	41.8757	41.69291	63.6187	4653.54	62.7963	63.1096	349.25	145277	314.39	286.91
NLS-P	$\hat{\sigma}$	9.15226	83.8678	9.1255	9.257475	7.47461	76.2494	5.54897	4.74545	2125	7E+06	1101.4	682.82
	$\hat{\xi}$	0.70582	0.67733	0.53384	0.403642	0.68382	0.66852	0.51692	0.40539	0.9519	1.2036	0.8077	0.7172
NLS-S	$\hat{\sigma}$	7.11706	51.9007	7.0543	7.142948	5.51659	48.8767	4.32462	3.47018	413.06	479468	243.38	157.6
	$\hat{\xi}$	0.29453	0.17638	0.25111	0.222503	0.27607	0.11386	0.21924	0.17778	0.5861	0.4824	0.5261	0.5063
WNLS-P	$\hat{\sigma}$	9.11941	83.276	9.09231	9.226302	7.65019	79.1523	5.55546	4.60232	2280.9	8E+06	1192	738.45
	$\hat{\xi}$	0.63439	0.58646	0.47924	0.357723	0.63134	0.60086	0.47519	0.36413	0.9297	1.1807	0.7952	0.7123
ZHANG	$\hat{\sigma}$	21.7672	479.443	21.7066	21.68206	36.5356	1340.57	36.2937	36.103	282.5	80284	273.82	264.95
	$\hat{\xi}$	1.05512	1.1473	1.0508	1.047651	0.62907	0.40824	0.61218	0.60904	0.6233	0.4034	0.5797	0.5777
LME	$\hat{\sigma}$	7.25454	52.7462	7.22482	7.264225	2.21326	7.07031	1.77939	1.53755	18.672	461.53	**9.222**	**2.6249**
	$\hat{\xi}$	0.38136	0.21504	0.26283	0.1547	0.33593	0.20619	0.21633	0.12298	2.7993	7.8396	2.6206	2.893
MDPD	$\hat{\sigma}$	6.63158	44.0173	6.53996	6.568594	2.76403	14.5031	1.95718	1.53987	85352	1E+10	2043.6	467.36
	$\hat{\xi}$	0.21088	0.08442	0.15854	0.144548	0.21503	0.08628	0.16377	0.13106	3.7522	14.134	1.0985	0.605
MED	$\hat{\sigma}$	6.86548	47.1359	6.80382	6.873807	2.68326	10.5965	2.07588	1.71245	110.55	12845	98.411	89.97
	$\hat{\xi}$	0.31033	0.15826	0.20842	0.150969	0.35922	0.18853	0.26587	0.20763	0.5543	0.421	0.4383	0.3849
MLE	$\hat{\sigma}$	6.53869	42.8387	6.48147	6.513773	2.91103	15.5643	2.16413	1.63447	85332	1E+10	1748.3	179.87
	$\hat{\xi}$	0.19229	*0.06375*	0.15934	0.147508	0.21825	0.08743	0.17201	0.13918	3.0304	17.417	0.5207	0.3317
MOMENTS	$\hat{\sigma}$	6.79236	46.1383	6.73497	6.843166	2.17632	7.38483	1.61258	1.25585	44290	4E+09	1101.9	287.03
	$\hat{\xi}$	0.22088	0.08143	0.15841	0.124418	0.15771	0.04028	*0.1141*	*0.0856*	0.6087	0.3798	0.6009	0.5794

METHOD	PARAMETERS												
MPLE	$\hat{\sigma}$	6.53435	42.7858	6.47712	6.508713	2.88496	15.3763	2.11482	1.53653	85332	1E+10	1792.1	202.94
	$\hat{\xi}$	0.19289	0.06384	0.15958	0.147566	0.20924	0.08057	0.15614	0.11672	0.5353	0.3251	0.5105	0.4788
PICKANDS	$\hat{\sigma}$	6.90746	47.7268	6.81388	6.964572	3.43304	17.1625	2.60063	2.16046	112.14	13199	94.962	83.249
	$\hat{\xi}$	0.49481	0.35426	0.39344	0.331179	0.51097	0.37852	0.40526	0.33959	0.6117	0.5387	0.4848	0.4067
PWMB	$\hat{\sigma}$	6.81122	46.3934	6.75387	6.857241	2.28534	7.88487	1.73005	1.39317	2379.7	2E+07	165.23	119.37
	$\hat{\xi}$	0.22254	0.07381	0.17093	0.14082	0.17498	0.04685	0.13289	0.10606	0.3354	0.1358	0.2944	0.2776
PWMU	$\hat{\sigma}$	6.84627	46.8716	6.78799	6.896982	2.25475	7.63338	1.7254	1.42474	126.15	16361	115.66	107.3
	$\hat{\xi}$	0.23002	0.08107	0.1774	0.147811	0.17452	0.04673	0.13396	0.1096	0.3162	0.1172	0.2718	0.2546
AD	$\hat{\sigma}$	6.85188	46.9486	6.80039	6.861846	2.32349	8.12957	1.81277	1.51754	85352	1E+10	1982.9	402.22
	$\hat{\xi}$	0.21303	0.07961	0.16028	0.125172	0.22739	0.08417	0.1734	0.13895	0.8233	0.6892	0.7679	0.8712
ADR	$\hat{\sigma}$	6.80305	46.287	6.75181	6.819664	2.29247	8.10723	1.76808	1.4553	85353	1E+10	2031.9	458.32
	$\hat{\xi}$	0.18127	5.89801	0.14095	0.113952	0.19608	0.13902	0.15404	0.1268	0.8454	2E+07	0.8165	0.8904
AD2R	$\hat{\sigma}$	6.70736	45.012	6.65665	6.734254	2.73628	11.7919	1.99066	1.52172	85353	1E+10	1191.5	484.15
	$\hat{\xi}$	0.19426	0.07728	0.14001	0.11282	6.35949	60.8557	0.73828	0.12895	47.555	3859.4	28.546	11.225
ADL	$\hat{\sigma}$	6.81586	46.4567	6.735	6.83911	2.86697	12.3209	2.20501	1.8175	85349	1E+10	1908.8	240.49
	$\hat{\xi}$	0.39899	0.27127	0.296	0.226084	0.39971	0.25748	0.30244	0.23956	363.93	265572	22.335	2.3484
AD2L	$\hat{\sigma}$	7.08822	50.2557	6.94712	7.047291	4.24051	26.3889	3.13372	2.5578	19067	7E+08	1755.7	133.26
	$\hat{\xi}$	1.30413	2.16811	0.75675	0.436096	1.31117	2.19596	0.76988	0.46392	4197.4	6E+07	237.49	2.1039
CM	$\hat{\sigma}$	6.78021	45.9743	6.71263	6.801831	2.55577	9.53063	1.98352	1.6433	85350	1E+10	1971.5	338.3
	$\hat{\xi}$	0.2913	0.1389	0.22264	0.176603	0.29273	0.13057	0.22818	0.18519	14.065	268	5.3875	1.9502
KS	$\hat{\sigma}$	6.9323	48.061	6.88661	6.963164	1.55391	3.35987	1.20424	0.9899	85353	1E+10	2084.4	506.88
	$\hat{\xi}$	0.30298	0.12635	0.24596	0.22313	0.1574	0.0364	0.12136	0.10019	4.5906	25.736	2.9284	2.638

METHOD	PARAMETERS	2				3				5			
		RMSE	MSE	MAE	MDAE	RMSE	MSE	MAE	MDAE	RMSE	MSE	MAE	MDAE
MLEn	$\hat{\sigma}$	8.62779	74.4538	8.61453	8.615423	7.63458	58.3005	7.6112	7.6291	5.6975	32.496	5.6258	5.6648

	$\hat{\xi}$	3311.63	1.5E+07	2623.89	2326.411	48547.6	5.6E+09	26293.3	21036.3	1E+08	1E+17	5E+06	2E+06
NLS-P	$\hat{\sigma}$	309251	2.6E+11	60944.8	37868.75	5402996	1.2E+14	230569	9.9	23.819	1923.5	10.103	9.9
	$\hat{\xi}$	1.19523	1.70206	1.07816	1.010825	2.39059	5.71805	2.37286	2.40813	4.4963	20.216	4.4962	4.5
NLS-S	$\hat{\sigma}$	418308	1.2E+12	30710	4333.881	4.5E+08	1.5E+18	1.5E+07	158686	1E+14	8E+28	2E+12	2E+08
	$\hat{\xi}$	1.01213	1.41565	0.91721	0.894764	1.45586	2.91426	1.32054	1.30976	2.279	7.0197	2.06	2.0585
WNLS-P	$\hat{\sigma}$	330024	2.8E+11	68377.4	40430.11	5643521	1.2E+14	250655	9.9	23.979	1962.6	10.105	9.9
	$\hat{\xi}$	1.18096	1.68602	1.07247	1.003813	2.38963	5.71349	2.372	2.40813	4.4964	20.218	4.4964	4.5
ZHANG	$\hat{\sigma}$	2795.31	8275839	2497.99	2270.952	41431.9	3.2E+09	25529.2	20795.2	1E+08	2E+17	6E+06	2E+06
	$\hat{\xi}$	*0.70622*	*0.53019*	0.63179	0.613949	*0.7971*	*0.7012*	*0.695*	0.66217	*1.0169*	*1.2262*	*0.8579*	*0.7895*
LME	$\hat{\sigma}$	**7.89568**	175.38	**1.74978**	**0.704113**	**4.17424**	**30.4119**	**2.40201**	**2.21361**	8.3691	70.044	8.2543	8.1979
	$\hat{\xi}$	5.31495	28.2494	5.27617	5.290873	7.50175	56.2763	7.4639	7.44858	11.835	140.07	11.776	11.742
MDPD	$\hat{\sigma}$	8.7E+13	3.3E+28	8.7E+11	417189.8	3.7E+19	2.7E+39	4.6E+17	2.3E+09	5E+35	1E+72	5E+33	2E+17
	$\hat{\xi}$	48.1134	3548.12	24.2509	14.42468	103.306	16489.5	59.203	49.634	259.45	108880	80.836	67.788
MED	$\hat{\sigma}$	1544.31	3046553	1.7E+07	137528.7	26827	1.7E+09	14459.1	10153.7	4E+07	1E+16	6E+06	1E+06
	$\hat{\xi}$	0.74092	0.74679	0.69261	0.621338	0.92011	1.15183	0.73748	*0.6353*	1.2365	2.1237	1.0147	0.8874
MLE	$\hat{\sigma}$	2.7E+08	1.8E+17	1.1E+07	180394.6	1.6E+11	1.7E+23	1.6E+11	1.6E+11				
	$\hat{\xi}$	22.4238	833.235	6.90942	1.083222	43.6839	5103.58	39.0362	39.0362				
MOMENTS	$\hat{\sigma}$	4.3E+13	8.3E+27	2.9E+11	186420	1.9E+19	7.3E+38	2.4E+17	1.1E+09	3E+35	3E+71	3E+33	9E+16
	$\hat{\xi}$	1.54418	2.38709	1.51694	1.504353	2.52931	6.39862	2.52904	2.52041	4.521	20.44	4.521	4.5151
MPLE	$\hat{\sigma}$	1.5E+07	3.5E+14	1.4E+11	248686.7	1.9E+11	2E+23	1.8E+11	1.8E+11	8E+10	7E+21	8E+10	8E+10
	$\hat{\xi}$	1.47947	2.2101	1.50403	1.490877	2.46339	6.09676	2.46191	2.46191	4.5273	20.5	4.5273	4.5273
PICKANDS	$\hat{\sigma}$	1625.74	3390176	1147.91	897.1033	35052.3	3.1E+09	14448.3	8877.66	2E+09	3E+19	3E+07	855838
	$\hat{\xi}$	0.78913	0.91091	*0.62043*	*0.516593*	0.99298	1.44133	0.77691	0.64122	1.4991	3.2938	1.1672	0.9689
PWMB	$\hat{\sigma}$	1E+11	5.6E+22	1E+09	5963.25	8.5E+17	2.5E+36	9E+15	4730833	3E+33	3E+67	3E+31	2E+14
	$\hat{\xi}$	1.10208	1.22475	1.0971	1.071574	2.05677	4.23466	2.05558	2.03868	4.0353	16.286	4.0351	4.0237
PWMU	$\hat{\sigma}$	155713	4.5E+10	9776.32	3996.481	1.1E+10	3.4E+20	2.1E+08	1290355	7E+21	2E+44	8E+19	8E+12
	$\hat{\xi}$	1.08076	1.17379	1.07564	1.050256	2.03581	4.1462	2.03461	2.01796	4.0147	16.118	4.0145	4.0033
AD	$\hat{\sigma}$	8.7E+13	3.3E+28	8.7E+11	417189.8	3.7E+19	2.7E+39	4.6E+17	2.3E+09	5E+35	1E+72	5E+33	2E+17
	$\hat{\xi}$	1.90334	3.63378	1.90005	1.923032	2.86135	8.21148	2.85812	2.88993	4.8241	23.314	4.8217	4.8419

METHOD	PARAMETERS												
ADR	$\hat{\sigma}$	8.7E+13	3.3E+28	8.7E+11	417189.8	3.7E+19	2.7E+39	4.6E+17	2.3E+09	5E+35	1E+72	5E+33	2E+17
	$\hat{\xi}$	1.84837	2.7E+28	1.84341	1.865515	2.81001	6.7E+36	2.80629	2.83893	4.7753	8E+69	4.7733	4.7758
AD2R	$\hat{\sigma}$	8.7E+13	3.3E+28	2.9E+09	411300.4	3.7E+19	2.7E+39	5.2E+19	2E+09	5E+35	1E+72	4E+42	2E+17
	$\hat{\xi}$	40.8896	4012.34	28.4101	21.54869	36.6184	3864.89	26.9048	22.1741	32.638	3575.7	26.808	24.87
ADL	$\hat{\sigma}$	8.7E+13	3.3E+28	8.7E+11	417189.7	3.7E+19	2.7E+39	4.6E+17	2.3E+09	5E+35	1E+72	5E+33	2E+17
	$\hat{\xi}$	154076	1.5E+11	2045.65	209.3964	177095	2.2E+11	2275.58	59.2705	46913	4E+09	1282.5	15.869
AD2L	$\hat{\sigma}$	1.9E+09	7E+18	8.7E+11	404858	1.4E+17	9.3E+34	4.6E+17	2.3E+09	2E+30	2E+61	5E+33	2E+17
	$\hat{\xi}$	4.7E+07	1.5E+16	4306272	6153.83	1.9E+08	5.6E+16	1.3E+07	315202	3E+07	4E+15	2E+06	282.27
CM	$\hat{\sigma}$	8.7E+13	3.3E+28	8.7E+11	417189.8	3.7E+19	2.7E+39	4.6E+17	2.3E+09	5E+35	1E+72	5E+33	2E+17
	$\hat{\xi}$	141.49	34774.2	43.8481	28.58331	499.965	1032566	31.5106	12.267	193.83	95081	15.222	7.5798
KS	$\hat{\sigma}$	8.7E+13	3.3E+28	8.7E+11	417189.8	3.7E+19	2.7E+39	4.6E+17	2.3E+09	5E+35	1E+72	5E+33	2E+17
	$\hat{\xi}$	291.531	209850	13.581	2.374556	618.688	1355103	27.0704	3.08615	346.48	241999	15.578	5.0052

Table 5. Results for the POT (q = 0.95) framework when varying shape parameter with true scale = 1

METHOD	PARAMETERS	-3				-2				-1			
		RMSE	MSE	MAE	MDAE	RMSE	MSE	MAE	MDAE	RMSE	MSE	MAE	MDAE
MLEn	$\hat{\sigma}$	11.8891	141.35	11.8834	11.89623	8.91845	79.5433	8.91027	8.90405	5.2519	27.668	5.2475	5.2404
	$\hat{\xi}$	6.62893	43.9428	6.6278	6.63209	5.95818	35.501	5.95511	5.952	5.2456	27.598	5.2412	5.234
NLS-P	$\hat{\sigma}$	0.99793	0.99587	0.99782	1	0.99996	0.99992	0.99996	0.99998	0.9953	0.9906	0.9953	0.9962
	$\hat{\xi}$	1.45534	3.07817	1.26481	1.181495	1.05511	1.59732	0.89123	0.79779	0.8014	0.874	0.6413	0.5302
NLS-S	$\hat{\sigma}$	0.99991	0.99982	0.99991	0.999913	0.99786	0.99573	0.99786	0.99794	0.9544	0.9112	0.9543	0.9556
	$\hat{\xi}$	1.38213	2.40474	1.02042	0.755083	0.53588	0.63406	0.46732	0.43228	0.3123	0.1903	0.2681	0.2384
WNLS-P	$\hat{\sigma}$	0.99791	0.99583	0.99781	1	0.99996	0.99992	0.99996	0.99998	0.9952	0.9903	0.9951	0.996
	$\hat{\xi}$	1.40487	2.8956	1.23089	1.16646	0.98974	1.44875	0.84974	0.78696	0.7189	0.7434	0.5774	0.4851
ZHANG	$\hat{\sigma}$	0.4187	0.2863	0.4187	0.418707	0.89362	1.19252	**0.89354**	**0.89385**	1.9847	4.3517	1.9839	1.9857
	$\hat{\xi}$	1.32475	2.66807	1.32475	1.324771	1.74063	4.58302	1.74059	1.74109	1.8558	4.0207	1.855	1.8567
LME	$\hat{\sigma}$	0.99996	0.99993	0.99996	0.999967	0.9991	0.9982	0.9991	0.99914	0.9748	0.9503	0.9748	0.9751
	$\hat{\xi}$	3.00004	9.00022	3.00004	3.000033	2.00006	4.00025	1.99994	2.00085	1.0244	1.0495	1.0244	1.024

MDPD	$\hat{\sigma}$					0.99799	0.99599	0.99799	0.99799	0.9619	0.9253	0.9619	0.9626
	$\hat{\xi}$					1.37143	1.88082	1.36846	1.36846	0.2633	0.0697	0.2523	0.2486
MED	$\hat{\sigma}$	0.99991	0.99982	0.99991	0.99992	0.99788	0.99576	0.99788	0.99799	0.9494	0.9014	0.9493	0.9502
	$\hat{\xi}$	1.85002	3.43237	1.80975	1.962622	0.90727	0.82422	0.86886	0.94636	0.2909	0.1346	0.1601	*0.0899*
MLE	$\hat{\sigma}$	0.99996	0.99993	0.99996	0.999967	0.9991	0.9982	0.9991	0.99914	0.9616	0.9246	0.9615	0.9635
	$\hat{\xi}$	3	9	3	3	1.99999	3.99997	1.99999	2	0.3256	0.1076	0.2851	0.2702
MOMENTS	$\hat{\sigma}$	0.99982	0.99964	0.99982	0.999867	0.99705	**0.99411**	0.99705	0.99742	**0.9467**	**0.8963**	**0.9465**	0.9496
	$\hat{\xi}$	3.13384	39.273	1.16826	0.650842	1.06093	2.73297	0.59386	0.40869	0.3846	0.2603	0.2676	0.204
MPLE	$\hat{\sigma}$	0.99996	0.99993	0.99996	0.999967	0.9991	0.9982	0.9991	0.99914	0.9615	0.9246	0.9614	0.9634
	$\hat{\xi}$	3	9	3	3	1.99999	3.99997	1.99999	2	0.3271	0.108	0.285	0.2689
PICKANDS	$\hat{\sigma}$	0.99986	0.99971	0.99986	0.999875	0.99733	0.99467	0.99733	0.99753	0.949	0.9006	0.9488	0.9513
	$\hat{\xi}$	0.69477	0.6887	0.55202	0.466142	0.57006	0.46909	0.45291	0.38141	0.498	0.3577	0.3951	0.3315
PWMB	$\hat{\sigma}$	0.99985	0.9997	0.99985	0.999872	0.99724	0.99448	0.99724	0.99747	0.9477	0.8981	0.9475	0.9499
	$\hat{\xi}$	0.88194	1.1738	0.6531	0.529438	0.56765	0.47911	0.42894	0.35172	0.319	0.1511	0.2448	0.2007
PWMU	$\hat{\sigma}$	0.99984	0.99969	0.99984	0.99987	0.99719	0.99439	0.99719	0.99746	0.9478	0.8983	0.9476	0.9502
	$\hat{\xi}$	1.12506	2.43557	0.74664	0.558522	0.64575	0.69617	0.4661	0.36897	0.3377	0.1776	0.2572	0.2108
AD	$\hat{\sigma}$	0.99995	0.99991	0.99995	0.999959	0.9989	0.9978	0.9989	0.9991	0.9515	0.9054	0.9514	0.9525
	$\hat{\xi}$	2.98519	8.91228	2.97886	2.999943	1.90198	3.62358	1.88063	1.99854	0.2293	0.0774	0.1736	0.1398
ADR	$\hat{\sigma}$	0.99996	0.99992	0.99996	0.999962	0.99897	0.99793	0.99897	0.99912	0.951	0.9045	0.951	0.952
	$\hat{\xi}$	2.99856	8.99135	2.9982	2.999999	1.9156	3.67459	1.90361	2	0.197	0.0529	0.1564	0.1326
AD2R	$\hat{\sigma}$	0.99996	0.99992	0.99996	0.999962	0.99903	0.99805	0.99902	0.99913	0.9534	0.909	0.9533	0.9542
	$\hat{\xi}$	2.99065	8.94405	2.98881	3	1.9455	3.78734	1.93699	1.9998	0.2155	0.0518	0.1779	0.1588
ADL	$\hat{\sigma}$	0.99995	0.9999	0.99995	0.999954	0.99838	0.99676	0.99838	0.99896	0.947	0.8969	0.9468	0.9491
	$\hat{\xi}$	2.98125	8.91625	2.95757	3.02524	1.61891	2.78022	1.46408	1.78805	0.4308	0.3277	0.3202	0.2434
AD2L	$\hat{\sigma}$	0.99994	0.99988	0.99994	0.999943	0.99803	0.99607	0.99803	0.99861	0.9494	0.9013	0.949	0.9522
	$\hat{\xi}$	2.87862	8.30952	2.83708	2.999933	1.50273	2.78904	1.31302	1.39144	1.2396	2.0257	0.7605	0.4709
CM	$\hat{\sigma}$	0.99996	0.99992	0.99996	0.999962	0.99869	0.99737	0.99869	0.99913	0.9469	0.8967	0.9468	0.9486
	$\hat{\xi}$	2.99895	8.99368	2.99856	2.999994	1.81118	3.29665	1.72218	1.99949	0.3179	0.1684	0.2449	0.1962
KS	$\hat{\sigma}$	0.99996	0.99993	0.99996	0.999967	0.99905	0.99811	0.99905	0.99914	0.97	0.9408	0.9699	0.971

	$\hat{\xi}$	3	9	3	3	2.0015	4.00601	2.00135	2	0.933	0.871	0.918	0.9581

		-0.5				0				1			
METHOD	PARAMETERS	RMSE	MSE	MAE	MDAE	RMSE	MSE	MAE	MDAE	RMSE	MSE	MAE	MDAE
MLEn	$\hat{\sigma}$	3.48871	12.3741	3.48431	3.47041	2.09774	4.75349	2.08273	2.08359	**0.7372**	**0.6488**	**0.6587**	**0.6195**
	$\hat{\xi}$	5.32114	28.9047	5.31312	5.294225	7.7429	67.0339	7.68264	7.72226	69.671	5627.9	63.151	58.294
NLS-P	$\hat{\sigma}$	0.93828	0.88093	0.93688	0.946934	0.73181	0.73049	0.54748	0.47301	464.71	380605	224.84	136.17
	$\hat{\xi}$	0.71912	0.69622	0.54893	0.424029	0.67433	0.64174	0.51315	0.39692	0.954	1.2068	0.8092	0.7179
NLS-S	$\hat{\sigma}$	0.79239	0.6342	0.78921	0.796905	0.56528	0.51762	0.43954	0.35241	108.97	42460	50.187	32.497
	$\hat{\xi}$	0.24864	0.09767	0.20137	0.168057	0.28575	0.12083	0.23769	0.21874	0.5925	0.4938	0.532	0.5102
WNLS-P	$\hat{\sigma}$	0.93546	0.8757	0.93406	0.944422	0.74959	0.76633	0.54739	0.45722	495.58	419198	243.3	146.99
	$\hat{\xi}$	0.6529	0.60396	0.4955	0.372035	0.61967	0.57402	0.46945	0.36074	0.9305	1.1826	0.7958	0.713
ZHANG	$\hat{\sigma}$	2.74342	7.6512	2.7394	2.738153	4.80145	23.1482	4.77749	4.75876	59.216	3526.9	57.472	55.597
	$\hat{\xi}$	1.31716	1.80125	1.31436	1.312009	0.7139	0.52352	0.69763	0.69611	0.6341	0.4169	0.5911	0.5926
LME	$\hat{\sigma}$	0.86071	0.74082	0.8605	0.861055	**0.20665**	**0.06042**	**0.16134**	0.13462	20.761	432.68	19.342	18.384
	$\hat{\xi}$	0.6007	0.36086	0.60029	0.599026	*0.1455*	*0.0292*	0.11716	0.10122	0.3618	0.2201	*0.2674*	0.2042
MDPD	$\hat{\sigma}$	0.76006	0.57792	0.75801	0.75966	0.32102	0.22226	0.2144	0.16168	15379	5E+08	352.78	65.741
	$\hat{\xi}$	***0.17354***	***0.04927***	0.14531	0.140492	0.23018	0.10389	0.17434	0.13854	4.462	19.922	1.1513	0.445
MED	$\hat{\sigma}$	0.77548	0.6014	0.77266	0.777258	0.27039	0.10787	0.20909	0.1727	23.19	563.91	20.795	19.07
	$\hat{\xi}$	0.29975	0.14495	0.20516	0.150759	0.35629	0.18821	0.26329	0.20573	0.5507	0.4136	0.4358	0.3814
MLE	$\hat{\sigma}$	0.75598	0.57183	0.75382	0.756069	0.30102	0.17081	0.22202	0.16603	15368	5E+08	271.1	20.544
	$\hat{\xi}$	0.17843	0.05162	0.14944	0.143048	0.22134	0.09137	0.17423	0.1407	2.8628	16.338	0.3999	*0.1991*
MOMENTS	$\hat{\sigma}$	0.76988	0.59278	0.76682	0.775395	0.22291	0.07849	0.16455	**0.12803**	8155.5	1E+08	210.21	58.476
	$\hat{\xi}$	0.22502	0.0855	0.16139	0.125741	0.16078	0.04241	*0.1159*	0.08611	0.6081	0.3789	0.6007	0.5798
MPLE	$\hat{\sigma}$	**0.75544**	**0.57103**	**0.75323**	**0.75589**	0.29896	0.16964	0.21719	0.15591	15371	5E+08	286.85	25.975
	$\hat{\xi}$	0.18079	0.05249	0.1504	0.142828	0.21198	0.08374	0.1582	0.11917	0.4359	0.2427	0.4142	0.3857
PICKANDS	$\hat{\sigma}$	0.77736	0.60432	0.77282	0.783564	0.34599	0.17342	0.26159	0.21703	23.606	585.46	20.132	17.716

	$\hat{\xi}$	0.49229	0.35252	0.3911	0.330119	0.51006	0.37691	0.40379	0.33757	0.612	0.5422	0.485	0.4044
PWMB	$\hat{\sigma}$	0.77128	0.59491	0.76835	0.776179	0.23367	0.08343	0.17591	0.14045	700.25	2E+06	36.127	24.886
	$\hat{\xi}$	0.22597	0.07691	0.1734	0.141987	0.17783	0.04879	0.13462	0.10709	0.3351	0.1352	0.2947	0.2787
PWMU	$\hat{\sigma}$	0.77368	0.59859	0.77065	0.778861	0.23024	0.08052	0.17502	0.14269	26.299	710.04	24.212	22.508
	$\hat{\xi}$	0.23321	0.08415	0.17948	0.148889	0.17715	0.04852	0.13535	0.11076	0.3157	0.1166	0.2722	0.2557
AD	$\hat{\sigma}$	0.7747	0.60019	0.77227	0.776702	0.23603	0.08475	0.18334	0.15173	15380	5E+08	347.62	63.082
	$\hat{\xi}$	0.21192	0.07824	0.16016	0.125872	0.22995	0.08696	0.17464	0.13856	0.7108	0.5448	0.6186	0.5967
ADR	$\hat{\sigma}$	0.77153	0.59533	0.76914	0.773828	0.23601	0.08801	0.18034	0.14573	15380	5E+08	359.84	65.75
	$\hat{\xi}$	0.18201	0.05718	0.1416	0.114684	0.19971	0.0653	0.15588	0.12765	0.6886	0.5153	0.6075	0.6077
AD2R	$\hat{\sigma}$	0.78086	0.61079	0.76191	0.767339	1.57399	5.56984	0.35306	0.15681	2061.5	5E+06	228.79	89.244
	$\hat{\xi}$	0.1833	0.06159	0.14111	0.11325	6.01165	54.1707	0.7488	0.13128	46.826	3739.6	28.235	11.465
ADL	$\hat{\sigma}$	0.77028	0.5934	0.76597	0.774582	0.30335	0.14537	0.22822	0.18393	15378	5E+08	332.18	22.838
	$\hat{\xi}$	0.40516	0.28538	0.30096	0.229251	0.41224	0.28064	0.31066	0.24289	345.05	204556	18.92	0.4699
AD2L	$\hat{\sigma}$	0.78571	0.61739	0.7781	0.787932	0.43591	0.27755	0.32141	0.25719	12237	4E+08	238.86	21.797
	$\hat{\xi}$	1.27596	2.05452	0.74465	0.44625	1.29902	2.08458	0.76525	0.46604	4780.3	5E+07	133.38	1.4475
CM	$\hat{\sigma}$	0.7687	0.59097	0.76531	0.772299	0.27382	0.11623	0.207	0.16672	15379	5E+08	338.14	28.493
	$\hat{\xi}$	0.29361	0.14339	0.22463	0.179398	0.30508	0.14673	0.23536	0.18845	13.205	244.53	3.9424	0.5237
KS	$\hat{\sigma}$	0.7992	0.63874	0.79767	0.802509	0.24435	0.08845	0.18133	0.14342	15380	5E+08	392.78	102.31
	$\hat{\xi}$	0.33574	0.12063	0.28698	0.281965	0.22057	0.06875	0.14591	0.08189	4.4396	21.963	2.9033	2.626

METHOD	PARAMETERS	2				3				5			
		RMSE	MSE	MAE	MDAE	RMSE	MSE	MAE	MDAE	RMSE	MSE	MAE	MDAE
MLEn	$\hat{\sigma}$	0.59858	0.39015	0.50501	0.455704	1.51584	2.30243	1.41497	1.37513	3.5018	12.265	3.3824	3.3376
	$\hat{\xi}$	1288.24	2091757	1054.65	934.4012	29643.9	1.3E+09	20936.2	16844.9	6E+07	2E+16	1E+07	6E+06
NLS-P	$\hat{\sigma}$	137338	5.4E+10	32323.8	18577.9	4.6E+07	1.6E+16	645676	0.9	0.9	0.9	0.81	0.9	0.9
	$\hat{\xi}$	1.23871	1.88603	1.09888	1.011348	2.38328	5.68434	2.35974	2.40813	4.4985	20.237	4.4985	4.5
NLS-S	$\hat{\sigma}$	110943	8E+10	11983.2	1734.988	1.8E+08	1.9E+17	1E+07	130738	8E+13	5E+28	2E+12	6E+08

	$\hat{\xi}$	1.01414	1.42794	0.9199	0.897801	1.45452	2.90506	1.31912	1.30444	2.2617	6.874	2.0427	2.0452
WNLS-P	$\hat{\sigma}$	151511	6.2E+10	36961.1	20074.14	4.6E+07	1.6E+16	666405	**0.9**	**0.9**	**0.81**	**0.9**	**0.9**
	$\hat{\xi}$	1.22764	1.88504	1.09771	1.007941	2.38198	5.67816	2.35848	2.40813	4.4986	20.237	4.4986	4.5
ZHANG	$\hat{\sigma}$	1118.15	1312833	1007.47	916.27	27690.4	1E+09	20419	16653.4	8E+07	4E+16	1E+07	6E+06
	$\hat{\xi}$	*0.70716*	*0.53073*	0.63274	0.616306	*0.7951*	*0.6968*	*0.6935*	0.66207	*1.0124*	*1.2151*	*0.854*	*0.7888*
LME	$\hat{\sigma}$	24.2696	834.021	13.6957	8.712702	12.3314	159.004	11.298	11.0814	18.268	333.72	18.218	18.171
	$\hat{\xi}$	4.19459	17.5966	4.10138	4.196633	7.27192	52.8809	7.23158	7.22177	13.008	169.21	12.954	12.922
MDPD	$\hat{\sigma}$	8.7E+12	3.3E+26	9E+10	163532.9	7.6E+18	9.8E+37	1E+17	1.9E+09	2E+37	4E+75	2E+35	6E+17
	$\hat{\xi}$	37.174	1655.27	24.132	14.39848	156.609	61695.3	60.3687	49.8051	302.89	180469	80.838	66.157
MED	$\hat{\sigma}$	617.136	478148	484.482	400.5917	20607.5	8.8E+08	11694.8	8148.41	8E+07	4E+16	1E+07	4E+06
	$\hat{\xi}$	0.74189	0.75191	*0.59189*	0.513142	0.91949	1.15214	0.73703	*0.639*	1.1646	1.8365	0.9381	0.8088
MLE	$\hat{\sigma}$	2.1E+08	1.2E+17	1.3E+07	110075.9	3.6E+10	7.9E+21	3.6E+10	3.6E+10	4E+10	2E+21	4E+10	4E+10
	$\hat{\xi}$	24.6115	1123.31	8.05807	1.190602	1.54684	2.83834	1.52764	1.52764	3.6044	12.992	3.6044	3.6044
MOMENTS	$\hat{\sigma}$	4.3E+12	8.3E+25	4.5E+10	82591.27	4E+18	2.8E+37	5.2E+16	9.3E+08	1E+37	9E+74	1E+35	3E+17
	$\hat{\xi}$	1.54389	2.38613	1.54289	1.530387	2.52924	6.39827	2.52899	2.52036	4.521	20.44	4.5209	4.5151
MPLE	$\hat{\sigma}$	5.7E+07	1.1E+16	8111190	125209.8	4.4E+10	9.5E+21	4.4E+10	4.4E+10	2E+11	1E+23	2E+11	2E+11
	$\hat{\xi}$	1.47814	2.20518	1.47628	1.46297	2.51667	6.35079	2.51631	2.51631	4.5436	20.647	4.5436	4.5436
PICKANDS	$\hat{\sigma}$	669.035	591429	466.757	363.5224	27538.4	2E+09	11631.7	7086.93	3E+08	7E+17	2E+07	3E+06
	$\hat{\xi}$	0.78354	0.8952	0.61589	*0.512063*	0.99299	1.43849	0.77787	0.6453	1.4908	3.2599	1.1597	0.9549
PWMB	$\hat{\sigma}$	1E+10	5.6E+20	1.1E+08	2384.952	3E+17	3.7E+35	3.3E+15	3799907	2E+34	2E+69	2E+32	6E+14
	$\hat{\xi}$	1.10179	1.22395	1.09693	1.071854	2.05656	4.23372	2.05542	2.03855	4.0352	16.284	4.035	4.0237
PWMU	$\hat{\sigma}$	80981.8	1E+10	4201.21	1602.218	4.4E+10	1.2E+22	5.5E+08	1053585	6E+23	3E+48	6E+21	3E+13
	$\hat{\xi}$	1.08045	1.173	1.07547	1.050533	2.03558	4.14525	2.03445	2.01783	4.0145	16.117	4.0144	4.0033
AD	$\hat{\sigma}$	8.7E+12	3.3E+26	9E+10	163511.6	7.6E+18	9.8E+37	1E+17	1.9E+09	2E+37	4E+75	2E+35	6E+17
	$\hat{\xi}$	1.89981	3.62104	1.89586	1.920828	2.86077	8.20834	2.85753	2.88989	4.8241	23.315	4.8218	4.8423
ADR	$\hat{\sigma}$	8.7E+12	3.3E+26	9E+10	163532.9	7.6E+18	9.8E+37	1E+17	1.9E+09	2E+37	4E+75	2E+35	6E+17
	$\hat{\xi}$	1.84702	3.43589	1.84199	1.86412	2.80934	7.93605	2.80566	2.83819	4.7756	22.876	4.7737	4.7767
AD2R	$\hat{\sigma}$	5.5E+10	1E+22	7.7E+08	159577.5	1.5E+21	1.1E+43	1.5E+19	1.6E+09	9E+43	3E+88	9E+41	6E+17
	$\hat{\xi}$	41.0489	3992.59	28.0702	21.05936	36.7542	3852.61	27.1834	22.2625	32.703	3566.4	26.576	24.772

ADL	$\hat{\sigma}$	8.7E+12	3.3E+26	9E+10	163531.6	7.6E+18	9.8E+37	1E+17	1.9E+09	2E+37	4E+75	2E+35	6E+17
	$\hat{\xi}$	23626	1.5E+09	829.135	208.579	11663.7	1.5E+08	654.388	58.6294	18110	4E+08	893.83	15.911
AD2L	$\hat{\sigma}$	8.7E+12	3.3E+26	9E+10	145511.6	7.6E+18	9.8E+37	1E+17	1.9E+09	2E+37	4E+75	2E+35	6E+17
	$\hat{\xi}$	1.3E+08	3.2E+16	2444088	6029.423	2.8E+08	8.5E+16	1.1E+07	287932	8E+07	3E+16	2E+06	304.08
CM	$\hat{\sigma}$	8.7E+12	3.3E+26	9E+10	163532.9	7.6E+18	9.8E+37	1E+17	1.9E+09	2E+37	4E+75	2E+35	6E+17
	$\hat{\xi}$	139.953	49271.7	43.7988	28.5459	291.407	136396	27.5677	12.2083	190.12	57206	15.687	7.5665
KS	$\hat{\sigma}$	8.7E+12	3.3E+26	9E+10	163532.9	7.6E+18	9.8E+37	1E+17	1.9E+09	2E+37	4E+75	2E+35	6E+17
	$\hat{\xi}$	167.058	69773.7	9.8252	2.379216	1065.89	4168535	35.0685	3.08602	385.38	224297	16.605	5.005

Table 6. Results for the POT (q = 0.95) framework when varying shape parameter with true scale = 10

		-3				-2				-1			
METHOD	PARAMETERS	RMSE	MSE	MAE	MDAE	RMSE	MSE	MAE	MDAE	RMSE	MSE	MAE	MDAE
MLEn	$\hat{\sigma}$	20.8866	436.251	20.8834	20.89623	17.9144	320.928	17.9103	17.9041	14.249	203.12	14.247	14.24
	$\hat{\xi}$	39.2971	1544.27	39.278	39.3209	41.595	1730.26	41.5511	41.52	43.465	1897.4	43.412	43.34
NLS-P	$\hat{\sigma}$	9.99961	99.9923	9.99961	9.999999	9.9997	99.994	9.9997	9.9998	9.953	99.062	9.9529	9.9618
	$\hat{\xi}$	1.41218	2.91427	1.22953	1.154038	1.05484	1.59869	0.89241	0.79942	0.8062	0.8831	0.6468	0.5377
NLS-S	$\hat{\sigma}$	9.99911	99.9822	9.99911	9.999131	9.97853	99.5711	9.97853	9.97929	9.5537	91.301	9.5528	9.569
	$\hat{\xi}$	1.39994	2.42364	1.02364	0.746844	0.53185	0.63224	0.46699	0.43307	0.3099	0.1908	0.2663	0.2371
WNLS-P	$\hat{\sigma}$	9.99961	99.9922	9.99961	9.999999	9.9997	99.994	9.9997	9.99979	9.9512	99.026	9.9511	9.9592
	$\hat{\xi}$	1.35477	2.71701	1.1931	1.139086	0.99235	1.4597	0.85279	0.78913	0.7245	0.7556	0.5827	0.4854
ZHANG	$\hat{\sigma}$	4.18701	28.6298	4.187	4.187073	8.93625	119.252	8.93538	8.93849	19.847	435.17	19.839	19.857
	$\hat{\xi}$	1.32475	2.66807	1.32475	1.324771	1.74063	4.58302	1.74059	1.74109	1.8558	4.0207	1.855	1.8567
LME	$\hat{\sigma}$	9.99963	99.9927	9.99963	9.999673	9.99107	99.8215	9.99107	9.99146	9.772	95.492	9.7719	9.7739
	$\hat{\xi}$	3.00032	9.00194	3.00032	3.000327	2.00884	4.03542	2.00883	2.00848	1.1705	1.3701	1.17	1.168
MDPD	$\hat{\sigma}$	9.99855	99.9709	9.99855	9.998546	9.98845	99.7692	9.98845	9.98895	9.548	91.164	9.5466	9.5583
	$\hat{\xi}$	2.34645	5.50585	2.34645	2.346454	1.21136	1.46801	1.20869	1.19646	0.27	0.0755	0.1342	0.1076
MED	$\hat{\sigma}$	9.9991	99.9819	9.9991	9.9992	9.97875	99.5755	9.97875	9.97995	9.4948	90.151	9.4936	9.5027

Method													
	$\hat{\xi}$	1.84985	3.43183	1.80966	1.962442	0.90591	0.8219	0.86825	0.94629	0.3486	0.1737	0.1704	*0.0944*
MLE	$\hat{\sigma}$	9.99963	99.9927	9.99963	9.999673	9.98926	99.7853	9.98926	9.98957	9.5387	90.988	9.5379	9.5473
	$\hat{\xi}$	2.99999	8.99995	2.99999	3	1.48264	2.20758	1.44414	1.28655	0.1933	0.0426	0.1347	0.1072
MOMENTS	$\hat{\sigma}$	9.99821	99.9642	9.99821	9.998674	9.97052	**99.4113**	9.97048	9.97424	**9.4672**	**89.631**	**9.4647**	9.4962
	$\hat{\xi}$	3.13384	39.273	1.16826	0.650842	1.06093	2.73297	0.59386	0.40869	0.3846	0.2603	0.2676	0.204
MPLE	$\hat{\sigma}$	9.99963	99.9927	9.99963	9.999673	9.98934	99.7869	9.98934	9.98974	9.5406	91.023	9.5399	9.5505
	$\hat{\xi}$	2.99999	8.99994	2.99999	3	1.4801	2.19934	1.44188	1.27949	*0.1862*	*0.0362*	0.1354	0.1085
PICKANDS	$\hat{\sigma}$	9.99856	99.9712	9.99856	9.998751	9.9733	99.4666	9.97329	9.97532	9.4898	90.057	9.4879	9.5133
	$\hat{\xi}$	0.69477	0.6887	0.55202	0.466142	0.57006	0.46909	0.45291	0.38141	0.498	0.3577	0.3951	0.3315
PWMB	$\hat{\sigma}$	9.99849	99.9698	9.99849	9.998723	9.97238	99.4483	9.97237	9.97474	9.4769	89.813	9.4752	9.4993
	$\hat{\xi}$	0.88194	1.1738	0.6531	0.529438	0.56765	0.47911	0.42894	0.35172	0.319	0.1511	0.2448	0.2007
PWMU	$\hat{\sigma}$	9.99843	99.9685	9.99843	9.998697	9.97191	99.439	9.9719	9.97455	9.4776	89.826	9.4757	9.5018
	$\hat{\xi}$	1.12506	2.43557	0.74664	0.558522	0.64575	0.69617	0.4661	0.36897	0.3377	0.1776	0.2572	0.2108
AD	$\hat{\sigma}$	9.99956	99.9912	9.99956	9.999621	9.98047	99.6099	9.98047	9.98176	9.4885	90.033	9.4873	9.5001
	$\hat{\xi}$	3.01423	9.09239	3.00041	2.999505	0.71054	0.5074	0.65371	0.62547	0.2358	0.0961	0.1804	0.1455
ADR	$\hat{\sigma}$	9.99959	99.9919	9.99959	9.999654	9.98121	99.6245	9.9812	9.98241	9.4817	89.903	9.4805	9.4942
	$\hat{\xi}$	2.99136	8.94899	2.98838	2.999602	0.77774	0.60851	0.72215	0.68303	0.2086	0.0721	0.1653	0.1376
AD2R	$\hat{\sigma}$	9.99961	99.9921	9.99961	9.999655	9.9829	99.6584	9.9829	9.98396	9.4743	89.764	9.4731	**9.4867**
	$\hat{\xi}$	2.98959	8.93798	2.98709	2.999934	0.93679	0.87866	0.88653	0.83308	0.2035	0.0677	0.1654	0.1455
ADL	$\hat{\sigma}$	9.99954	99.9907	9.99954	9.999632	9.97324	99.4654	9.97323	9.97501	9.4708	89.698	9.4687	9.4917
	$\hat{\xi}$	3.0418	9.26325	3.01866	2.999122	0.49727	0.35063	0.36654	0.28151	0.4333	0.3384	0.3199	0.2415
AD2L	$\hat{\sigma}$	9.99946	99.9892	9.99946	9.999574	9.97299	99.4606	9.97298	9.97572	9.494	90.138	9.4894	9.5221
	$\hat{\xi}$	3.06472	9.41324	3.02998	2.967246	1.40095	2.52573	0.88382	0.56437	1.3732	2.4697	0.7895	0.4677
CM	$\hat{\sigma}$	9.99957	99.9914	9.99957	9.99965	9.97441	99.4889	9.9744	9.9762	9.4696	89.674	9.4679	9.4871
	$\hat{\xi}$	2.9813	8.89019	2.97182	2.999775	0.43297	0.24701	0.33207	0.27077	0.3231	0.179	0.2466	0.195
KS	$\hat{\sigma}$	9.99963	99.9925	9.99963	9.999673	9.98998	99.7997	9.98998	9.99068	9.6007	92.174	9.5997	9.6103
	$\hat{\xi}$	3.00025	9.00147	3.00024	3	1.98109	3.92493	1.97466	2.01246	0.6666	0.4531	0.5523	0.4909

METHOD	PARAMETERS	-0.5				0				1			
		RMSE	MSE	MAE	MDAE	RMSE	MSE	MAE	MDAE	RMSE	MSE	MAE	MDAE
MLEn	$\hat{\sigma}$	12.5171	156.912	12.5158	12.50187	11.1218	124.099	11.1185	11.121	**9.6704**	**93.575**	9.6595	9.6193
	$\hat{\xi}$	49.3154	2501.89	49.2305	49.04293	79.7905	7249.44	79.0683	79.5184	717.2	608844	647.56	592.06
NLS-P	$\hat{\sigma}$	9.39141	88.2522	9.37798	9.47463	7.41009	74.3242	5.53021	4.75511	3891.9	2E+07	2136.4	1355.7
	$\hat{\xi}$	0.70854	0.67986	0.53819	0.410273	0.67438	0.64764	0.50973	0.40173	0.9481	1.1894	0.8032	0.716
NLS-S	$\hat{\sigma}$	7.92781	63.5046	7.89602	7.977617	5.48842	48.0558	4.31489	3.46903	1081.9	4E+06	496.26	323.09
	$\hat{\xi}$	0.2951	0.16416	0.24737	0.218428	0.27464	0.1116	0.21821	0.17757	0.5856	0.4791	0.525	0.5043
WNLS-P	$\hat{\sigma}$	9.3668	87.7953	9.35315	9.448821	7.59755	77.7743	5.54135	4.60702	4201.4	3E+07	2319.3	1463.2
	$\hat{\xi}$	0.63783	0.59011	0.48318	0.362436	0.6223	0.579	0.46829	0.3603	0.9239	1.1645	0.789	0.7106
ZHANG	$\hat{\sigma}$	27.4342	765.12	27.394	27.38153	48.0145	2314.82	47.7749	47.5876	592.16	352690	574.72	555.97
	$\hat{\xi}$	1.31716	1.80125	1.31436	1.312009	0.7139	0.52352	0.69763	0.69611	0.6341	0.4169	0.5911	0.5926
LME	$\hat{\sigma}$	8.11701	65.9367	8.10502	8.141779	2.23059	7.19	1.79301	1.55654	9.9606	174.03	**4.449**	**2.744**
	$\hat{\xi}$	0.39354	0.20496	0.28573	0.199059	0.34456	0.21738	0.22168	0.12498	3.8812	15.065	3.824	3.9047
MDPD	$\hat{\sigma}$	7.59562	57.7204	7.54851	7.565851	2.87567	16.4289	1.99036	1.55792	153805	5E+10	3919.1	1018.7
	$\hat{\xi}$	0.23575	0.1177	0.16267	0.145539	0.22131	0.09519	0.16561	0.13202	3.7383	14.066	1.0974	0.6155
MED	$\hat{\sigma}$	7.75422	60.1313	7.72572	7.772332	2.71182	10.8356	2.09749	1.7325	231.72	56289	207.78	190.56
	$\hat{\xi}$	0.30456	0.15102	0.20601	0.150568	0.35861	0.18923	0.26559	0.20774	0.552	0.4157	0.4366	0.3817
MLE	$\hat{\sigma}$	7.52641	56.7048	7.50073	7.526229	2.96781	16.3651	2.20289	1.65978	153788	5E+10	3514.6	595.6
	$\hat{\xi}$	0.19439	0.06526	0.16145	0.148275	0.21991	0.08966	0.17349	0.14061	2.9721	16.474	0.6104	0.4594
MOMENTS	$\hat{\sigma}$	7.69883	59.2779	7.66824	7.753952	2.22906	7.84944	1.64549	1.28029	81555	1E+10	2102.1	584.76
	$\hat{\xi}$	0.22502	0.0855	0.16139	0.125741	0.16078	0.04241	*0.1159*	*0.0861*	0.6081	0.3789	0.6007	0.5798
MPLE	$\hat{\sigma}$	**7.51975**	**56.6094**	**7.49313**	**7.520867**	2.93345	16.0217	2.14637	1.55718	153789	5E+10	3544.1	600.1
	$\hat{\xi}$	0.19727	0.06753	0.16301	0.148385	0.20986	0.0813	0.15709	0.11898	0.594	0.3802	0.5716	0.5546
PICKANDS	$\hat{\sigma}$	7.77364	60.4316	7.72824	7.835643	3.45989	17.342	2.61594	2.17034	236.06	58546	201.32	177.16
	$\hat{\xi}$	0.49229	0.35252	0.3911	0.330119	0.51006	0.37691	0.40379	0.33757	0.612	0.5422	0.485	0.4044
PWMB	$\hat{\sigma}$	7.71282	59.491	7.68348	7.761792	2.3367	8.34328	1.75909	1.40448	7002.5	2E+08	361.27	248.86
	$\hat{\xi}$	0.22597	0.07691	0.1734	0.141987	0.17783	0.04879	0.13462	0.10709	0.3351	0.1352	0.2947	0.2787
PWMU	$\hat{\sigma}$	7.73679	59.859	7.70649	7.788608	2.30242	8.05226	1.75024	1.42695	262.99	71004	242.12	225.08

Method	Parameters												
	$\hat{\xi}$	0.23321	0.08415	0.17948	0.148889	0.17715	0.04852	0.13535	0.11076	*0.3157*	*0.1166*	*0.2722*	*0.2557*
AD	$\hat{\sigma}$	7.7463	60.0074	7.72181	7.766488	2.35766	8.44492	1.83241	1.51728	153803	5E+10	3826.3	933.06
	$\hat{\xi}$	0.21233	0.07868	0.16029	0.125891	0.22984	0.08681	0.17457	0.13856	0.8947	0.805	0.8689	0.9436
ADR	$\hat{\sigma}$	7.71523	59.5321	7.69131	7.737909	2.32977	8.43668	1.79169	1.45651	153804	5E+10	3882	981.46
	$\hat{\xi}$	***0.18218***	***0.05735***	0.14162	0.114666	0.19863	0.06412	0.1552	0.12723	0.8854	0.7902	0.8721	0.9108
AD2R	$\hat{\sigma}$	7.65022	58.5459	7.62266	7.680157	2.79431	12.5721	2.02734	1.54215	20622	5E+08	2400.1	1001.6
	$\hat{\xi}$	0.21074	0.10034	*0.13994*	*0.112342*	6.30055	61.5485	0.77129	0.13119	46.833	3739.8	28.299	11.446
ADL	$\hat{\sigma}$	7.7044	59.3634	7.66206	7.744806	2.93603	13.1447	2.24069	1.8279	153800	5E+10	3727.8	834.77
	$\hat{\xi}$	0.4027	0.27862	0.29925	0.227802	0.40216	0.26045	0.30569	0.24356	613.18	2E+06	27.772	7.9322
AD2L	$\hat{\sigma}$	7.85575	61.719	7.78003	7.879262	4.27394	26.3342	3.18999	2.56412	153110	5E+10	3409.5	383.86
	$\hat{\xi}$	1.31858	2.21786	0.75608	0.445352	1.32961	2.23514	0.77437	0.47381	9667.4	2E+08	357.47	14.355
CM	$\hat{\sigma}$	7.6882	59.1156	7.65478	7.723775	2.59836	9.90606	2.00878	1.65402	153802	5E+10	3824	941.59
	$\hat{\xi}$	0.29264	0.14025	0.22376	0.178172	0.29636	0.13462	0.23034	0.18603	13.322	229.41	5.9052	3.0125
KS	$\hat{\sigma}$	7.75653	60.164	7.73036	7.795662	**1.56611**	**3.42694**	**1.20649**	**0.98191**	153805	5E+10	3929.7	1024.9
	$\hat{\xi}$	0.28954	0.1209	0.23645	0.214556	*0.1586*	*0.0369*	0.1225	0.10153	7.2477	155.81	2.9313	2.6283

METHOD	PARAMETERS	2				3				5			
		RMSE	MSE	MAE	MDAE	RMSE	MSE	MAE	MDAE	RMSE	MSE	MAE	MDAE
MLEn	$\hat{\sigma}$	8.62914	74.4768	8.61592	8.618314	7.6333	58.2809	7.60992	7.63091	**5.692**	**32.43**	**5.6211**	**5.6629**
	$\hat{\xi}$	12898.9	2.1E+08	10564.7	9362.012	296462	1.3E+11	209389	168476	6E+08	2E+18	1E+08	6E+07
NLS-P	$\hat{\sigma}$	446994	4E+11	132292	85022.77	3355378	1.9E+13	167096	9.9	9.9	98.01	9.9	9.9
	$\hat{\xi}$	1.22086	1.64337	1.1377	1.147097	2.41549	5.83586	2.41329	2.40813	4.4998	20.248	4.4998	4.5
NLS-S	$\hat{\sigma}$	844825	4.5E+12	108848	16785.1	5.7E+10	2.5E+22	6.6E+08	1170603	6E+14	3E+30	1E+13	4E+09
	$\hat{\xi}$	1.00593	1.39336	0.91027	0.891005	1.43961	2.8272	1.30259	1.29193	2.2084	6.5031	1.9858	1.9839
WNLS-P	$\hat{\sigma}$	519207	5.1E+11	146603	88923.73	3964070	2.7E+13	187440	9.9	9.9	98.01	9.9	9.9
	$\hat{\xi}$	1.20529	1.61072	1.12546	1.140389	2.41553	5.83605	2.41336	2.40813	4.4998	20.248	4.4998	4.5
ZHANG	$\hat{\sigma}$	11181.5	1.3E+08	10074.7	9162.7	276904	1E+11	204190	166534	8E+08	4E+18	1E+08	6E+07

Method													
	$\hat{\xi}$	*0.70716*	*0.53073*	0.63274	0.616306	*0.7951*	*0.6968*	*0.6935*	0.66207	*1.0124*	*1.2151*	*0.854*	*0.7888*
LME	$\hat{\sigma}$	**1.66716**	**10.9901**	**0.5879**	**0.440596**	**3.86584**	**14.9483**	**3.76394**	**3.72497**	11.322	128.18	11.246	11.205
	$\hat{\xi}$	6.8295	46.6422	6.80674	6.804052	9.6493	93.1092	9.62057	9.60577	15.324	234.82	15.277	15.246
MDPD	$\hat{\sigma}$	8.7E+13	3.3E+28	9E+11	1635329	7.6E+19	9.8E+39	1E+18	1.9E+10	2E+38	4E+77	2E+36	6E+18
	$\hat{\xi}$	41.028	2188.66	23.8463	14.33506	96.4285	14038	57.4748	48.2819	239.57	105283	74.367	62.193
MED	$\hat{\sigma}$	6170.07	4.8E+07	4844.09	4005.74	206075	8.8E+10	116948	81484.1	8E+08	4E+18	1E+08	4E+07
	$\hat{\xi}$	0.74193	0.75197	*0.59192*	0.513132	0.91949	1.15213	0.73703	*0.639*	1.1646	1.8365	0.9381	0.8088
MLE	$\hat{\sigma}$	8.2E+07	1.1E+16	1.4E+07	486269.8	3.1E+08	2.1E+17	3E+08	3E+08				
	$\hat{\xi}$	24.0826	951.498	7.56984	1.230414	1.47303	2.46261	1.4481	1.4481				
MOMENTS	$\hat{\sigma}$	4.3E+13	8.3E+27	4.5E+11	825912.7	4E+19	2.8E+39	5.2E+17	9.3E+09	1E+38	9E+76	1E+36	3E+18
	$\hat{\xi}$	1.54389	2.38613	1.54289	1.530387	2.52924	6.39827	2.52899	2.52036	4.521	20.44	4.5209	4.5151
MPLE	$\hat{\sigma}$	7E+07	1.5E+16	2.6E+07	676976.1	1.3E+10	5.4E+20	9.7E+09	9.7E+09	3E+11	1E+23	3E+11	3E+11
	$\hat{\xi}$	1.47972	2.21156	1.47797	1.462745	2.45876	6.05365	2.45845	2.45845	4.5713	20.898	4.5713	4.5713
PICKANDS	$\hat{\sigma}$	6690.35	5.9E+07	4667.57	3635.224	275384	2E+11	116317	70869.3	3E+09	7E+19	2E+08	3E+07
	$\hat{\xi}$	0.78354	0.8952	0.61589	*0.512063*	0.99299	1.43849	0.77787	0.6453	1.4908	3.2599	1.1597	0.9549
PWMB	$\hat{\sigma}$	1E+11	5.6E+22	1.1E+09	23849.52	3E+18	3.7E+37	3.3E+16	3.8E+07	2E+35	2E+71	2E+33	6E+15
	$\hat{\xi}$	1.10179	1.22395	1.09693	1.071854	2.05656	4.23372	2.05542	2.03855	4.0352	16.284	4.035	4.0237
PWMU	$\hat{\sigma}$	809818	1E+12	42012.1	16022.18	4.4E+11	1.2E+24	5.5E+09	1.1E+07	6E+24	3E+50	6E+22	3E+14
	$\hat{\xi}$	1.08045	1.173	1.07547	1.050533	2.03558	4.14525	2.03445	2.01783	4.0145	16.117	4.0144	4.0033
AD	$\hat{\sigma}$	8.7E+13	3.3E+28	9E+11	1635329	7.6E+19	9.8E+39	1E+18	1.9E+10	2E+38	4E+77	2E+36	6E+18
	$\hat{\xi}$	1.90481	3.63898	1.9017	1.92419	2.86081	8.20854	2.85757	2.88991	4.8241	23.315	4.8218	4.8423
ADR	$\hat{\sigma}$	8.7E+13	3.3E+28	9E+11	1635329	7.6E+19	9.8E+39	1E+18	1.9E+10	2E+38	4E+77	2E+36	6E+18
	$\hat{\xi}$	1.84879	3.4419	1.84388	1.865778	2.80935	7.93606	2.80566	2.83819	4.7756	22.876	4.7737	4.7767
AD2R	$\hat{\sigma}$	5.5E+11	1E+24	7.7E+09	1595775	1.5E+22	1.1E+45	1.5E+20	1.6E+10	9E+44	3E+90	9E+42	6E+18
	$\hat{\xi}$	41.0489	3992.59	28.0706	21.05939	36.7542	3852.61	27.1834	22.2625	32.703	3566.4	26.576	24.772
ADL	$\hat{\sigma}$	8.7E+13	3.3E+28	9E+11	1635329	7.6E+19	9.8E+39	1E+18	1.9E+10	2E+38	4E+77	2E+36	6E+18
	$\hat{\xi}$	8718.51	1.4E+08	642.566	208.8314	127121	1.1E+11	1820.96	58.7144	24568	8E+08	1050.1	15.894
AD2L	$\hat{\sigma}$	8.7E+13	3.3E+28	9E+11	1627881	7.6E+19	9.8E+39	1E+18	1.9E+10	2E+38	4E+77	2E+36	6E+18
	$\hat{\xi}$	1.1E+08	2.6E+16	2053037	6056.922	1.8E+08	3.9E+16	5777133	298953	7E+07	2E+16	2E+06	304.37

CM	$\hat\sigma$	8.7E+13	3.3E+28	9E+11	1635329	7.6E+19	9.8E+39	1E+18	1.9E+10	2E+38	4E+77	2E+36	6E+18
	$\hat\xi$	140.87	50883.4	43.7235	28.50859	290.769	135761	27.5392	12.2091	190.12	57206	15.687	7.5665
KS	$\hat\sigma$	8.7E+13	3.3E+28	9E+11	1635329	7.6E+19	9.8E+39	1E+18	1.9E+10	2E+38	4E+77	2E+36	6E+18
	$\hat\xi$	215.939	115145	10.606		1066.07	4168713	35.0901	3.08592	385.38	224297	16.605	5.005

Table 7. Results for the NON-POT framework when varying sample size with true scale = 1

METHOD	PARAMETERS	n=10				n =20				n=30			
		RMSE	MSE	MAE	MDAE	RMSE	MSE	MAE	MDAE	RMSE	MSE	MAE	MDAE
MLEn	$\hat\sigma$	2.738968	8.879133	2.521175	2.434119	2.33702	6.982873	2.234685	2.175572	2.23035	6.513672	2.161716	2.132017
	$\hat\xi$	4.70284	42.03493	2.662493	2.481965	2.283852	6.481357	2.185079	2.186908	2.173964	6.116048	2.115697	2.137466
NLS-P	$\hat\sigma$	0.955533	0.916171	0.955171	0.957632	1619.963	8986300	596.1435	34.79119	1.02E+10	9.34E+20	1.04E+08	55.99527
	$\hat\xi$	2.071276	5.97909	2.066708	2.060191	2.241427	6.158109	1.960123	1.720883	1.97121	4.713508	1.669772	1.61418
NLS-S	$\hat\sigma$	**0.825022**	**0.727017**	0.775702	0.768954	1.64E+09	2.43E+19	47625926	604.0438	1.24E+09	1.39E+19	15757126	34.70429
	$\hat\xi$	1.91003	5.489168	1.900366	1.919203	1.581756	4.078845	1.457701	1.421078	1.172727	2.291745	1.002199	0.988473
WNLS-P	$\hat\sigma$	0.955386	0.915915	0.955022	0.957634	1621.577	9003232	597.5646	34.77812	1.02E+10	9.34E+20	1.04E+08	69.47661
	$\hat\xi$	2.045379	5.869104	2.041238	2.042311	2.240153	6.158942	1.960219	1.720028	1.927366	4.676689	1.656157	1.612864
ZHANG	$\hat\sigma$	4.38448	117.5177	0.825651	**0.453504**	**0.634026**	**0.606055**	0.443994	**0.340176**	**0.477488**	**0.305665**	0.354389	**0.284829**
	$\hat\xi$	*1.03845*	*1.41821*	0.911951	*0.836259*	*0.761441*	*0.799626*	0.66833	*0.616779*	*0.629426*	*0.565199*	0.552909	*0.510108*
LME	$\hat\sigma$	3.518071	45.69076	1.280228	0.589993	1.127141	2.608524	0.710379	0.505906	0.781174	0.889681	0.576897	0.46605
	$\hat\xi$	1.424607	2.801535	1.317739	1.267054	1.252216	2.370143	1.165711	1.123373	1.171904	2.219902	1.09946	1.064471
MDPD	$\hat\sigma$	1.06E+27	1.02E+55	1.26E+25	2147.223	5.32E+26	2.54E+54	5.58E+24	25220.67	3.54E+26	1.13E+54	3.72E+24	144953.6
	$\hat\xi$	11.80268	394.0922	8.327462	4.880762	15.43907	652.2286	10.88033	8.358432	16.86489	805.0773	12.83183	11.02828
MED	$\hat\sigma$	3.077445	38.61514	1.291823	0.491948	0.895858	1.598779	0.564807	0.37297	0.585946	0.502035	0.432606	0.322539
	$\hat\xi$	1.371984	2.30223	1.097166	1.036048	1.082552	1.430393	0.875652	0.830129	0.9567	1.147635	0.786024	0.740024
MLE	$\hat\sigma$	1365205	1.25E+13	254060.5	135844.8	22296110	3.08E+15	12954383	12808497	13299804	1.35E+15	9132542	8649490
	$\hat\xi$	6.586413	115.5653	4.720244	3.474154	28.04296	2499.912	15.71385	10.41615	30.93381	3300.758	16.2745	6.42792
MOMENTS	$\hat\sigma$	5.85E+26	3.08E+54	6.14E+24	1082.259	2.79E+26	7.01E+53	2.93E+24	13482.92	1.83E+26	3.02E+53	1.92E+24	75356.78
	$\hat\xi$	3.702355	38.35212	1.924264	1.426954	1.705481	4.845088	1.433646	1.298777	1.470972	3.903234	1.324273	1.24049
MPLE	$\hat\sigma$	238753.3	3.32E+11	146098.5	135846.1	5603782	2.18E+14	80295.43	1.302307	1.03E+10	8.51E+20	8.66E+08	121.9757

METHOD	PARAMETERS	RMSE	MSE	MAE	MDAE	RMSE	MSE	MAE	MDAE	RMSE	MSE	MAE	MDAE
	$\hat{\xi}$	1.553618	4.042178	1.485819	1.47118	1.053603	1.714156	0.970874	0.959021	0.991861	1.607583	0.958356	0.952539
PICKANDS	$\hat{\sigma}$	16.93803	2158.008	1.840054	0.551103	2.112581	16.84371	0.854258	0.430327	1.113914	3.583149	0.550649	0.362492
	$\hat{\xi}$	1.742641	3.579588	1.32704	1.08545	1.181666	1.6029	0.940275	0.798312	0.969856	1.107096	0.766083	0.639342
PWMB	$\hat{\sigma}$	8E+25	5.76E+52	8.41E+23	193.7243	1.93E+25	3.35E+51	2.03E+23	1319.753	8.47E+24	6.45E+50	8.89E+22	4750.895
	$\hat{\xi}$	1.513955	3.559376	1.335972	1.213031	1.26988	2.905554	1.160024	1.088265	1.170787	2.706449	1.086283	1.031588
PWMU	$\hat{\sigma}$	4.8E+10	2.07E+22	6.58E+08	9.192788	1.14E+10	1.18E+21	1.84E+08	58.16215	9.48E+10	8.09E+22	1.38E+09	184.7481
	$\hat{\xi}$	1.720542	4.64793	1.395381	1.212354	1.298128	2.965324	1.167072	1.083355	1.180478	2.709084	1.087072	1.027468
AD	$\hat{\sigma}$	1.06E+27	1.02E+55	1.12E+25	1898.159	5.32E+26	2.54E+54	5.58E+24	25204.07	3.54E+26	1.13E+54	5.91E+12	101.9857
	$\hat{\xi}$	1.286102	2.868605	1.105641	1.079881	1.131028	2.858179	1.005681	1.02567	1.112061	3.011776	0.683461	0.713947
ADR	$\hat{\sigma}$	1.06E+27	1.02E+55	1.12E+25	1910.455	5.32E+26	2.54E+54	5.58E+24	25241.27	3.54E+26	1.13E+54	5.91E+12	141.5241
	$\hat{\xi}$	1.252797	2.959811	1.126888	1.116198	1.125809	2.913389	1.036504	1.025458	1.092425	2.947835	0.741319	0.771976
AD2R	$\hat{\sigma}$	1.06E+27	1.02E+55	2.98E+15	2046.443	5.32E+26	2.54E+54	1.32E+18	31938.97	3.54E+26	1.13E+54	3.31E+08	157.3858
	$\hat{\xi}$	64.27026	9011.782	50.42537	43.91187	34.70929	2638.898	22.76611	14.80305	23.47638	1284.545	26.44035	20.9452
ADL	$\hat{\sigma}$	1.06E+27	1.02E+55	1.12E+25	1887.298	5.32E+26	2.54E+54	5.58E+24	25242.48	3.54E+26	1.13E+54	5.91E+12	145.3814
	$\hat{\xi}$	4733.849	1E+08	175.6432	2.75529	34354.88	9.89E+09	464.4013	5.03648	4030.314	1.06E+08	97.69689	6.497172
AD2L	$\hat{\sigma}$	3.36E+27	1.01E+56	1.12E+25	403.1889	1.68E+27	2.54E+55	5.58E+24	8471.815	1.12E+27	1.13E+55	5.91E+12	1.681774
	$\hat{\xi}$	25460372	5.7E+15	4199344	37.5405	255685	2.33E+11	8133398	143.6173	4683006	1.75E+14	108895	50.40031
CM	$\hat{\sigma}$	1.06E+27	1.02E+55	1.12E+25	1911.344	5.32E+26	2.54E+54	5.58E+24	25243.6	3.54E+26	1.13E+54	5.91E+12	148.6334
	$\hat{\xi}$	8.845108	228.9101	2.563199	1.457934	18.48156	1131.621	3.451661	1.686183	65.37219	26901.83	3.501941	2.017841
KS	$\hat{\sigma}$	1.06E+27	1.02E+55	1.12E+25	1914.538	5.32E+26	2.54E+54	5.58E+24	25246.77	3.54E+26	1.13E+54	5.91E+12	151.8337
	$\hat{\xi}$	25.02017	2570.588	3.026995	2.013533	54.68465	15866.67	3.977051	1.99901	32.55599	3551.536	3.14856	1.785627

METHOD	PARAMETERS	n=50				n = 100				n= 200			
		RMSE	MSE	MAE	MDAE	RMSE	MSE	MAE	MDAE	RMSE	MSE	MAE	MDAE
MLEn	$\hat{\sigma}$	2.156112	6.204699	2.114009	2.099269	2.10646	6.019872	2.084284	2.07654	2.081226	5.93678	2.069419	2.065057
	$\hat{\xi}$	2.116727	5.961906	2.083081	2.105467	2.088016	5.914698	2.071699	2.082259	2.074108	5.900384	2.065508	2.070103
NLS-P	$\hat{\sigma}$	83020595	6.2E+16	1766320	99.28964	800813.5	5.76E+12	27085.51	1073.129	30515.47	8.24E+09	11009.08	4767.415

Method	Param												
	$\hat{\xi}$	1.554484	3.148455	1.290291	1.275475	1.121073	1.836592	0.911934	0.80898	0.80098	0.986761	0.63027	0.508201
NLS-S	$\hat{\sigma}$	48056.91	2.07E+10	1974.145	2.698964	592.8518	3105980	45.778	0.622902	32.48338	8814.411	4.114434	0.372925
	$\hat{\xi}$	0.836513	1.189474	0.687147	0.629872	0.577906	0.587271	0.465774	0.409073	0.409626	0.298237	0.326482	0.279992
WNLS-P	$\hat{\sigma}$	85379015	6.56E+16	2012612	127.0046	4364074	1.71E+14	92656.61	1308.522	45267.65	1.82E+10	14132.56	5421.625
	$\hat{\xi}$	1.511304	3.109354	1.272464	1.277382	1.066576	1.768065	0.879578	0.802794	0.747288	0.927094	0.594885	0.491175
ZHANG	$\hat{\sigma}$	**0.346727**	**0.149169**	0.27135	**0.22639**	**0.233484**	**0.063966**	0.191633	**0.167087**	**0.16648**	**0.032491**	0.13929	**0.123373**
	$\hat{\xi}$	*0.497616*	*0.368137*	*0.437337*	*0.404606*	*0.366131*	*0.213285*	*0.323046*	*0.298842*	*0.273401*	*0.128514*	*0.242851*	*0.225743*
LME	$\hat{\sigma}$	0.588367	0.421454	0.484494	0.422986	0.457221	0.252855	0.409653	0.380249	0.39525	0.209975	0.366913	0.350921
	$\hat{\xi}$	1.091068	2.097902	1.033758	1.004989	1.009959	2.007987	0.969402	0.947087	0.952139	1.962433	0.923977	0.908067
MDPD	$\hat{\sigma}$	2.13E+26	4.07E+53	2.23E+24	1129341	1.06E+26	1.02E+53	1.17E+24	16359790	4.38E+32	1.73E+66	4.38E+30	2.83E+08
	$\hat{\xi}$	24.40524	1807.866	18.04618	15.22419	44.59	7171.187	25.43484	19.57591	72.73003	20567.11	30.84396	24.46569
MED	$\hat{\sigma}$	0.404371	0.199332	0.32099	0.262159	0.322366	0.136258	0.258402	0.215763	0.239033	0.071796	0.200651	0.175404
	$\hat{\xi}$	0.834279	0.951636	0.699699	0.650632	0.673389	0.719104	0.591179	0.56271	0.580353	0.633454	0.525517	0.499699
MLE	$\hat{\sigma}$	1.93E+08	3.33E+17	1.36E+08	1.36E+08	97084308	8.33E+16	68148562	68129269	68853571	4.17E+16	68169490	68135775
	$\hat{\xi}$	37.9678	4702.208	25.77287	17.88727	6.872728	126.6136	4.244108	3.595647	6.693516	190.8215	5.640425	5.385383
MOMENTS	$\hat{\sigma}$	1.08E+26	1.06E+53	1.14E+24	581006.5	5.37E+25	2.6E+52	5.89E+23	8311194	2.2E+32	4.36E+65	2.2E+30	1.42E+08
	$\hat{\xi}$	1.310277	3.514816	1.232517	1.18293	1.201588	3.34912	1.157079	1.128053	1.136864	3.282739	1.108016	1.089018
MPLE	$\hat{\sigma}$	3.21E+10	9.27E+21	1.02E+10	820404	1.08E+08	8.45E+16	68322580	68129269	1.49E+10	1.99E+21	9.95E+09	4.41E+09
	$\hat{\xi}$	1.306821	3.484727	1.26963	1.260288	1.273024	3.400649	1.25635	1.254939	1.265518	3.423036	1.255895	1.251082
PICKANDS	$\hat{\sigma}$	0.634666	0.822161	0.397911	0.291471	0.387868	0.243003	0.275851	0.211572	0.251261	0.092458	0.188952	0.151886
	$\hat{\xi}$	0.746345	0.658463	0.590806	0.494767	0.523653	0.319568	0.417422	0.352833	0.370156	0.159698	0.294463	0.24844
PWMB	$\hat{\sigma}$	3.02E+24	8.21E+49	3.17E+22	22613.36	7.5E+23	5.06E+48	8.22E+21	160570.6	1.54E+30	2.13E+61	1.54E+28	1339643
	$\hat{\xi}$	1.071272	2.546118	1.012674	0.975156	0.983474	2.440079	0.944679	0.920404	0.924438	2.38848	0.897432	0.88075
PWMU	$\hat{\sigma}$	3.93E+10	1.39E+22	8.72E+08	856.1594	2.5E+10	5.63E+21	6E+08	6731.737	7.56E+12	5.14E+26	1.08E+11	54822.48
	$\hat{\xi}$	1.072664	2.534167	1.011129	0.971974	0.982793	2.431101	0.943142	0.918094	0.923734	2.383426	0.896436	0.879544
AD	$\hat{\sigma}$	2.13E+26	4.07E+53	2.23E+24	1129324	1.06E+26	1.02E+53	1.17E+24	16359795	4.38E+32	1.73E+66	4.38E+30	2.83E+08
	$\hat{\xi}$	1.210687	3.742402	1.116098	1.129456	1.296679	4.197262	1.237163	1.255772	1.327081	4.342538	1.298392	1.32977
ADR	$\hat{\sigma}$	2.13E+26	4.07E+53	2.23E+24	1129334	1.06E+26	1.02E+53	1.17E+24	16359795	4.38E+32	1.73E+66	4.38E+30	2.83E+08
	$\hat{\xi}$	1.20975	3.76795	1.131762	1.155404	1.292569	4.207476	1.242184	1.256484	1.325065	4.341144	1.297262	1.333606

METHOD	PARAMETERS												
AD2R	$\hat{\sigma}$	2.13E+26	4.07E+53	3.17E+20	1113035	1.06E+26	1.02E+53	4.32E+22	16231376	4.38E+32	1.73E+66	4.55E+22	2.02E+08
	$\hat{\xi}$	13.24486	531.6892	7.058223	3.989608	6.255487	146.8515	3.446835	1.365975	3.336163	32.291	1.946671	1.358455
ADL	$\hat{\sigma}$	2.13E+26	4.07E+53	2.23E+24	1129337	1.06E+26	1.02E+53	1.17E+24	16359784	4.38E+32	1.73E+66	4.38E+30	2.83E+08
	$\hat{\xi}$	3493.774	50973696	163.5371	11.12846	7110.043	1.85E+08	226.0079	17.54184	6824.913	2.16E+08	287.9584	28.2351
AD2L	$\hat{\sigma}$	6.72E+26	4.06E+54	2.23E+24	1239393	3.36E+26	1.01E+54	1.17E+24	16612933	1.68E+26	2.54E+53	4.38E+30	2.84E+08
	$\hat{\xi}$	3741760	1.15E+14	343664	119.3688	20926845	2.05E+15	581552.5	399.1085	1988566	1.84E+13	477842.7	1951.389
CM	$\hat{\sigma}$	2.13E+26	4.07E+53	2.23E+24	1129343	1.06E+26	1.02E+53	1.17E+24	16359795	4.38E+32	1.73E+66	4.38E+30	2.83E+08
	$\hat{\xi}$	114.4042	85245.06	7.31943	3.482678	43.36064	6579.641	8.304845	4.837167	119.4924	52013.13	11.87885	6.482885
KS	$\hat{\sigma}$	2.13E+26	4.07E+53	2.23E+24	1129343	1.06E+26	1.02E+53	1.17E+24	16359796	4.38E+32	1.73E+66	4.38E+30	2.83E+08
	$\hat{\xi}$	306.7349	379922.9	9.12499	1.972574	182.6895	152040.6	8.225224	1.955452	142.9519	65736.4	8.142004	1.951553

METHOD	PARAMETERS	n= 500				n=1000			
		RMSE	MSE	MAE	MDAE	RMSE	MSE	MAE	MDAE
MLEn	$\hat{\sigma}$	2.066109	5.896655	2.060581	2.057338	2.059998	5.882667	2.05682	2.055261
	$\hat{\xi}$	2.065157	5.898972	2.061142	2.062129	2.06128	5.898457	2.058853	2.059123
NLS-P	$\hat{\sigma}$	19521.12	3.37E+09	13637.9	9659.978	15809.3	2.21E+09	13113.05	10749.54
	$\hat{\xi}$	0.464813	0.300839	0.358755	0.294372	0.309335	0.121968	0.245617	0.206598
NLS-S	$\hat{\sigma}$	1.975852	22.14029	0.76636	0.277659	0.750562	2.461923	0.384061	0.213021
	$\hat{\xi}$	0.260548	0.119918	0.206169	0.174769	0.189484	0.062006	0.147917	0.124256
WNLS-P	$\hat{\sigma}$	22479.43	4.48E+09	15215.74	10471.1	17042.44	2.57E+09	13919.49	11301.47
	$\hat{\xi}$	0.426498	0.272463	0.33162	0.276255	0.280154	0.10645	0.224194	0.190837
ZHANG	$\hat{\sigma}$	**0.110486**	**0.0148**	0.094607	**0.08553**	**0.082616**	**0.008731**	0.071507	**0.065001**
	$\hat{\xi}$	*0.191299*	0.070332	*0.171836*	0.161128	*0.148129*	0.046541	0.134387	0.127062
LME	$\hat{\sigma}$	0.346624	0.189225	0.331021	0.321686	0.324775	0.18348	0.31398	0.306928
	$\hat{\xi}$	0.902074	1.935457	0.884201	0.873738	0.876644	1.926241	0.864044	0.856622
MDPD	$\hat{\sigma}$	1.75E+32	2.76E+65	1.75E+30	1.12E+10	8.76E+31	6.91E+64	8.76E+29	1.81E+11
	$\hat{\xi}$	56.24646	9682.535	34.48111	30.18171	80.46935	28666.4	37.80939	31.25512

MED	$\hat{\sigma}$	0.173035	0.040741	0.150545	0.136769	0.145948	0.033275	0.130798	0.12187
	$\hat{\xi}$	0.476926	0.548988	0.444139	0.440363	0.427949	0.525921	0.401775	0.395464
MLE	$\hat{\sigma}$	765069.3	3.96E+12	92623.15	46001.22	9.7E+10	7.53E+22	1.36E+10	112876
	$\hat{\xi}$	4.766689	140.5587	3.509288	3.477712	0.689413	0.987891	0.597617	0.554523
MOMENTS	$\hat{\sigma}$	8.78E+31	6.93E+64	8.78E+29	5.59E+09	4.38E+31	1.73E+64	4.38E+29	9.08E+10
	$\hat{\xi}$	1.083075	3.245467	1.066511	1.056234	1.058152	3.234008	1.046575	1.038983
MPLE	$\hat{\sigma}$	82249.67	3.54E+10	49189.43	46004.47	1.44E+11	1.32E+23	4.84E+10	2.56E+10
	$\hat{\xi}$	0.843425	1.409414	0.832747	0.830504	1.230874	3.306811	1.224373	1.231783
PICKANDS	$\hat{\sigma}$	0.150223	0.030839	0.117556	0.097652	0.105076	0.014886	0.082772	0.069184
	$\hat{\xi}$	0.235089	*0.064652*	0.187715	*0.159194*	0.166433	*0.032395*	0.132805	*0.111931*
PWMB	$\hat{\sigma}$	2.46E+29	5.43E+59	2.46E+27	20586961	6.14E+28	3.39E+58	6.14E+26	1.65E+08
	$\hat{\xi}$	0.873124	2.356767	0.856579	0.847469	0.84834	2.346236	0.836449	0.829998
PWMU	$\hat{\sigma}$	6.95E+12	4.35E+26	1.13E+11	817241.1	4.62E+13	1.92E+28	1.02E+12	6784165
	$\hat{\xi}$	0.872712	2.354617	0.856091	0.847002	0.848104	2.345143	0.836187	0.829742
AD	$\hat{\sigma}$	1.75E+32	2.76E+65	1.75E+30	1.12E+10	8.76E+31	6.91E+64	8.76E+29	1.81E+11
	$\hat{\xi}$	1.331024	4.377291	1.319727	1.321928	1.327333	4.380395	1.321425	1.319304
ADR	$\hat{\sigma}$	1.75E+32	2.76E+65	1.75E+30	1.12E+10	8.76E+31	6.91E+64	8.76E+29	1.81E+11
	$\hat{\xi}$	1.333509	4.380536	1.323914	1.327833	1.334513	4.389487	1.328397	1.325688
AD2R	$\hat{\sigma}$	1.75E+32	2.76E+65	3.69E+29	9.06E+09	8.76E+31	6.91E+64	1.84E+29	1.61E+11
	$\hat{\xi}$	1.697167	5.307072	1.387421	1.353268	1.426742	4.462751	1.35272	1.350161
ADL	$\hat{\sigma}$	1.75E+32	2.76E+65	1.75E+30	1.12E+10	8.76E+31	6.91E+64	8.76E+29	1.81E+11
	$\hat{\xi}$	40384.02	9.98E+09	625.8476	54.28506	5531.987	1.96E+08	340.6722	99.94029
AD2L	$\hat{\sigma}$	6.72E+25	4.06E+52	1.75E+30	1.12E+10	3.36E+25	1.01E+52	8.76E+29	1.81E+11
	$\hat{\xi}$	10569945	6.86E+14	370172.6	6927.967	1100272	9.24E+12	1356261	13981.8
CM	$\hat{\sigma}$	1.75E+32	2.76E+65	1.75E+30	1.12E+10	8.76E+31	6.91E+64	8.76E+29	1.81E+11
	$\hat{\xi}$	255.3824	320372.8	19.3124	9.592054	218.0352	173493.7	25.67368	13.10708
KS	$\hat{\sigma}$	1.75E+32	2.76E+65	1.75E+30	1.12E+10	8.76E+31	6.91E+64	8.76E+29	1.81E+11
	xi	189.995	163963.4	10.40756	1.958241	217.8093	222487.8	13.07449	1.96362

Table 8. Results for the NON-POT framework when varying sample size with true scale = 10

Method	Parameters	n=10				n =20				n=30			
		RMSE	MSE	MAE	MDAE	RMSE	MSE	MAE	MDAE	RMSE	MSE	MAE	MDAE
METHOD	PARAMETERS	10.17077	109.6291	10.09701	10.11425	9.768409	101.1948	9.733347	9.722818	9.660744	98.98631	9.636168	9.639091
		43.1289	4035.998	18.85152	14.03269	14.76446	221.921	12.5644	10.95221	12.56185	159.0835	11.29768	10.40968
MLEn	$\hat{\sigma}$	9.939298	98.7944	9.939166	9.938184	2247.902	14245746	897.0381	141.1744	1.82E+09	2.91E+19	1635711	250.9602
	$\hat{\xi}$	2.070527	5.928182	2.065357	2.073526	2.197112	5.831241	2.834583	1.703271	1.974377	4.77122	1.691162	1.599699
NLS-P	$\hat{\sigma}$	9.464429	89.9016	9.460777	9.480429	8.12E+11	5.93E+24	1.05E+10	5494.549	2.95E+08	7.82E+17	52558602	341.6437
	$\hat{\xi}$	2.120183	6.168893	2.101293	2.114002	1.677853	4.345734	2.026765	1.48252	1.286664	2.630013	1.10087	1.051549
NLS-S	$\hat{\sigma}$	9.93908	98.79009	9.938947	9.938188	2248.256	14254213	897.8109	141.7644	1.83E+09	2.95E+19	1653517	309.1142
	$\hat{\xi}$	2.051059	5.838151	2.046082	2.051788	2.193056	5.820766	2.834375	1.702336	1.923091	4.683973	1.66818	1.567233
WNLS-P	$\hat{\sigma}$	43.87832	11752.3	8.25651	4.535036	6.34026	60.60546	4.439945	3.401762	4.809268	31.34855	3.543888	2.848295
	$\hat{\xi}$	1.040318	1.42056	0.911951	0.836259	0.761441	0.799626	1.032499	0.616779	0.627871	0.561809	0.552909	0.510108
ZHANG	$\hat{\sigma}$	19.33025	952.9566	10.41644	6.623007	10.72014	188.9085	7.386604	5.678487	8.234668	91.85895	6.163825	5.149871
	$\hat{\xi}$	1.852656	4.493466	1.652464	1.637134	1.637574	3.985795	1.991323	1.436527	1.535893	3.800684	1.398208	1.335016
LME	$\hat{\sigma}$	1.06E+28	1.02E+57	1.12E+26	19140.32	5.32E+27	2.54E+56	5.58E+25	252460.9	3.54E+27	1.13E+56	3.72E+25	1449766
	$\hat{\xi}$	10.39755	290.8927	6.672895	3.926211	13.35181	506.3451	10.15605	7.921959	15.20189	680.8691	11.73066	10.04196
MDPD	$\hat{\sigma}$	31.43171	3867.829	12.89435	4.867738	8.924071	158.4826	5.599514	3.703515	5.811269	49.28186	4.276135	3.204901
	$\hat{\xi}$	1.370825	2.285153	1.089008	1.004136	1.077339	1.401521	1.076119	0.822779	0.946532	1.1126	0.768765	0.738255
MED	$\hat{\sigma}$	13652050	1.25E+15	2540671	1358578	1.85E+08	2.95E+17	1.29E+08	1.28E+08	1.58E+08	1.41E+17	88909960	86494933
	$\hat{\xi}$	6.579617	115.7166	4.776371	3.572865	27.89608	2491.106	16.15917	10.52117	30.06195	3206.376	16.31017	6.499123
MLE	$\hat{\sigma}$	5.85E+27	3.08E+56	6.14E+25	10822.59	2.79E+27	7.01E+55	2.93E+25	134829.2	1.83E+27	3.02E+55	1.92E+25	753567.8
	$\hat{\xi}$	3.708799	38.36218	1.924264	1.426954	1.705481	4.845088	1.821416	1.298777	1.470952	3.903054	1.324273	1.24049
MOMENTS	$\hat{\sigma}$	20574738	3.13E+15	3694497	1358584	53246786	2.17E+16	1174176	17.87436	1.24E+08	1.34E+17	86774582	86494599
	$\hat{\xi}$	1.552641	4.087448	1.495222	1.48537	1.025943	1.65624	1.351555	0.778751	1.375134	3.664724	1.342283	1.350948
MPLE	$\hat{\sigma}$	169.9968	215813.4	18.40054	5.511026	21.12581	1684.371	8.542577	4.303271	10.71016	314.197	5.506489	3.624922
	$\hat{\xi}$	1.712077	3.48497	1.32704	1.08545	1.181666	1.6029	1.154423	0.798312	0.968878	1.103251	0.766083	0.639342
PICKANDS	$\hat{\sigma}$	8E+26	5.76E+54	8.41E+24	1937.243	1.93E+26	3.35E+53	2.03E+24	13197.53	8.47E+25	6.45E+52	8.89E+23	47508.95
	$\hat{\xi}$	1.526387	3.573829	1.335972	1.213031	1.26988	2.905554	1.421616	1.088265	1.170758	2.706218	1.086283	1.031588

METHOD	PARAMETERS												
PWMB	$\hat{\sigma}$	4.8E+11	2.07E+24	6.58E+09	91.91696	1.14E+11	1.18E+23	1.84E+09	581.6558	2.96E+11	7.91E+23	1.38E+10	1848.536
	$\hat{\xi}$	1.733327	4.660982	1.395381	1.212354	1.298128	2.965324	1.456325	1.083355	1.180449	2.708857	1.087072	1.027468
PWMU	$\hat{\sigma}$	1.06E+28	1.02E+57	1.12E+26	19126.39	5.32E+27	2.54E+56	5.58E+25	252416.7	3.54E+27	1.13E+56	3.72E+25	1449721
	$\hat{\xi}$	1.383977	3.376229	1.238731	1.211171	1.22628	3.283464	1.271287	1.133599	1.191667	3.359451	1.111737	1.132199
AD	$\hat{\sigma}$	1.06E+28	1.02E+57	1.12E+26	19142.1	5.32E+27	2.54E+56	5.58E+25	252463.1	3.54E+27	1.13E+56	3.72E+25	1449769
	$\hat{\xi}$	1.334864	3.338064	1.237596	1.191402	1.198737	3.197574	1.271268	1.12045	1.162968	3.206302	1.105653	1.108898
ADR	$\hat{\sigma}$	1.06E+28	1.02E+57	2.98E+16	20457.56	5.32E+27	2.54E+56	1.32E+19	319391	3.54E+27	1.13E+56	8.89E+18	1541899
	$\hat{\xi}$	64.55081	9052.28	50.51376	43.95478	35.23988	2671.844	22.95814	14.86823	23.54374	1289.762	13.07006	6.492479
AD2R	$\hat{\sigma}$	1.06E+28	1.02E+57	1.12E+26	19140.33	5.32E+27	2.54E+56	5.58E+25	252464	3.54E+27	1.13E+56	3.72E+25	1449776
	$\hat{\xi}$	11214.51	7.4E+08	354.8296	3.406866	5773.445	2.15E+08	216.9853	6.671843	14826.06	1.33E+09	284.2292	9.056945
ADL	$\hat{\sigma}$	3.36E+28	1.01E+58	1.12E+26	10603.09	1.68E+28	2.54E+57	5.58E+25	170070.9	1.12E+28	1.13E+57	3.72E+25	1448774
	$\hat{\xi}$	4.1E+08	1.51E+18	11073538	61.02123	4.36E+08	1.56E+18	11686213	194.2038	1842126	1.41E+13	6110997	361.5443
AD2L	$\hat{\sigma}$	1.06E+28	1.02E+57	1.12E+26	19142.65	5.32E+27	2.54E+56	5.58E+25	252466.1	3.54E+27	1.13E+56	3.72E+25	1449776
	$\hat{\xi}$	8.437136	185.6152	2.825899	1.621148	23.45782	1600.966	4.002199	2.066052	84.01706	32204.33	5.210609	2.653559
CM	$\hat{\sigma}$	1.06E+28	1.02E+57	1.12E+26	19149.12	5.32E+27	2.54E+56	5.58E+25	252470.9	3.54E+27	1.13E+56	3.72E+25	1449781
	$\hat{\xi}$	19.63399	1224.4	3.179605	2.151635	31.86764	3545.022	4.16956	2.130514	30.04339	3078.264	3.70018	2.115741

		n=50				n = 100				n= 200			
METHOD	PARAMETERS	RMSE	MSE	MAE	MDAE	RMSE	MSE	MAE	MDAE	RMSE	MSE	MAE	MDAE
MLEn	$\hat{\sigma}$	9.583938	97.47174	9.570646	9.57317	9.535365	96.53382	9.52855	9.529744	9.51571	96.15213	9.51106	9.512274
	$\hat{\xi}$	11.11526	125.4522	10.46441	10.00752	10.23333	108.2021	9.931793	9.733574	9.852139	101.4884	9.706544	9.611449
NLS-P	$\hat{\sigma}$	7.95E+08	5.69E+18	11821797	489.8672	2020528	3.64E+13	41162.46	841.9144	151810.3	2.01E+11	22847.98	1046.165
	$\hat{\xi}$	1.609792	3.549517	1.368308	1.296553	1.224093	2.555547	1.041791	1.008201	0.963078	2.005521	0.81944	0.845065
NLS-S	$\hat{\sigma}$	332447	9.91E+11	17438.8	27.01799	5931.264	3.11E+08	457.9896	6.434833	178.5368	248929.1	41.49059	4.01657
	$\hat{\xi}$	0.962808	1.519749	0.792747	0.692952	0.719059	0.89473	0.575153	0.467873	0.562405	0.59928	0.441398	0.366869
WNLS-P	$\hat{\sigma}$	7.89E+08	5.61E+18	11681857	601.6546	1956634	3.36E+13	50594.66	983.2392	231519.1	4.71E+11	29941.62	1158.937
	$\hat{\xi}$	1.559397	3.469514	1.342082	1.296661	1.169956	2.482544	1.009405	0.992547	0.912345	1.951282	0.785718	0.826019

ZHANG	$\hat{\sigma}$	**3.468221**	**14.92008**	2.713498	**2.263897**	**2.334845**	**6.396612**	1.916328	**1.670866**	**1.661726**	**3.232549**	1.392904	**1.233726**
	$\hat{\xi}$	*0.497699*	*0.368172*	*0.437337*	*0.404606*	*0.366131*	*0.213285*	*0.323046*	*0.298842*	*0.273461*	*0.128381*	*0.242851*	*0.225743*
LME	$\hat{\sigma}$	6.374194	48.65641	5.217186	4.578455	5.028273	31.69378	4.435433	4.033602	4.370893	27.22315	3.974261	3.652911
	$\hat{\xi}$	1.431675	3.651677	1.320127	1.25267	1.327574	3.547036	1.246925	1.180766	1.254754	3.490858	1.194231	1.134835
MDPD	$\hat{\sigma}$	2.13E+27	4.07E+55	2.23E+25	11293425	1.06E+27	1.02E+55	1.17E+25	1.64E+08	1.21E+33	1.33E+67	4.38E+31	2.83E+09
	$\hat{\xi}$	22.21778	1566.592	16.92599	13.77737	33.92371	3968.171	23.43192	18.35752	54.60793	13584.17	28.60838	23.76721
MED	$\hat{\sigma}$	3.948317	18.78309	3.145426	2.592853	3.164078	13.04016	2.544589	2.158772	2.368273	6.995209	2.003381	1.785148
	$\hat{\xi}$	0.825377	0.918316	0.684607	0.645529	0.675033	0.711583	0.585846	0.554901	0.587849	0.635698	0.523311	0.494982
MLE	$\hat{\sigma}$	24628840	2.83E+15	2089452	4209.342	1834854	1.63E+13	977556.7	945105	9226006	4.87E+14	1534190	1122602
	$\hat{\xi}$	22.0559	1967.27	10.8342	1.917049	5.858162	114.2514	3.356951	2.623276	6.458997	205.2294	5.39257	5.174294
MOMENTS	$\hat{\sigma}$	1.08E+27	1.06E+55	1.14E+25	5810065	5.37E+26	2.6E+54	5.89E+24	83111936	6.1E+32	3.35E+66	2.2E+31	1.42E+09
	$\hat{\xi}$	1.309942	3.514592	1.232517	1.18293	1.201588	3.34912	1.157079	1.128053	1.136121	3.28194	1.108016	1.089018
MPLE	$\hat{\sigma}$	2280444	2.12E+13	448277.9	1728.488	2.93E+11	7.72E+23	1.7E+11	1.36E+09	11002732	7.3E+14	1615085	1122656
	$\hat{\xi}$	0.942367	1.568999	0.917171	0.934499	1.31668	3.549505	1.281467	1.292328	0.881237	1.469186	0.854613	0.871506
PICKANDS	$\hat{\sigma}$	6.345444	82.20935	3.979106	2.914705	3.878678	24.30033	2.758506	2.115724	2.501131	9.075772	1.889521	1.518859
	$\hat{\xi}$	0.746169	0.658287	0.590806	0.494767	0.523653	0.319568	0.417422	0.352833	0.370824	0.160357	0.294463	0.24844
PWMB	$\hat{\sigma}$	3.02E+25	8.21E+51	3.17E+23	226133.6	7.5E+24	5.06E+50	8.22E+22	1605706	4.26E+30	1.63E+62	1.54E+29	13396434
	$\hat{\xi}$	1.070961	2.54592	1.012674	0.975156	0.983474	2.440079	0.944679	0.920404	0.924083	2.388154	0.897432	0.88075
PWMU	$\hat{\sigma}$	3.93E+11	1.39E+24	8.72E+09	8556.184	2.5E+11	5.63E+23	6E+09	67241.79	1.15E+13	1.2E+27	1.08E+12	547220.6
	$\hat{\xi}$	1.072357	2.533968	1.011129	0.971974	0.982793	2.431101	0.943142	0.918094	0.923405	2.383119	0.896436	0.879544
AD	$\hat{\sigma}$	2.13E+27	4.07E+55	2.23E+25	11293401	1.06E+27	1.02E+55	1.17E+25	1.64E+08	4.38E+33	1.73E+68	4.38E+31	2.83E+09
	$\hat{\xi}$	1.248578	3.933513	1.177021	1.229345	1.288192	4.224845	1.238296	1.236933	1.304061	4.321943	1.275174	1.303612
ADR	$\hat{\sigma}$	2.13E+27	4.07E+55	2.23E+25	11293426	1.06E+27	1.02E+55	1.17E+25	1.64E+08	4.38E+33	1.73E+68	4.38E+31	2.83E+09
	$\hat{\xi}$	1.244034	3.936325	1.192148	1.224754	1.283307	4.232395	1.240644	1.231963	1.301086	4.320538	1.272462	1.303854
AD2R	$\hat{\sigma}$	2.13E+27	4.07E+55	3.17E+21	11130391	1.06E+27	1.02E+55	4.32E+23	1.62E+08	4.38E+33	1.73E+68	4.55E+23	2.02E+09
	$\hat{\xi}$	13.07345	513.9889	6.545866	1.352922	5.77419	117.2966	2.642159	1.339026	2.739699	17.83791	1.47446	1.330922
ADL	$\hat{\sigma}$	2.13E+27	4.07E+55	2.23E+25	11293429	1.06E+27	1.02E+55	1.17E+25	1.64E+08	4.38E+33	1.73E+68	4.38E+31	2.83E+09
	$\hat{\xi}$	9743.662	6.79E+08	245.1472	12.59537	2890.012	31747008	188.8361	19.27228	6559.269	1.58E+08	287.6834	30.68939
AD2L	$\hat{\sigma}$	6.72E+27	4.06E+56	2.23E+25	11454611	3.36E+27	1.01E+56	1.17E+25	1.65E+08	1.68E+27	2.54E+55	4.38E+31	2.83E+09

	$\hat{\xi}$	1392130	6.44E+12	2438038	515.816	815712.4	3.36E+12	3453862	1844.842	10868709	7.78E+14	3479835	8250.519
CM	$\hat{\sigma}$	2.13E+27	4.07E+55	2.23E+25	11293430	1.06E+27	1.02E+55	1.17E+25	1.64E+08	4.38E+33	1.73E+68	4.38E+31	2.83E+09
	$\hat{\xi}$	115.2537	84062.97	7.674919	3.534463	43.18761	6313.121	8.538566	4.859585	271.1109	350203	13.92313	6.505627
KS	$\hat{\sigma}$	2.13E+27	4.07E+55	2.23E+25	11293435	1.06E+27	1.02E+55	1.17E+25	1.64E+08	4.38E+33	1.73E+68	4.38E+31	2.83E+09
	$\hat{\xi}$	203.556	311450.1	7.896181	2.111137	483.8331	845079	11.99258	2.092801	1265.862	11648047	20.29636	2.087146

		n= 500				n=1000			
METHOD	PARAMETERS	RMSE	MSE	MAE	MDAE	RMSE	MSE	MAE	MDAE
MLEn	$\hat{\sigma}$	9.501749	96.53382	9.500315	9.501431	9.497094	95.81806	9.496459	9.496854
	$\hat{\xi}$	9.633315	97.84392	9.573346	9.540239	9.557212	96.60695	9.52809	9.508985
NLS-P	$\hat{\sigma}$	90303.65	3.64E+13	41937.77	1148.235	105894.7	9.83E+10	72757.84	63289.16
	$\hat{\xi}$	0.704412	1.395615	0.57376	0.70739	0.521877	0.823766	0.387762	0.241718
NLS-S	$\hat{\sigma}$	20.23401	3.11E+08	8.043122	3.166842	7.964921	248.6191	4.197362	2.484412
	$\hat{\xi}$	0.417848	0.407978	0.328101	0.29317	0.338564	0.313865	0.261904	0.231245
WNLS-P	$\hat{\sigma}$	103893.9	3.36E+13	47406.94	1218.068	114593.7	1.15E+11	77658.27	65543.93
	$\hat{\xi}$	0.668406	1.37048	0.54788	0.691012	0.49607	0.810004	0.367983	0.224662
ZHANG	$\hat{\sigma}$	**1.1051**	**6.396613**	0.946074	**0.855305**	**0.825855**	**0.872669**	0.715074	**0.650013**
	$\hat{\xi}$	*0.19132*	0.070333	0.171836	0.161128	*0.148031*	0.046528	0.134387	0.127062
LME	$\hat{\sigma}$	3.83122	31.69377	3.563986	3.323032	3.5587	23.92418	3.35056	3.160137
	$\hat{\xi}$	1.188125	3.443776	1.142779	1.096457	1.148212	3.418545	1.112596	1.077971
MDPD	$\hat{\sigma}$	1.75E+33	1.02E+55	1.75E+31	1.12E+11	8.76E+32	6.91E+66	8.76E+30	1.81E+12
	$\hat{\xi}$	86.12307	36841.09	32.80237	27.73894	90.64419	38878.19	36.4374	29.4021
MED	$\hat{\sigma}$	1.714249	13.04016	1.492695	1.373488	1.434281	3.238173	1.28488	1.202477
	$\hat{\xi}$	0.480631	0.549886	0.444803	0.436695	0.427746	0.525186	0.396737	0.384217
MLE	$\hat{\sigma}$	1.97E+09	1.63E+13	1.96E+09	1.96E+09	30577312	7.31E+15	1499754	317978.9
	$\hat{\xi}$	4.431825	125.4105	3.366547	3.422241	0.709098	0.990434	0.649264	0.680434
MOMENTS	$\hat{\sigma}$	8.78E+32	2.6E+54	8.78E+30	5.59E+10	4.38E+32	1.73E+66	4.38E+30	9.08E+11

METHOD	PARAMETERS	RMSE	MSE	MAE	MDAE	RMSE	MSE	MAE	MDAE
	$\hat{\xi}$	1.083047	3.245463	1.066511	1.056234	1.058157	3.234014	1.046575	1.038983
MPLE	$\hat{\sigma}$	1.96E+09	7.72E+23	1.96E+09	1.96E+09	75997346	4.58E+16	5663581	317774.4
	$\hat{\xi}$	1.199307	3.17804	1.167963	1.221598	0.83151	1.397288	0.819747	0.845739
PICKANDS	$\hat{\sigma}$	1.501803	24.30033	1.175558	0.976522	1.050681	1.488479	0.827723	0.691845
	$\hat{\xi}$	0.234958	*0.064611*	0.187715	*0.159194*	0.166369	*0.032377*	0.132805	*0.111931*
PWMB	$\hat{\sigma}$	2.46E+30	5.07E+50	2.46E+28	2.06E+08	6.14E+29	3.39E+60	6.14E+27	1.65E+09
	$\hat{\xi}$	0.873102	2.356764	0.856579	0.847469	0.848378	2.346249	0.836449	0.829998
PWMU	$\hat{\sigma}$	6.95E+13	5.63E+23	1.13E+12	8158065	4.62E+14	1.92E+30	1.02E+13	67870012
	$\hat{\xi}$	0.872691	2.354614	0.856091	0.847002	0.848142	2.345156	0.836187	0.829742
AD	$\hat{\sigma}$	1.75E+33	1.02E+55	1.75E+31	1.12E+11	8.76E+32	6.91E+66	8.76E+30	1.81E+12
	$\hat{\xi}$	1.303176	4.351836	1.288723	1.289457	1.302143	4.358329	1.292544	1.290617
ADR	$\hat{\sigma}$	1.75E+33	1.02E+55	1.75E+31	1.12E+11	8.76E+32	6.91E+66	8.76E+30	1.81E+12
	$\hat{\xi}$	1.30574	4.354698	1.293207	1.295482	1.301616	4.358775	1.291935	1.291876
AD2R	$\hat{\sigma}$	1.75E+33	1.02E+55	3.69E+30	9.06E+10	8.76E+32	6.91E+66	1.84E+30	1.61E+12
	$\hat{\xi}$	1.511358	4.664828	1.330882	1.325397	1.396684	4.426176	1.321503	1.325252
ADL	$\hat{\sigma}$	1.75E+33	1.02E+55	1.75E+31	1.12E+11	8.76E+32	6.91E+66	8.76E+30	1.81E+12
	$\hat{\xi}$	5153.519	1.14E+08	303.4502	60.48907	3277.939	41233256	361.404	113.2111
AD2L	$\hat{\sigma}$	6.72E+26	1.01E+56	1.75E+31	1.12E+11	3.36E+26	1.01E+54	8.76E+30	1.81E+12
	$\hat{\xi}$	5045771	1.79E+14	2090386	48544.35	4168955	1.25E+14	2221058	98273.31
CM	$\hat{\sigma}$	1.75E+33	1.02E+55	1.75E+31	1.12E+11	8.76E+32	6.91E+66	8.76E+30	1.81E+12
	$\hat{\xi}$	269.0855	328750.4	19.97239	9.656054	236.1743	217856.4	26.65338	13.10376
KS	$\hat{\sigma}$	1.75E+33	1.02E+55	1.75E+31	1.12E+11	8.76E+32	6.91E+66	8.76E+30	1.81E+12
	$\hat{\xi}$	138.7796	87011.26	8.441905	2.112494	213.7896	202701.7	13.64155	2.141532

Table 9. Results for the POT (q = 0.9) framework when varying sample size with true scale = 1

		n=10				n =20				n=30			
METHOD	PARAMETERS	RMSE	MSE	MAE	MDAE	RMSE	MSE	MAE	MDAE	RMSE	MSE	MAE	MDAE

MLEn	$\hat{\sigma}$	4.301247	27.11406	4.134694	4.034747	**3.926834**	**24.78246**	**3.841074**	**3.814805**	**3.813059**	**24.12122**	**3.752054**	**3.743064**
	$\hat{\xi}$	9794451	8.63E+14	229018.7	20628.07	130214	1.51E+11	47384.06	21116.03	67391.25	4.04E+10	36226.83	21332.95
NLS-P	$\hat{\sigma}$	0.946789	0.900109	0.945771	0.940276	1723.384	13182645	773.0104	185.4937	556929	2.18E+12	19558.15	325.907
	$\hat{\xi}$	2.03534	5.683728	2.032237	2.034018	2.11196	5.327764	1.841076	1.649393	1.952749	4.760454	1.706287	1.562937
NLS-S	$\hat{\sigma}$	**0.875323**	**0.896895**	**0.840019**	**0.819125**	5.66E+13	2.89E+28	8.22E+11	23732475	3.55E+10	1.13E+22	2.18E+09	2224426
	$\hat{\xi}$	1.886251	5.212402	1.879678	1.894095	1.571789	3.774028	1.432421	1.399242	1.20568	2.301403	1.024013	0.985736
WNLS-P	$\hat{\sigma}$	0.946611	0.899804	0.945594	0.940277	1724.665	13189380	773.9447	186.0288	578086.2	2.28E+12	21233.32	418.1668
	$\hat{\xi}$	2.003245	5.558408	1.999612	2.006821	2.104698	5.303797	1.838587	1.648954	1.891296	4.601534	1.667506	1.559657
ZHANG	$\hat{\sigma}$	12327066	1.37E+15	306271.2	20651.44	140505.2	1.76E+11	47227.1	20921.98	68865.59	4.22E+10	36840.15	21521.78
	$\hat{\xi}$	*0.977743*	*1.180716*	*0.878886*	*0.843105*	*0.840972*	*0.790075*	*0.764841*	*0.734961*	*0.824002*	*0.752816*	*0.760908*	0.738798
LME	$\hat{\sigma}$	17.70973	903.0766	10.76105	6.00775	16.64715	817.2226	11.14838	8.471971	15.4676	729.4702	11.11861	9.848061
	$\hat{\xi}$	2.744829	15.22194	2.568284	2.5246	2.634237	14.74325	2.527587	2.468283	2.603023	14.67166	2.511824	2.439962
MDPD	$\hat{\sigma}$	1.06E+27	1.02E+55	1.31E+25	1.84E+08	4.93E+33	1.94E+68	4.93E+31	3.18E+09	3.29E+33	8.63E+67	3.29E+31	1.7E+10
	$\hat{\xi}$	9.261013	216.687	6.574389	4.084587	13.13092	431.775	9.561793	7.842357	15.89069	668.4923	12.24337	10.16484
MED	$\hat{\sigma}$	3438107	1.06E+14	357574.7	12444.09	72627.12	4.7E+10	35869.35	13244.9	43085.48	1.65E+10	23217.28	12726.58
	$\hat{\xi}$	1.384216	2.317662	1.073762	1.019401	1.093454	1.456239	0.880798	0.828666	0.961097	1.169259	0.790883	0.749848
MLE	$\hat{\sigma}$	1834831	1.63E+13	977566.6	945133.3	6.89E+08	4.17E+18	6.82E+08	6.81E+08	40174863	1.22E+16	1704638	759078.2
	$\hat{\xi}$	5.401929	90.58756	3.775338	3.321145	27.75283	3124.767	22.65554	21.2117	8.979516	399.8965	3.399572	1.290121
MOMENTS	$\hat{\sigma}$	5.85E+26	3.08E+54	6.41E+24	93017346	2.3E+33	4.76E+67	2.3E+31	1.51E+09	1.51E+33	2.05E+67	1.51E+31	7.97E+09
	$\hat{\xi}$	85390586	6.56E+16	1.815074	1.414253	1.641776	4.524993	1.405406	1.293594	1.441416	3.817663	1.310669	1.236368
MPLE	$\hat{\sigma}$	1.03E+09	8.36E+18	6.81E+08	6.81E+08	255832.5	4.74E+11	1152514	1122600	6.07E+08	3.1E+18	5.88E+08	5.88E+08
	$\hat{\xi}$	1.560869	4.258609	1.783805	1.76015	1.330781	2.836875	1.297884	1.277728	1.639419	4.659896	1.620109	1.606091
PICKANDS	$\hat{\sigma}$	1.67E+08	2.5E+17	2102379	4473.4	614449.3	3.39E+12	70053.42	9914.523	214155.2	4.12E+11	32524.04	8399.552
	$\hat{\xi}$	2.664859	14.48851	1.336672	1.09606	1.184756	1.61182	0.939409	0.791515	0.97376	1.119776	0.768599	*0.641324*
PWMB	$\hat{\sigma}$	8.01E+25	5.77E+52	8.77E+23	17910168	1.59E+32	2.27E+65	1.59E+30	1.41E+08	6.98E+31	4.38E+64	6.98E+29	4.85E+08
	$\hat{\xi}$	4.38153	90.68511	1.311986	1.20113	1.249959	2.860807	1.148925	1.084769	1.157787	2.68401	1.079401	1.027969
PWMU	$\hat{\sigma}$	2.83E+12	7.23E+25	6.79E+10	766397.9	7.99E+14	5.75E+30	1.15E+13	5852538	3.61E+14	1.17E+30	6.74E+12	17869945
	$\hat{\xi}$	2158.86	41895906	1.357861	1.200538	1.272626	2.896171	1.153409	1.080982	1.165405	2.679943	1.079313	1.023885
AD	$\hat{\sigma}$	1.06E+27	1.02E+55	1.17E+25	1.64E+08	4.38E+33	1.73E+68	4.38E+31	2.83E+09	2.92E+33	7.67E+67	2.92E+31	1.51E+10

METHOD	PARAMETERS												
	$\hat{\xi}$	1.726386	4.710994	1.635265	1.598135	1.628276	4.674714	1.574453	1.552304	1.60977	4.753044	1.567	1.550983
ADR	$\hat{\sigma}$	1.06E+27	1.02E+55	1.17E+25	1.64E+08	4.38E+33	1.73E+68	4.38E+31	2.83E+09	2.92E+33	7.67E+67	2.92E+31	1.51E+10
	$\hat{\xi}$	1.664067	4.485473	1.600525	1.570097	1.573652	4.440502	1.522453	1.507045	1.543822	4.399194	1.508983	1.494498
AD2R	$\hat{\sigma}$	1.06E+27	1.02E+55	4.32E+23	1.62E+08	4.38E+33	1.73E+68	4.55E+23	2.02E+09	2.92E+33	7.67E+67	6.21E+24	1.11E+10
	$\hat{\xi}$	64.98309	9105.336	50.90489	44.26275	35.09542	2645.196	23.25913	15.32571	23.38061	1260.367	13.4809	6.831383
ADL	$\hat{\sigma}$	1.06E+27	1.02E+55	1.17E+25	1.64E+08	4.38E+33	1.73E+68	4.38E+31	2.83E+09	2.92E+33	7.67E+67	2.92E+31	1.51E+10
	$\hat{\xi}$	5262.009	1.68E+08	231.3254	3.778654	6369.941	1.98E+08	187.8886	6.943854	6356.981	1.45E+08	216.6033	9.33894
AD2L	$\hat{\sigma}$	3.36E+27	1.01E+56	1.17E+25	1.64E+08	1.68E+27	2.54E+55	4.38E+31	2.83E+09	1.12E+27	1.13E+55	2.92E+31	1.51E+10
	$\hat{\xi}$	54622876	2.64E+16	2781172	61.11903	28840467	4.15E+15	5638636	181.0547	68879244	4.19E+16	4830188	317.5428
CM	$\hat{\sigma}$	1.06E+27	1.02E+55	1.17E+25	1.64E+08	4.38E+33	1.73E+68	4.38E+31	2.83E+09	2.92E+33	7.67E+67	2.92E+31	1.51E+10
	$\hat{\xi}$	9.154596	216.0902	3.204587	1.928733	17.97147	1121.383	4.080117	2.461557	32.14177	2845.429	5.008164	3.000732
KS	$\hat{\sigma}$	1.06E+27	1.02E+55	1.17E+25	1.64E+08	4.38E+33	1.73E+68	4.38E+31	2.83E+09	2.92E+33	7.67E+67	2.92E+31	1.51E+10
	$\hat{\xi}$	42.03789	9708.44	3.464765	2.103356	76.38833	26101.42	4.873779	2.136424	82.73134	40362.26	5.394684	2.138494

METHOD	PARAMETERS	n=50				n = 100				n= 200			
		RMSE	MSE	MAE	MDAE	RMSE	MSE	MAE	MDAE	RMSE	MSE	MAE	MDAE
MLEn	$\hat{\sigma}$	**3.724058**	**23.65312**	**3.685359**	**3.667943**	**3.657129**	**23.31597**	**3.636285**	3.629632	**3.623343**	**23.15746**	**3.61255**	**3.610711**
	$\hat{\xi}$	41641.39	1.54E+10	29748.43	21866.49	29573.91	7.71E+09	25617.14	22016.81	25471.28	5.71E+09	23789.71	22189.02
NLS-P	$\hat{\sigma}$	314017.3	8.25E+11	14955.64	581.1943	1074664	8.98E+12	21462.93	**1.170878**	9362041	7.78E+14	112352.1	991.5376
	$\hat{\xi}$	1.667621	3.95778	1.470538	1.379622	1.367425	3.325295	1.227568	1.04207	1.159434	2.997906	1.055864	1.04207
NLS-S	$\hat{\sigma}$	1.48E+09	1.98E+19	67696479	169812.8	70192432	4.43E+16	3637898	35771.53	2803555	7.07E+13	349467	19777.98
	$\hat{\xi}$	0.887987	1.270193	0.714422	0.62989	0.647837	0.692324	0.497946	0.411019	0.469621	0.367091	0.347872	0.277614
WNLS-P	$\hat{\sigma}$	525829	2.35E+12	24783.34	692.3629	1093348	8.08E+12	25760.09	964.9001	9312510	7.68E+14	115176	1083.336
	$\hat{\xi}$	1.608162	3.836875	1.432519	1.365071	1.306867	3.243522	1.187968	1.148254	1.111127	2.947834	1.023013	1.023924
ZHANG	$\hat{\sigma}$	42549.96	1.6E+10	30305.2	22209.07	29755.97	7.81E+09	25761.8	22113.67	25556.53	5.75E+09	23864.88	22261.37
	$\hat{\xi}$	0.849101	0.844256	0.800753	0.786084	0.979263	1.163389	0.945856	0.938951	1.104543	1.631468	1.083173	1.080845
LME	$\hat{\sigma}$	14.21871	683.1066	11.31149	11.28759	13.34896	745.4748	12.13522	12.94887	14.05831	886.0261	13.29116	14.08039

	$\hat{\xi}$	2.568494	14.62401	2.491708	2.419633	2.521425	14.53348	2.456898	2.395413	2.474384	14.45541	2.421138	2.381455
MDPD	$\hat{\sigma}$	1.97E+33	3.11E+67	1.97E+31	1.26E+11	9.86E+32	7.77E+66	9.86E+30	2.04E+12	4.93E+32	1.94E+66	4.93E+30	3.21E+13
	$\hat{\xi}$	23.81648	1639.742	17.9846	13.69622	43.73555	6529.935	23.15155	17.94306	98.92569	36326.63	30.78933	23.20509
MED	$\hat{\sigma}$	26278.46	6.13E+09	18106.8	13087.64	20625.41	3.77E+09	17193.6	13862.63	18092.64	2.9E+09	16387.24	15557.24
	$\hat{\xi}$	0.820708	0.923129	0.697772	0.648137	0.673811	0.726974	0.596349	0.558593	0.568344	0.616653	0.52091	0.498187
MLE	$\hat{\sigma}$	35615287	9.79E+15	1769201	461077.3	1727495	1.6E+13	526750.6	317869.4	5639825	2E+14	5073589	4955592
	$\hat{\xi}$	14.54942	693.2589	7.471844	5.507283	5.372047	88.98585	3.07292	2.258559	24.43464	3906.123	23.25206	22.84705
MOMENTS	$\hat{\sigma}$	8.94E+32	7.19E+66	8.94E+30	5.71E+10	4.42E+32	1.76E+66	4.42E+30	9.18E+11	2.2E+32	4.36E+65	2.2E+30	1.43E+13
	$\hat{\xi}$	1.298571	3.493689	1.226102	1.179487	1.199088	3.346293	1.155191	1.127543	1.134807	3.28102	1.106712	1.088367
MPLE	$\hat{\sigma}$	14305558	1.61E+15	1379669	460858.9	90203424	5.92E+16	7008045	317865.6	42338681	1.16E+16	1.83E+08	1.8E+08
	$\hat{\xi}$	1.245035	2.701315	1.228115	1.217062	1.203504	2.617856	1.193395	1.185873	1.177116	2.569418	1.168153	1.163011
PICKANDS	$\hat{\sigma}$	43548.61	1.69E+10	20165.94	9323.929	24428.36	5.3E+09	16489.86	11217.98	16490.97	2.41E+09	13562.44	11261.53
	$\hat{\xi}$	*0.747827*	*0.658929*	*0.593202*	*0.499374*	*0.525591*	*0.321627*	*0.418923*	*0.355127*	*0.372224*	*0.161635*	*0.296583*	*0.250869*
PWMB	$\hat{\sigma}$	2.49E+31	5.57E+63	2.49E+29	2.1E+09	6.18E+30	3.43E+62	6.18E+28	1.66E+10	1.54E+30	2.13E+61	1.54E+28	1.39E+11
	$\hat{\xi}$	1.065392	2.538885	1.009508	0.974361	0.982086	2.439075	0.943467	0.919803	0.923436	2.387816	0.896832	0.880528
PWMU	$\hat{\sigma}$	7.09E+14	4.52E+30	1.16E+13	83928691	4.66E+15	1.95E+32	1.03E+14	6.9E+08	2.34E+17	4.94E+35	3.83E+15	5.25E+09
	$\hat{\xi}$	1.066346	2.525898	1.007677	0.9713	0.981377	2.430016	0.941873	0.917537	0.922701	2.382719	0.895816	0.879228
AD	$\hat{\sigma}$	1.75E+33	2.76E+67	1.75E+31	1.12E+11	8.76E+32	6.91E+66	8.76E+30	1.81E+12	4.38E+32	1.73E+66	4.38E+30	2.85E+13
	$\hat{\xi}$	1.649126	5.229762	1.613271	1.605851	1.670244	5.371459	1.63821	1.604801	1.665625	5.382448	1.644387	1.67145
ADR	$\hat{\sigma}$	1.75E+33	2.76E+67	1.75E+31	1.12E+11	8.76E+32	6.91E+66	8.76E+30	1.81E+12	4.38E+32	1.73E+66	4.38E+30	2.85E+13
	$\hat{\xi}$	1.630301	5.125026	1.599202	1.607928	1.661534	5.362983	1.633596	1.613863	1.698205	5.464859	1.675212	1.697256
AD2R	$\hat{\sigma}$	1.75E+33	2.76E+67	3.69E+30	9.06E+10	8.76E+32	6.91E+66	1.84E+30	1.61E+12	4.38E+32	1.73E+66	9.61E+29	2.5E+13
	$\hat{\xi}$	13.28866	508.8534	7.016706	1.71991	6.135701	118.6281	3.006571	1.710843	3.066544	16.78823	1.848989	1.709155
ADL	$\hat{\sigma}$	1.75E+33	2.76E+67	1.75E+31	1.12E+11	8.76E+32	6.91E+66	8.76E+30	1.81E+12	4.38E+32	1.73E+66	4.38E+30	2.85E+13
	$\hat{\xi}$	18428.79	2.39E+09	361.2974	12.93694	6548.453	2.01E+08	271.5418	19.90196	13117.98	7.9E+08	337.7826	30.85691
AD2L	$\hat{\sigma}$	6.72E+26	4.06E+54	1.75E+31	1.12E+11	3.36E+26	1.01E+54	8.76E+30	1.81E+12	4.63E+26	1.93E+54	4.38E+30	2.85E+13
	$\hat{\xi}$	16461416	2.09E+15	2464049	492.8878	1.19E+08	1.25E+17	5949713	1792.019	9771396	6.8E+14	2922326	14787.5
CM	$\hat{\sigma}$	1.75E+33	2.76E+67	1.75E+31	1.12E+11	8.76E+32	6.91E+66	8.76E+30	1.81E+12	4.38E+32	1.73E+66	4.38E+30	2.85E+13
	$\hat{\xi}$	29.53237	2631.581	6.250705	3.875419	57.04343	9658.697	8.900108	5.202565	84.3102	32548.74	12.17144	6.940231

METHOD	PARAMETERS								
KS	$\hat{\sigma}$	1.75E+33	2.76E+67	1.75E+31	1.12E+11	8.76E+32	6.91E+66	8.76E+30	1.81E+12
		4.38E+32	1.73E+66	4.38E+30	2.85E+13				
	$\hat{\xi}$	39.73564	4839.548	4.610603	2.135098	163.0122	147836.8	6.904903	2.139366
		130.7875	64019.11	7.447489	2.167307				

METHOD	PARAMETERS	n= 500				n=1000			
		RMSE	MSE	MAE	MDAE	RMSE	MSE	MAE	MDAE
MLEn	$\hat{\sigma}$	**3.598264**	**23.05076**	**3.59378**	**3.593007**	**3.586252**	**23.00077**	**3.583944**	**3.583667**
	$\hat{\xi}$	23394.27	4.81E+09	22781.34	22133.01	22723.86	4.54E+09	22425.84	22116.52
NLS-P	$\hat{\sigma}$	77254.41	5.19E+10	42539.62	1060.314	17778243	2.81E+15	317370.2	75081.61
	$\hat{\xi}$	0.963722	2.703832	0.879621	0.939175	0.838161	2.481841	0.756867	0.682527
NLS-S	$\hat{\sigma}$	213560.5	4.09E+11	56052.42	13785.65	55064.72	2.71E+10	27037.69	12419.8
	$\hat{\xi}$	0.329139	0.186978	0.229322	0.176702	0.251383	0.116541	0.166208	0.125397
WNLS-P	$\hat{\sigma}$	84303.97	6.19E+10	46175.97	1112.907	24336423	5.29E+15	410976.1	77983.61
	$\hat{\xi}$	0.93167	2.683934	0.856337	0.924551	0.815777	2.472699	0.739674	0.667487
ZHANG	$\hat{\sigma}$	23416.89	4.82E+09	22802.51	22153.56	22733.22	4.54E+09	22434.87	22123.7
	$\hat{\xi}$	1.259195	2.399688	1.248469	1.249012	1.36391	3.036801	1.358066	1.358201
LME	$\hat{\sigma}$	14.94158	1052.261	14.62937	14.97076	15.31498	1126.931	15.21242	15.25322
	$\hat{\xi}$	2.415933	14.38081	2.383086	2.367723	2.37981	14.34428	2.36596	2.361238
MDPD	$\hat{\sigma}$	3.19E+33	8.15E+67	3.4E+31	1.12E+15	3.74E+34	1.12E+70	3.92E+32	1.67E+16
	$\hat{\xi}$	74.77387	22986.79	32.97534	29.51415	132.9595	76214.52	39.24018	31.92532
MED	$\hat{\sigma}$	13675.82	1.65E+09	13007.9	11385.97	12464.23	1.37E+09	12160.21	11440.87
	$\hat{\xi}$	0.47716	0.549677	0.441243	0.421382	0.434322	0.531371	0.408787	0.404105
MLE	$\hat{\sigma}$	1.2E+08	1.01E+17	6442626	13333.13	8.27E+10	5.47E+22	6.49E+10	6.49E+10
	$\hat{\xi}$	0.930856	2.025858	0.909159	0.911506	0.879174	1.805661	0.865437	0.873113
MOMENTS	$\hat{\sigma}$	1.42E+33	1.82E+67	1.51E+31	5E+14	1.67E+34	2.5E+69	1.75E+32	7.42E+15
	$\hat{\xi}$	1.083129	3.245607	1.06634	1.055546	1.058528	3.234188	1.046881	1.0395
MPLE	$\hat{\sigma}$	78320359	3.35E+16	1.16E+11	1.16E+11	16307234	1.13E+15	1464883	18547.74
	$\hat{\xi}$	1.148546	2.516792	1.099261	1.104918	1.133386	2.48785	0.968904	0.967971

METHOD	PARAMETERS								
PICKANDS	$\hat{\sigma}$	13103.74	1.51E+09	12108	11141.96	12096.72	1.29E+09	11641.35	11221.22
	$\hat{\xi}$	*0.234564*	*0.064466*	*0.186459*	*0.156867*	*0.166548*	*0.032462*	*0.132632*	*0.111514*
PWMB	$\hat{\sigma}$	3.98E+30	1.42E+62	4.23E+28	1.92E+12	2.33E+31	4.89E+63	2.44E+29	1.37E+13
	$\hat{\xi}$	0.873301	2.356907	0.856694	0.847543	0.848775	2.346414	0.836809	0.830391
PWMU	$\hat{\sigma}$	4.09E+20	1.5E+42	4.12E+18	8.08E+10	1.79E+20	2.89E+41	2.8E+18	6.15E+11
	$\hat{\xi}$	0.872881	2.354752	0.856194	0.846985	0.848534	2.34532	0.836542	0.830117
AD	$\hat{\sigma}$	2.84E+33	7.25E+67	3.02E+31	9.99E+14	3.33E+34	9.97E+69	3.49E+32	1.48E+16
	$\hat{\xi}$	1.679197	5.377913	1.663201	1.666159	1.655764	5.357373	1.65018	1.660105
ADR	$\hat{\sigma}$	2.84E+33	7.25E+67	3.02E+31	9.99E+14	3.33E+34	9.97E+69	3.49E+32	1.48E+16
	$\hat{\xi}$	1.689545	5.452763	1.682343	1.685076	1.699744	5.482676	1.694009	1.678422
AD2R	$\hat{\sigma}$	2.84E+33	7.25E+67	2.08E+41	9.32E+14	3.33E+34	9.97E+69	1.04E+41	1.48E+16
	$\hat{\xi}$	1.901173	5.801084	1.714812	1.700716	1.810847	5.614867	1.724047	1.701112
ADL	$\hat{\sigma}$	2.84E+33	7.25E+67	3.02E+31	9.99E+14	3.33E+34	9.97E+69	3.49E+32	1.48E+16
	$\hat{\xi}$	6913.324	1.41E+08	343.1851	60.41725	4680.713	93049024	411.147	111.041
AD2L	$\hat{\sigma}$	1.02E+27	9.39E+54	3.02E+31	9.99E+14	1.52E+29	2.07E+59	3.49E+32	1.48E+16
	$\hat{\xi}$	3538699	8.59E+13	1340175	92745.23	8153181	3.87E+14	1667707	163690.3
CM	$\hat{\sigma}$	2.84E+33	7.25E+67	3.02E+31	9.99E+14	3.33E+34	9.97E+69	3.49E+32	1.48E+16
	$\hat{\xi}$	83.65366	22394.34	17.83271	9.991956	485.6049	984374.7	30.5276	13.46933
KS	$\hat{\sigma}$	2.84E+33	7.25E+67	3.02E+31	9.99E+14	3.33E+34	9.97E+69	3.49E+32	1.48E+16
	$\hat{\xi}$	387.7582	1137841	13.00797	2.196161	170.1785	142522.5	11.76175	2.222683

Table 10. Results for the POT (q = 0.9) framework when varying sample size with true scale = 10

METHOD	PARAMETERS	n=10				n =20				n=30			
		RMSE	MSE	MAE	MDAE	RMSE	MSE	MAE	MDAE	RMSE	MSE	MAE	MDAE
MLEn	$\hat{\sigma}$	12.14498	163.9339	12.08711	12.05691	11.74508	154.7961	11.71866	11.73414	11.62479	152.0935	11.60724	11.62746
	$\hat{\xi}$	97944495	8.63E+16	2290197	206286.3	1302141	1.51E+13	473845.7	211165.3	673914.2	4.04E+12	362273.1	213334.3
NLS-P	$\hat{\sigma}$	9.9422	98.85203	9.942156	9.940966	1769.688	12448221	731.3979	65.89942	3443495	9.88E+13	46361.5	77.913
	$\hat{\xi}$	2.014644	5.629781	2.010524	2.018096	2.040715	5.030278	1.781914	1.580424	1.914823	4.627179	1.685956	1.531546

Method													
NLS-S	$\hat{\sigma}$	**9.21386**	**85.70724**	9.210143	9.227715	8.84E+13	7.03E+28	1.73E+12	1.66E+08	2.84E+11	7.26E+23	1.38E+10	17761861
	$\hat{\xi}$	1.913579	5.18344	1.897426	1.897794	1.536257	3.586714	1.395895	1.37141	1.185838	2.221391	1.007091	0.967829
WNLS-P	$\hat{\sigma}$	9.942025	98.84858	9.941981	9.940967	1771.317	12389450	731.8851	65.89924	3492145	1.01E+14	48496.13	92.23902
	$\hat{\xi}$	1.991321	5.529246	1.987124	1.993171	2.034817	5.010447	1.779275	1.578134	1.848747	4.449073	1.640433	1.50031
ZHANG	$\hat{\sigma}$	1.23E+08	1.37E+17	3062712	206514.4	1405052	1.76E+13	472271	209219.8	688655.9	4.22E+12	368401.5	215217.8
	$\hat{\xi}$	*0.977746*	*1.180724*	*0.878886*	*0.843105*	*0.840972*	*0.790075*	*0.764841*	*0.734961*	*0.824002*	*0.752816*	*0.760908*	0.738798
LME	$\hat{\sigma}$	14.19075	294.9688	**8.432229**	**6.333628**	**11.01759**	167.9765	**7.589455**	**6.055108**	**9.615173**	**138.3323**	7.287399	**5.925756**
	$\hat{\xi}$	3.938688	27.54494	3.79095	3.780068	3.885711	27.47752	3.776525	3.773757	3.856346	27.4565	3.765185	3.76855
MDPD	$\hat{\sigma}$	1.06E+28	1.02E+57	1.17E+26	1.64E+09	4.38E+34	1.73E+70	4.38E+32	2.83E+10	2.92E+34	7.67E+69	2.92E+32	1.51E+11
	$\hat{\xi}$	8.773539	197.7192	5.872793	3.840763	11.31741	353.4799	8.43879	7.042482	13.96872	576.9351	10.93522	9.133841
MED	$\hat{\sigma}$	34376350	1.06E+16	3575747	124440.8	726271.1	4.7E+12	358693.5	132448.9	430854.8	1.65E+12	232172.8	127265.8
	$\hat{\xi}$	1.363318	2.209306	1.07996	1.021198	1.1039	1.467868	0.884299	0.830116	0.969199	1.177203	0.792851	0.750687
MLE	$\hat{\sigma}$	18348308	1.63E+15	9775745	9451376	78378399	3.33E+16	14307651	11226396	62232590	2.22E+16	10453149	7590929
	$\hat{\xi}$	5.422387	90.85327	3.674564	3.233921	10.42432	325.8515	5.223063	4.047881	8.419654	351.551	3.175878	1.188522
MOMENTS	$\hat{\sigma}$	5.85E+27	3.08E+56	6.41E+25	9.3E+08	2.3E+34	4.76E+69	2.3E+32	1.51E+10	1.51E+34	2.05E+69	1.51E+32	7.97E+10
	$\hat{\xi}$	3.465746	29.08082	1.815074	1.414253	1.641776	4.524993	1.405406	1.293594	1.441416	3.817663	1.310669	1.236368
MPLE	$\hat{\sigma}$	1.36E+10	1.67E+21	1.36E+10	1.36E+10	6.82E+09	4.17E+20	6.81E+09	6.81E+09	6.61E+09	3.49E+20	6.6E+09	6.6E+09
	$\hat{\xi}$	1.72743	4.826043	1.674306	1.657413	1.596456	4.478596	1.552751	1.539339	1.435597	4.136256	1.403223	1.38553
PICKANDS	$\hat{\sigma}$	1.67E+09	2.5E+19	21023786	44734	6144493	3.39E+14	700534.2	99145.23	2141552	4.12E+13	325240.4	83995.52
	$\hat{\xi}$	1.722839	3.537408	1.336672	1.09606	1.184756	1.61182	0.939409	0.791515	0.97376	1.119776	0.768599	*0.641324*
PWMB	$\hat{\sigma}$	8.01E+26	5.77E+54	8.77E+24	1.79E+08	1.59E+33	2.27E+67	1.59E+31	1.41E+09	6.98E+32	4.38E+66	6.98E+30	4.85E+09
	$\hat{\xi}$	1.485042	3.443263	1.311986	1.20113	1.249959	2.860807	1.148925	1.084769	1.157787	2.68401	1.079401	1.027969
PWMU	$\hat{\sigma}$	2.83E+13	7.23E+27	6.79E+11	7663979	7.99E+15	5.75E+32	1.15E+14	58594509	3.61E+15	1.17E+32	6.74E+13	1.79E+08
	$\hat{\xi}$	1.663106	4.26375	1.357861	1.200538	1.272626	2.896171	1.153409	1.080982	1.165405	2.679943	1.079313	1.023885
AD	$\hat{\sigma}$	1.06E+28	1.02E+57	1.17E+26	1.64E+09	4.38E+34	1.73E+70	4.38E+32	2.83E+10	2.92E+34	7.67E+69	2.92E+32	1.51E+11
	$\hat{\xi}$	1.587751	4.09775	1.48898	1.447163	1.484156	4.017277	1.426893	1.421119	1.45803	4.052349	1.412917	1.418214
ADR	$\hat{\sigma}$	1.06E+28	1.02E+57	1.17E+26	1.64E+09	4.38E+34	1.73E+70	4.38E+32	2.83E+10	2.92E+34	7.67E+69	2.92E+32	1.51E+11
	$\hat{\xi}$	1.535372	3.956645	1.465663	1.432326	1.431851	3.800474	1.386858	1.378291	1.412396	3.811183	1.376514	1.371286
AD2R	$\hat{\sigma}$	1.06E+28	1.02E+57	4.32E+24	1.62E+09	4.38E+34	1.73E+70	4.55E+24	2.02E+10	2.92E+34	7.67E+69	6.21E+25	1.11E+11

METHOD	PARAMETERS												
	$\hat{\xi}$	64.9165	9106.504	50.76053	44.02929	35.13948	2649.29	23.11625	15.16515	23.26302	1260.565	13.33052	6.662441
ADL	$\hat{\sigma}$	1.06E+28	1.02E+57	1.17E+26	1.64E+09	4.38E+34	1.73E+70	4.38E+32	2.83E+10	2.92E+34	7.67E+69	2.92E+32	1.51E+11
	$\hat{\xi}$	15816.68	7.66E+08	356.7774	3.700047	123012.7	1.3E+11	1343.82	6.892667	8849.128	6.02E+08	273.6676	9.28762
AD2L	$\hat{\sigma}$	3.36E+28	1.01E+58	1.17E+26	1.64E+09	1.68E+28	2.54E+57	4.38E+32	2.83E+10	1.12E+28	1.13E+57	2.92E+32	1.51E+11
	$\hat{\xi}$	23526623	3.3E+15	1052648	60.45641	71863016	2.28E+16	2116160	180.3459	20561567	3.43E+15	1977836	317.2534
CM	$\hat{\sigma}$	1.06E+28	1.02E+57	1.17E+26	1.64E+09	4.38E+34	1.73E+70	4.38E+32	2.83E+10	2.92E+34	7.67E+69	2.92E+32	1.51E+11
	$\hat{\xi}$	9.052464	215.8674	3.109475	1.80133	17.87355	1122.176	4.035563	2.415865	32.02009	2845.91	5.00002	2.968642
KS	$\hat{\sigma}$	1.06E+28	1.02E+57	1.17E+26	1.64E+09	4.38E+34	1.73E+70	4.38E+32	2.83E+10	2.92E+34	7.67E+69	2.92E+32	1.51E+11
	$\hat{\xi}$	45.1942	9944.904	3.490787	2.112422	85.64818	27905.65	4.990967	2.101429	89.71085	41197.27	5.556008	2.082013

METHOD	PARAMETERS	n=50				n = 100				n= 200			
		RMSE	MSE	MAE	MDAE	RMSE	MSE	MAE	MDAE	RMSE	MSE	MAE	MDAE
MLEn	$\hat{\sigma}$	11.53084	150.0425	11.52056	11.51765	11.46348	148.5749	11.45841	11.4584	11.42733	147.8071	11.42478	11.42523
	$\hat{\xi}$	416416.6	1.54E+12	297488.9	218669.4	295742.7	7.71E+11	256175.9	220172.6	254716.8	5.71E+11	237901.6	221894.7
NLS-P	$\hat{\sigma}$	591510.5	2.35E+12	20461.27	511.5552	268467	5.76E+11	18081.15	3750.398	198733.4	3.1E+11	29027.6	8336.143
	$\hat{\xi}$	1.664515	3.963668	1.482822	1.38882	1.388155	3.41593	1.261429	1.213457	1.192889	3.134069	1.101405	1.049713
NLS-S	$\hat{\sigma}$	9.44E+09	8.02E+20	5.95E+08	1647349	7.07E+08	4.5E+18	35111938	357288.3	27502867	6.8E+15	3373021	196120.9
	$\hat{\xi}$	0.880402	1.255782	0.708799	0.625363	0.64153	0.683634	0.494017	0.409289	0.468928	0.367982	0.347712	0.27816
WNLS-P	$\hat{\sigma}$	617132.5	2.59E+12	25021.67	636.9629	372746	1.09E+12	23732.92	4341.769	218211.7	3.72E+11	32873.29	9123.234
	$\hat{\xi}$	1.603223	3.836723	1.442588	1.36799	1.328432	3.333456	1.221074	1.186601	1.145291	3.08898	1.068739	1.030508
ZHANG	$\hat{\sigma}$	425499.6	1.6E+12	303052	222090.7	297559.7	7.81E+11	257618	221136.7	255565.3	5.75E+11	238648.8	222613.7
	$\hat{\xi}$	0.849101	0.844256	0.800753	0.786084	0.979263	1.163389	0.945856	0.938951	1.104543	1.631468	1.083173	1.080845
LME	$\hat{\sigma}$	**8.780609**	**118.1586**	6.933826	**5.79808**	**7.711355**	**90.06163**	6.381021	**5.668086**	**6.822082**	**63.86576**	5.871054	**5.566467**
	$\hat{\xi}$	3.8274	27.4756	3.757557	3.770928	3.800364	27.4975	3.757711	3.771646	3.785081	27.53298	3.762874	3.771778
MDPD	$\hat{\sigma}$	1.75E+34	2.76E+69	1.75E+32	1.12E+12	8.76E+33	6.91E+68	8.76E+31	1.81E+13	4.38E+33	1.73E+68	4.38E+31	2.85E+14
	$\hat{\xi}$	30.43693	3845.625	15.97801	11.93761	56.46625	12661.87	20.50659	15.95202	87.58115	34642.96	26.5805	19.73681

MED	$\hat{\sigma}$	262784.5	6.13E+11	181068	130876.3	206254	3.77E+11	171936	138626.3	180926.3	2.9E+11	163872.3	155572.4
	$\hat{\xi}$	0.826739	0.927272	0.699517	0.64859	0.679767	0.729101	0.596967	0.559148	0.568713	0.616685	0.521173	0.498689
MLE	$\hat{\sigma}$	7001646	3.31E+14	4734499	4608812	17274950	1.6E+15	5267979	3178978	56398262	2E+16	50736102	49555926
	$\hat{\xi}$	13.06483	561.0601	6.611675	5.38728	5.245894	88.64542	2.938896	2.155548	24.30636	3905.766	23.12001	22.71488
MOMENTS	$\hat{\sigma}$	8.94E+33	7.19E+68	8.94E+31	5.71E+11	4.42E+33	1.76E+68	4.42E+31	9.18E+12	2.2E+33	4.36E+67	2.2E+31	1.43E+14
	$\hat{\xi}$	1.298571	3.493689	1.226102	1.179487	1.199088	3.346293	1.155191	1.127543	1.134807	3.28102	1.106712	1.088367
MPLE	$\hat{\sigma}$	8364262	3.59E+14	4909913	4608535	7507762	2.26E+14	3810661	3178101	2.52E+09	5.06E+19	1.8E+09	1.8E+09
	$\hat{\xi}$	1.142327	2.366806	1.117042	1.107241	1.088543	2.266553	1.053318	1.070766	1.053218	2.200907	1.039899	1.035705
PICKANDS	$\hat{\sigma}$	435486.1	1.69E+12	201659.4	93239.29	244283.6	5.3E+11	164898.6	112179.8	164909.7	2.41E+11	135624.4	112615.3
	$\hat{\xi}$	*0.747827*	*0.658929*	*0.593202*	*0.499374*	*0.525591*	*0.321627*	*0.418923*	*0.355127*	*0.372224*	*0.161635*	*0.296583*	*0.250869*
PWMB	$\hat{\sigma}$	2.49E+32	5.57E+65	2.49E+30	2.1E+10	6.18E+31	3.43E+64	6.18E+29	1.66E+11	1.54E+31	2.13E+63	1.54E+29	1.39E+12
	$\hat{\xi}$	1.065392	2.538885	1.009481	0.974361	0.982086	2.439075	0.943467	0.919803	0.923436	2.387816	0.896832	0.880528
PWMU	$\hat{\sigma}$	7.09E+15	4.52E+32	1.16E+14	8.39E+08	4.66E+16	1.95E+34	1.03E+15	6.9E+09	2.34E+18	4.94E+37	3.83E+16	5.26E+10
	$\hat{\xi}$	1.066346	2.525898	1.00763	0.9713	0.981377	2.430016	0.941873	0.917537	0.922701	2.382719	0.895816	0.879228
AD	$\hat{\sigma}$	1.75E+34	2.76E+69	1.75E+32	1.12E+12	8.76E+33	6.91E+68	8.76E+31	1.81E+13	4.38E+33	1.73E+68	4.38E+31	2.85E+14
	$\hat{\xi}$	1.494062	4.545705	1.458748	1.473368	1.489663	4.682217	1.460377	1.47457	1.501281	4.751119	1.481208	1.496021
ADR	$\hat{\sigma}$	1.75E+34	2.76E+69	1.75E+32	1.12E+12	8.76E+33	6.91E+68	8.76E+31	1.81E+13	4.38E+33	1.73E+68	4.38E+31	2.85E+14
	$\hat{\xi}$	1.500639	4.547783	1.473975	1.501998	1.508653	4.745597	1.487638	1.505943	1.510265	4.788429	1.494384	1.499881
AD2R	$\hat{\sigma}$	1.75E+34	2.76E+69	3.69E+31	9.06E+11	8.76E+33	6.91E+68	1.84E+31	1.61E+13	4.38E+33	1.73E+68	9.61E+30	2.5E+14
	$\hat{\xi}$	13.12052	508.393	6.858736	1.64682	6.001854	118.753	2.860811	1.539627	2.872933	16.16399	1.680789	1.525788
ADL	$\hat{\sigma}$	1.75E+34	2.76E+69	1.75E+32	1.12E+12	8.76E+33	6.91E+68	8.76E+31	1.81E+13	4.38E+33	1.73E+68	4.38E+31	2.85E+14
	$\hat{\xi}$	165325.5	1.99E+11	1849.823	12.90428	10473.87	5.54E+08	270.9521	19.68757	5042.732	1.31E+08	230.1643	30.69769
AD2L	$\hat{\sigma}$	6.72E+27	4.06E+56	1.75E+32	1.12E+12	3.36E+27	1.01E+56	8.76E+31	1.81E+13	4.63E+27	1.93E+56	4.38E+31	2.85E+14
	$\hat{\xi}$	34870163	1.01E+16	2847804	494.2223	51033590	2.28E+16	3096586	1749.368	24056456	4.26E+15	3358560	13093.7
CM	$\hat{\sigma}$	1.75E+34	2.76E+69	1.75E+32	1.12E+12	8.76E+33	6.91E+68	8.76E+31	1.81E+13	4.38E+33	1.73E+68	4.38E+31	2.85E+14
	$\hat{\xi}$	29.44877	2634.891	6.281941	3.86878	56.82408	9659.478	8.923441	5.247154	84.41763	32588.22	12.24803	6.991565
KS	$\hat{\sigma}$	1.75E+34	2.76E+69	1.75E+32	1.12E+12	8.76E+33	6.91E+68	8.76E+31	1.81E+13	4.38E+33	1.73E+68	4.38E+31	2.85E+14
	$\hat{\xi}$	37.2706	4540.105	4.562757	2.06346	163.9805	147950.9	6.914514	2.05308	139.8985	72876.08	7.215777	2.063727

METHOD	PARAMETERS	n= 500				n=1000			
		RMSE	MSE	MAE	MDAE	RMSE	MSE	MAE	MDAE
MLEn	$\hat{\sigma}$	11.40189	147.2674	11.40085	11.40168	11.39104	147.0305	11.3905	11.39047
	$\hat{\xi}$	233947.1	4.81E+11	227817.9	221334.6	227243	4.54E+11	224262.9	221169.7
NLS-P	$\hat{\sigma}$	256608.6	5.35E+11	55236.72	10599.02	318910.2	8.48E+11	90241.14	10973.83
	$\hat{\xi}$	1.020692	2.952275	0.962701	0.940367	0.940297	2.881736	0.894685	0.890465
NLS-S	$\hat{\sigma}$	2129552	4.07E+13	558301.9	137579.9	551354.1	2.72E+12	270383.4	123868.6
	$\hat{\xi}$	0.31902	0.175455	0.224965	0.176185	0.25276	0.122421	0.16754	0.125272
WNLS-P	$\hat{\sigma}$	277937.3	6.29E+11	59780	11121.75	331954.1	9.2E+11	94046.88	11258.96
	$\hat{\xi}$	0.988579	2.933911	0.939574	0.924176	0.916422	2.872235	0.876845	0.876869
ZHANG	$\hat{\sigma}$	234168.9	4.82E+11	228025.1	221535.6	227332.2	4.54E+11	224348.7	221237
	$\hat{\xi}$	1.259195	2.399688	1.248469	1.249012	1.36391	3.036801	1.358066	1.358201
LME	$\hat{\sigma}$	**5.783201**	**47.61533**	5.524054	**5.487803**	**5.514142**	**46.20109**	5.463523	**5.459982**
	$\hat{\xi}$	3.774361	27.55952	3.767482	3.769677	3.769578	27.54947	3.76685	3.767725
MDPD	$\hat{\sigma}$	2.84E+34	7.25E+69	3.02E+32	9.99E+15	3.33E+35	9.97E+71	3.49E+33	1.48E+17
	$\hat{\xi}$	63.46319	19143.71	28.35592	25.84319	100.2713	43189.62	33.79383	27.63367
MED	$\hat{\sigma}$	136758.2	1.65E+11	130092.3	113865.4	124643.7	1.37E+11	15000969	235770
	$\hat{\xi}$	0.480058	0.55015	0.442022	0.421698	0.435399	0.531146	0.500333	0.505682
MLE	$\hat{\sigma}$	6949929	3.38E+14	1871617	109990.3	1.36E+11	1.49E+23	1.36E+11	1.36E+11
	$\hat{\xi}$	0.786784	1.584763	0.709745	0.66585	0.762586	1.460359	0.626881	0.615092
MOMENTS	$\hat{\sigma}$	1.42E+34	1.82E+69	1.51E+32	5E+15	1.67E+35	2.5E+71	1.75E+33	7.42E+16
	$\hat{\xi}$	1.083129	3.245607	1.06634	1.055546	1.058528	3.234188	1.023612	1.016424
MPLE	$\hat{\sigma}$	108161.1	7.94E+10	92348.33	73357.76	1.36E+11	1.49E+23	2.81E+11	1.36E+11
	$\hat{\xi}$	0.844779	1.711211	0.780514	0.725078	1.015042	2.15392	1.025321	1.015734
PICKANDS	$\hat{\sigma}$	131037.4	1.51E+11	121080	111419.6	120967.2	1.29E+11	116413.5	112212.2
	$\hat{\xi}$	*0.234564*	*0.064466*	*0.186459*	*0.156867*	*0.166548*	*0.032462*	*0.132632*	*0.111514*
PWMB	$\hat{\sigma}$	3.98E+31	1.42E+64	4.23E+29	1.92E+13	2.33E+32	4.89E+65	2.44E+30	1.37E+14

METHOD	PARAMETERS								
	$\hat{\xi}$	0.873301	2.356907	0.856694	0.847543	0.848775	2.346414	0.836809	0.830391
PWMU	$\hat{\sigma}$	4.09E+21	1.5E+44	4.12E+19	8.08E+11	1.79E+21	2.89E+43	2.8E+19	6.14E+12
	$\hat{\xi}$	0.872881	2.354752	0.856194	0.846985	0.848534	2.34532	0.836542	0.830117
AD	$\hat{\sigma}$	2.84E+34	7.25E+69	3.02E+32	9.99E+15	3.33E+35	9.97E+71	3.49E+33	1.48E+17
	$\hat{\xi}$	1.483721	4.710629	1.476166	1.477132	1.492647	4.747019	1.487182	1.487808
ADR	$\hat{\sigma}$	2.84E+34	7.25E+69	3.02E+32	9.99E+15	3.33E+35	9.97E+71	3.49E+33	1.48E+17
	$\hat{\xi}$	1.510639	7.25E+69	1.503007	1.501807	1.499703	4.774352	1.494687	1.488303
AD2R	$\hat{\sigma}$	2.84E+34	7.25E+69	2.08E+42	9.32E+15	3.33E+35	9.97E+71	1.04E+42	1.48E+17
	$\hat{\xi}$	1.705034	5.132909	1.533954	1.520631	1.613973	4.957975	1.53139	1.513125
ADL	$\hat{\sigma}$	2.84E+34	7.25E+69	3.02E+32	9.99E+15	3.33E+35	9.97E+71	3.49E+33	1.48E+17
	$\hat{\xi}$	3811.915	61827488	275.3823	59.97288	4069.068	64343052	402.476	113.6941
AD2L	$\hat{\sigma}$	1.02E+28	9.39E+56	3.02E+32	9.99E+15	1.52E+30	2.07E+61	3.49E+33	1.48E+17
	$\hat{\xi}$	3001423	5.47E+13	1456242	93718.62	4173461	1.25E+14	1359685	176291.1
CM	$\hat{\sigma}$	2.84E+34	7.25E+69	3.02E+32	9.99E+15	3.33E+35	9.97E+71	3.49E+33	1.48E+17
	$\hat{\xi}$	83.98827	22106.58	17.73419	9.957314	443.8383	962331.2	30.05727	13.40554
KS	$\hat{\sigma}$	2.84E+34	7.25E+69	3.02E+32	9.99E+15	3.33E+35	9.97E+71	3.49E+33	1.48E+17
	$\hat{\xi}$	384.0644	1134738	12.8065	2.086712	180.6571	167062.4	12.13049	2.124238

Table 11. Results for the POT (q = 0.95) framework when varying sample size with true scale = 1

METHOD	PARAMETERS	n=10				n =20				n=30			
		RMSE	MSE	MAE	MDAE	RMSE	MSE	MAE	MDAE	RMSE	MSE	MAE	MDAE
MLEn	$\hat{\sigma}$	4.732719	34.30995	4.567441	4.472484	**4.366195**	**32.01162**	4.284081	**4.25465**	4.258847	**31.37413**	4.20017	**4.185269**
	$\hat{\xi}$	44276621	1.76E+16	4528943	635028.2	5637522	2.86E+14	1602591	667900.5	2207643	4.37E+13	1163151	669412
NLS-P	$\hat{\sigma}$	0.945865	0.898267	0.944978	0.947915	1533.53	12498555	688.3074	125.7175	40010125	1.44E+16	412798	319.2697
	$\hat{\xi}$	2.028305	5.657651	2.025844	2.022172	2.072485	5.168959	1.809097	1.631518	1.95105	4.759495	1.710994	1.539622
NLS-S	$\hat{\sigma}$	**0.92125**	1.018661	**0.890725**	**0.868849**	6.81E+13	4.17E+28	1.94E+12	4.52E+08	5.72E+12	2.94E+26	1.09E+11	47488959
	$\hat{\xi}$	1.867606	5.080758	1.861035	1.881915	1.537987	3.538929	1.394649	1.364311	1.190754	2.203771	1.010083	0.968889
WNLS-P	$\hat{\sigma}$	0.945711	**0.898**	0.944823	0.947916	1536.602	12546172	689.5112	125.9924	40012366	1.44E+16	413966.9	400.2015

Method	Param												
	$\hat{\xi}$	1.99752	5.538083	1.994388	1.994328	2.06857	5.156304	1.807611	1.63201	1.884019	4.578258	1.665882	1.50665
ZHANG	$\hat{\sigma}$	61144736	3.36E+16	5167396	637817.3	5694877	2.92E+14	1601313	659826.9	2263020	4.6E+13	1184615	679090.1
	$\hat{\xi}$	*1.005421*	*1.215035*	*0.906469*	*0.870785*	*0.88973*	*0.87893*	*0.816127*	*0.790692*	*0.884957*	*0.887662*	0.823642	0.804774
LME	$\hat{\sigma}$	12.8294	425.1138	8.421366	6.184085	10.81374	293.5803	8.044883	6.617034	10.20165	249.5307	7.820335	6.762691
	$\hat{\xi}$	3.590874	28.2234	3.4817	3.465453	3.543142	28.1917	3.477284	3.476187	3.523147	28.21388	3.477163	3.479765
MDPD	$\hat{\sigma}$	9.86E+33	7.77E+68	9.86E+31	6.37E+09	5.63E+33	2.22E+68	5.63E+31	1.16E+11	3.75E+33	9.87E+67	3.75E+31	5.55E+11
	$\hat{\xi}$	9.627877	219.8404	6.334428	4.107934	14.18068	453.2009	10.34387	8.386298	17.59903	742.9619	13.58686	11.15372
MED	$\hat{\sigma}$	63474307	3.63E+16	7004553	424657.7	1852168	3.08E+13	858044	348367	1254172	1.41E+13	710850.4	416269.2
	$\hat{\xi}$	1.325919	2.078824	1.056062	1.005826	1.069086	1.38214	0.862096	0.809674	0.93793	1.110247	0.773946	0.722758
MLE	$\hat{\sigma}$	15675443	1.33E+15	2861249	2244999	4.84E+09	2.09E+20	4.82E+09	4.82E+09	62008887	2.97E+16	3271120	773847
	$\hat{\xi}$	2.644855	14.85711	1.672019	1.286819	7.011695	230.3477	2.920702	1.449246	8.741873	389.669	3.198382	1.135712
MOMENTS	$\hat{\sigma}$	4.82E+33	2.09E+68	4.82E+31	3.2E+09	2.3E+33	4.76E+67	2.3E+31	4.83E+10	1.51E+33	2.05E+67	1.51E+31	2.26E+11
	$\hat{\xi}$	3.718875	39.04546	1.891762	1.423376	1.641193	4.491203	1.41129	1.289709	1.45177	3.848994	1.314136	1.236762
MPLE	$\hat{\sigma}$	1.36E+09	1.67E+19	1.36E+09	1.36E+09	6.61E+10	3.93E+22	4.91E+10	4.91E+10	3.3E+09	9.8E+19	3.3E+09	3.3E+09
	$\hat{\xi}$	1.829321	5.136325	1.778795	1.748902	1.703768	4.824407	1.677138	1.657285	1.666441	4.738384	1.642633	1.624795
PICKANDS	$\hat{\sigma}$	2.56E+08	5.89E+17	12130626	147807.7	11874986	1.27E+15	2157874	320698.9	3289461	9.73E+13	994721.2	267092.9
	$\hat{\xi}$	1.716242	3.504617	1.331544	1.090066	1.179785	1.600224	0.936225	0.791736	0.975246	1.124274	0.767332	0.637795
PWMB	$\hat{\sigma}$	6.59E+32	3.91E+66	6.59E+30	6E+08	1.59E+32	2.27E+65	1.59E+30	4.59E+09	6.98E+31	4.38E+64	6.98E+29	1.43E+10
	$\hat{\xi}$	1.513673	3.537954	1.329349	1.210082	1.255337	2.86805	1.150038	1.083398	1.158743	2.6849	1.080064	1.029043
PWMU	$\hat{\sigma}$	3.42E+15	1.05E+32	4.92E+13	25143509	9.32E+14	7.83E+30	2.32E+13	1.72E+08	4.62E+16	1.92E+34	5.92E+14	5.67E+08
	$\hat{\xi}$	1.71659	4.583657	1.385417	1.20983	1.279753	2.909369	1.155633	1.077813	1.166909	2.682314	1.080347	1.024936
AD	$\hat{\sigma}$	8.76E+33	6.91E+68	8.76E+31	5.66E+09	4.38E+33	1.73E+68	4.38E+31	9.02E+10	2.92E+33	7.67E+67	2.92E+31	4.32E+11
	$\hat{\xi}$	1.80476	4.948502	1.724726	1.724481	1.713981	4.890436	1.666423	1.675829	1.688645	4.926348	1.649479	1.665551
ADR	$\hat{\sigma}$	8.76E+33	6.91E+68	8.76E+31	5.66E+09	4.38E+33	1.73E+68	4.38E+31	9.02E+10	2.92E+33	7.67E+67	2.92E+31	4.32E+11
	$\hat{\xi}$	1.735637	4.710004	1.682852	1.687684	1.651867	4.635826	1.615922	1.620431	1.637457	4.665546	1.607241	1.615222
AD2R	$\hat{\sigma}$	5.62E+25	2.85E+52	9.1E+23	4.05E+09	8.27E+26	6.16E+54	9.32E+24	7.81E+10	6.14E+32	3.4E+66	6.14E+30	3.95E+11
	$\hat{\xi}$	64.68027	9002.996	50.71267	43.93514	35.13594	2628.273	23.23689	15.19031	23.49586	1247.305	13.55199	6.803871
ADL	$\hat{\sigma}$	8.76E+33	6.91E+68	8.76E+31	5.66E+09	4.38E+33	1.73E+68	4.38E+31	9.02E+10	2.92E+33	7.67E+67	2.92E+31	4.32E+11
	$\hat{\xi}$	5772.269	1.73E+08	214.5919	3.965977	4497.17	1.07E+08	184.9125	7.143328	3005.708	37031349	180.0843	9.590592

METHOD	PARAMETERS												
AD2L	$\hat{\sigma}$	8.76E+33	6.91E+68	8.76E+31	5.66E+09	4.38E+33	1.73E+68	4.38E+31	9.02E+10	2.92E+33	7.67E+67	2.92E+31	4.32E+11
	$\hat{\xi}$	22645722	3.66E+15	616657.9	60.61549	66814520	1.85E+16	1900791	185.981	1.08E+08	3.76E+16	2289988	330.2294
CM	$\hat{\sigma}$	8.76E+33	6.91E+68	8.76E+31	5.66E+09	4.38E+33	1.73E+68	4.38E+31	9.02E+10	2.92E+33	7.67E+67	2.92E+31	4.32E+11
	$\hat{\xi}$	11.18021	332.162	3.300941	2.090907	14.71795	620.7318	4.23561	2.641801	102.3422	46435.88	6.089086	3.214956
KS	$\hat{\sigma}$	8.76E+33	6.91E+68	8.76E+31	5.66E+09	4.38E+33	1.73E+68	4.38E+31	9.02E+10	2.92E+33	7.67E+67	2.92E+31	4.32E+11
	$\hat{\xi}$	36.92183	5271.449	3.35989	2.103807	91.67291	34021.06	4.588858	2.136527	118.3726	72619.32	5.731617	2.139376

METHOD	PARAMETERS	n=50				n = 100				n= 200			
		RMSE	MSE	MAE	MDAE	RMSE	MSE	MAE	MDAE	RMSE	MSE	MAE	MDAE
MLEn	$\hat{\sigma}$	**4.172431**	**30.9046**	4.134289	**4.117916**	**4.105121**	**30.56217**	4.084572	**4.078183**	4.069413	30.39226	4.058607	**4.055903**
	$\hat{\xi}$	1272284	1.45E+13	933239.5	689034.5	938411.6	7.89E+12	811308.8	703910.5	813503.8	5.93E+12	757248.6	703861.9
NLS-P	$\hat{\sigma}$	315988.3	7.5E+11	12505.94	1105.854	185285.8	2.76E+11	15397.27	2705.479	134192.8	1.47E+11	20633.48	3830.282
	$\hat{\xi}$	1.666802	3.977598	1.479535	1.391006	1.38855	3.413702	1.255192	1.180089	1.18606	3.120482	1.094549	1.044519
NLS-S	$\hat{\sigma}$	1.68E+10	2.54E+21	1.38E+09	5355391	2.23E+09	4.48E+19	1.05E+08	1069250	54959355	2.72E+16	10246727	610649.7
	$\hat{\xi}$	0.891002	1.274004	0.717029	0.629726	0.644153	0.679744	0.495448	0.408372	0.474723	0.376074	0.35298	0.284271
WNLS-P	$\hat{\sigma}$	367114.5	1E+12	16761.34	1322.369	251961.4	5.14E+11	20292.77	3085.265	156549.1	2.02E+11	23747.1	4137.521
	$\hat{\xi}$	1.610583	3.863426	1.442592	1.371302	1.330967	3.332691	1.216913	1.159192	1.139784	3.07602	1.062518	1.024855
ZHANG	$\hat{\sigma}$	1298108	1.51E+13	950286	699716	944495.8	7.99E+12	816053.8	707896.2	816294.9	5.97E+12	759699.2	706147.4
	$\hat{\xi}$	0.928645	1.051806	0.880529	0.86631	1.080589	1.482161	1.047484	1.041668	1.228853	2.085981	1.207409	1.206202
LME	$\hat{\sigma}$	8.973425	176.68	7.386672	6.815373	7.429392	116.2602	6.978713	6.823076	6.90776	103.5548	6.864134	6.809665
	$\hat{\xi}$	3.50664	28.23795	3.479313	3.481004	3.495563	28.30595	3.481985	3.478148	3.486604	28.32098	3.478633	3.475508
MDPD	$\hat{\sigma}$	2.25E+33	3.55E+67	2.25E+31	4.66E+12	1.13E+33	8.88E+66	1.13E+31	7.33E+13	9.12E+33	5.82E+68	9.7E+31	1.04E+15
	$\hat{\xi}$	25.97901	1702.279	19.34983	14.5968	41.59044	4973.845	24.98867	19.9014	187.1179	113622.9	35.66129	24.40139
MED	$\hat{\sigma}$	919305.4	7.58E+12	578430.7	355068.8	642657.1	3.7E+12	504812.7	412800.4	499775.6	2.24E+12	455336.8	424710.8
	$\hat{\xi}$	0.809896	0.906517	0.689373	0.636341	0.6614	0.701157	0.586094	0.563006	0.577116	0.628998	0.521623	0.493716
MLE	$\hat{\sigma}$	3454640	6.4E+13	1053193	635403.1	11279209	8E+14	10146744	9910724	1525251	1.63E+13	318930	16306.2
	$\hat{\xi}$	8.83176	423.3441	3.174332	1.069159	3.577095	61.11383	1.757374	0.937339	1.519041	5.292834	1.049056	0.927498

METHOD	PARAMETERS												
MOMENTS	$\hat{\sigma}$	8.94E+32	7.19E+66	8.94E+30	1.86E+12	4.42E+32	1.76E+66	4.42E+30	2.88E+13	3.56E+33	1.14E+68	3.79E+31	4.07E+14
	$\hat{\xi}$	1.303595	3.503057	1.228837	1.180683	1.199706	3.347125	1.155223	1.126182	1.135961	3.28195	1.107623	1.088857
MPLE	$\hat{\sigma}$	3454640	6.4E+13	1053195	635403.8	466967.4	1.52E+12	101406.6	8028.437	1525252	1.63E+13	318933.2	16306.59
	$\hat{\xi}$	1.249661	2.68313	1.234836	1.223376	1.043677	2.182474	1.033707	1.024267	1.012315	2.151622	1.005972	1.000473
PICKANDS	$\hat{\sigma}$	1553656	2.17E+13	643459.4	292785.1	768434.2	5.3E+12	521419.5	351075.9	526128	2.48E+12	431829.4	355654.9
	$\hat{\xi}$	*0.742559*	*0.646904*	*0.587713*	*0.491776*	*0.521455*	*0.316783*	*0.414633*	*0.348485*	*0.370022*	*0.160017*	*0.294997*	*0.249213*
PWMB	$\hat{\sigma}$	2.49E+31	5.57E+63	2.49E+29	6.72E+10	6.18E+30	3.43E+62	6.18E+28	5.59E+11	2.49E+31	5.59E+63	2.65E+29	3.9E+12
	$\hat{\xi}$	1.066687	2.540554	1.009913	0.971994	0.982022	2.438979	0.943274	0.918882	0.923931	2.387985	0.897243	0.880911
PWMU	$\hat{\sigma}$	1.88E+16	3.2E+33	4.17E+14	2.81E+09	9.45E+17	8.03E+36	1.55E+16	2.11E+10	2.56E+21	5.91E+43	2.58E+19	1.61E+11
	$\hat{\xi}$	1.068047	2.528284	1.008427	0.969585	0.981379	2.430006	0.941748	0.916753	0.923216	2.382916	0.896229	0.87983
AD	$\hat{\sigma}$	1.75E+33	2.76E+67	1.75E+31	3.63E+12	8.76E+32	6.91E+66	8.76E+30	5.7E+13	7.09E+33	4.53E+68	7.55E+31	8.08E+14
	$\hat{\xi}$	1.743287	5.453399	1.710223	1.729357	1.775876	5.673379	1.748389	1.732249	1.788245	5.720175	1.768309	1.79931
ADR	$\hat{\sigma}$	1.75E+33	2.76E+67	1.75E+31	3.63E+12	8.76E+32	6.91E+66	8.76E+30	5.7E+13	7.09E+33	4.53E+68	7.55E+31	8.08E+14
	$\hat{\xi}$	1.719237	5.384253	1.691943	1.716612	1.761119	5.65513	1.734632	1.720114	1.785002	5.734873	1.765618	1.798309
AD2R	$\hat{\sigma}$	3.69E+32	1.22E+66	3.69E+30	3.22E+12	1.84E+32	3.06E+65	1.92E+30	4.99E+13	5.2E+43	2.43E+88	5.2E+41	7.6E+14
	$\hat{\xi}$	13.36886	499.3855	7.000681	2.373759	6.281289	120.863	3.116642	1.80833	3.057759	16.42717	1.941653	1.806016
ADL	$\hat{\sigma}$	1.75E+33	2.76E+67	1.75E+31	3.63E+12	8.76E+32	6.91E+66	8.76E+30	5.7E+13	7.09E+33	4.53E+68	7.55E+31	8.08E+14
	$\hat{\xi}$	4708.332	66306795	213.5736	13.15909	11565.18	7.46E+08	321.8881	19.8371	3050.812	30794163	208.857	31.32934
AD2L	$\hat{\sigma}$	1.75E+33	2.76E+67	1.75E+31	3.63E+12	8.76E+32	6.91E+66	8.76E+30	5.7E+13	7.09E+33	4.53E+68	7.55E+31	8.08E+14
	$\hat{\xi}$	51458297	1.3E+16	1669376	478.2375	76275177	2.61E+16	2471711	1854.83	53681393	1.39E+16	1910054	15887.1
CM	$\hat{\sigma}$	1.75E+33	2.76E+67	1.75E+31	3.63E+12	8.76E+32	6.91E+66	8.76E+30	5.7E+13	7.09E+33	4.53E+68	7.55E+31	8.08E+14
	$\hat{\xi}$	39.37744	6824.52	6.665415	4.059304	78.53806	29860.38	9.73128	5.411844	90.44012	35056.4	12.53001	7.07888
KS	$\hat{\sigma}$	1.75E+33	2.76E+67	1.75E+31	3.63E+12	8.76E+32	6.91E+66	8.76E+30	5.7E+13	7.09E+33	4.53E+68	7.55E+31	8.08E+14
	$\hat{\xi}$	78.83927	28114.23	4.796288	2.141939	168.012	113832.8	8.449451	2.145801	87.84743	26763.14	6.745065	2.164642

METHOD	PARAMETERS	n= 500				n=1000			
		RMSE	MSE	MAE	MDAE	RMSE	MSE	MAE	MDAE

MLEn	$\hat{\sigma}$	4.042464	30.26974	4.038001	4.037299	4.029944	30.21666	4.027657	4.027297
	$\hat{\xi}$	741625.7	4.92E+12	721306.5	702107.2	723923.1	4.69E+12	713678.4	704452.2
NLS-P	$\hat{\sigma}$	237799.6	4.87E+11	51863.31	4213.291	286353.4	7.14E+11	88984.02	4339.412
	$\hat{\xi}$	1.020287	2.9464	0.960513	0.940676	0.935243	2.868158	0.887175	0.888398
NLS-S	$\hat{\sigma}$	5106025	2.34E+14	1750849	446229.2	1671961	2.51E+13	850709.7	390202.1
	$\hat{\xi}$	0.325946	0.18524	0.229183	0.177537	0.25673	0.126736	0.169439	0.125098
WNLS-P	$\hat{\sigma}$	266179	6.12E+11	56602.14	4433.637	301650.5	7.92E+11	93374.88	4473.905
	$\hat{\xi}$	0.988496	2.927921	0.937604	0.924422	0.913191	2.859529	0.871173	0.876405
ZHANG	$\hat{\sigma}$	742375.9	4.93E+12	722008.8	702652.5	724245.8	4.69E+12	713989.5	704745.3
	$\hat{\xi}$	1.414992	3.083097	1.404286	1.404422	1.545463	3.942997	1.539672	1.539952
LME	$\hat{\sigma}$	6.842673	101.6022	6.826353	6.804693	6.821045	100.9494	6.81279	6.800733
	$\hat{\xi}$	3.47681	28.29686	3.47255	3.470628	3.472573	28.29973	3.469814	3.468556
MDPD	$\hat{\sigma}$	8.56E+34	5.13E+70	8.97E+32	3.81E+16	2.48E+37	4.32E+75	2.49E+35	6.6E+17
	$\hat{\xi}$	129.8011	75772.44	37.53746	32.62197	146.4102	81154.89	42.41584	34.53397
MED	$\hat{\sigma}$	440404.8	1.74E+12	425857.9	398517.9	387971.2	1.35E+12	382562.9	397046
	$\hat{\xi}$	0.47989	0.552688	0.445117	0.429675	0.432855	0.531421	0.407925	0.403593
MLE	$\hat{\sigma}$	2.74E+10	5.95E+21	2.73E+10	2.73E+10	4540785	1.44E+14	2291730	33559.42
	$\hat{\xi}$	1.001215	2.146199	0.879627	0.868591	0.910003	1.992647	0.888635	0.914726
MOMENTS	$\hat{\sigma}$	3.34E+34	1E+70	3.49E+32	1.49E+16	9.67E+36	8.42E+74	9.69E+34	2.57E+17
	$\hat{\xi}$	1.083421	3.245607	1.066823	1.056167	1.058698	3.234171	1.047066	1.039194
MPLE	$\hat{\sigma}$	2.73E+10	5.94E+21	2.73E+10	2.73E+10	26918599	5.07E+15	5903185	83745.55
	$\hat{\xi}$	1.158685	2.539678	1.15448	1.150824	0.97592	2.116722	0.972251	0.971925
PICKANDS	$\hat{\sigma}$	415247.7	1.54E+12	382946.6	353518.9	386789.1	1.34E+12	371302	356784.7
	$\hat{\xi}$	*0.234735*	*0.064389*	*0.186954*	*0.157738*	*0.1662*	*0.032368*	*0.132507*	*0.111854*
PWMB	$\hat{\sigma}$	9.33E+31	7.84E+64	9.78E+29	5.5E+13	1.35E+34	1.65E+69	1.36E+32	4.84E+14
	$\hat{\xi}$	0.873752	2.357001	0.857066	0.84753	0.848944	2.346401	0.837008	0.8304
PWMU	$\hat{\sigma}$	7.18E+20	4.64E+42	1.12E+19	2.46E+12	5.05E+23	2.3E+48	5.61E+21	2.01E+13
	$\hat{\xi}$	0.873337	2.354848	0.856583	0.84704	0.848705	2.345308	0.836739	0.830066
AD	$\hat{\sigma}$	6.66E+34	3.99E+70	6.98E+32	2.96E+16	1.93E+37	3.36E+75	1.94E+35	5.13E+17

METHOD	PARAMETERS												
	$\hat{\xi}$	1.789424	5.731209	1.782037	1.796689	1.788084	5.73858	1.783023	1.789806				
ADR	$\hat{\sigma}$	6.66E+34	3.99E+70	6.98E+32	2.96E+16	1.93E+37	3.36E+75	1.94E+35	5.13E+17				
	$\hat{\xi}$	1.796191	5.773793	1.789476	1.792987	1.792162	5.755427	1.787533	1.792304				
AD2R	$\hat{\sigma}$	2.08E+43	3.89E+87	2.08E+41	2.96E+16	1.04E+43	9.72E+86	1.04E+41	4.68E+17				
	$\hat{\xi}$	2.031937	6.185864	1.801355	1.802544	1.884258	5.836739	1.801358	1.801502				
ADL	$\hat{\sigma}$	6.66E+34	3.99E+70	6.98E+32	2.96E+16	1.93E+37	3.36E+75	1.94E+35	5.13E+17				
	$\hat{\xi}$	5053.917	84898384	339.4517	60.86079	10125.15	6.34E+08	471.4235	111.1074				
AD2L	$\hat{\sigma}$	6.66E+34	3.99E+70	6.98E+32	2.96E+16	1.93E+37	3.36E+75	1.94E+35	5.13E+17				
	$\hat{\xi}$	39298007	1.31E+16	1458172	84680.72	9938861	5.75E+14	1060660	158098.2				
CM	$\hat{\sigma}$	6.66E+34	3.99E+70	6.98E+32	2.96E+16	1.93E+37	3.36E+75	1.94E+35	5.13E+17				
	$\hat{\xi}$	93.63659	35380.07	18.35693	10.21136	139.0236	61606.57	24.79916	13.65361				
KS	$\hat{\sigma}$	6.66E+34	3.99E+70	6.98E+32	2.96E+16	1.93E+37	3.36E+75	1.94E+35	5.13E+17				
	$\hat{\xi}$	167.8561	156318.3	9.88573	2.194211	698.7045	3529853	19.33608	2.234293				

Table 12. Results for the POT (q = 0.95) framework when varying sample size with true scale = 10

METHOD	PARAMETERS	n=10				n =20				n=30			
		RMSE	MSE	MAE	MDAE	RMSE	MSE	MAE	MDAE	RMSE	MSE	MAE	MDAE
MLEn	$\hat{\sigma}$	12.57071	178.823	12.51401	12.48685	12.1877	170.0316	12.16259	12.17944	12.07265	167.437	12.05604	12.07608
	$\hat{\xi}$	4.43E+08	1.76E+18	45289438	6350288	56375226	2.86E+16	16025911	6679010	22076428	4.37E+15	11631516	6694125
NLS-P	$\hat{\sigma}$	9.943578	98.87929	9.943547	9.940966	1487.677	8899313	579.5484	115.8339	319146.6	4.56E+11	11252.78	140.9621
	$\hat{\xi}$	2.006103	5.60197	2.002004	2.019804	2.003173	4.91076	1.753295	1.578181	1.904861	4.601065	1.684517	1.533672
NLS-S	$\hat{\sigma}$	**9.143965**	**84.59401**	9.139896	9.150349	5.07E+14	2.31E+30	1.2E+13	2.83E+09	7.89E+12	5.6E+26	3.25E+11	3.54E+08
	$\hat{\xi}$	1.881943	5.018714	1.864985	1.872319	1.499637	3.324185	1.353786	1.328829	1.170598	2.104552	0.990779	0.946335
WNLS-P	$\hat{\sigma}$	9.94343	98.87637	9.943399	9.940967	1480.56	8795619	579.313	116.0259	332114	4.94E+11	12291.53	169.5625
	$\hat{\xi}$	1.980504	5.491421	1.97619	1.990292	1.999542	4.898366	1.751772	1.57652	1.829939	4.397229	1.63128	1.49875
ZHANG	$\hat{\sigma}$	6.11E+08	3.36E+18	51673958	6378173	56948771	2.92E+16	16013134	6598269	22630196	4.6E+15	11846152	6790901
	$\hat{\xi}$	*1.005421*	*1.215035*	0.906469	*0.870785*	*0.88973*	*0.87893*	0.816127	*0.790692*	*0.884957*	*0.887662*	0.823642	0.804774
LME	$\hat{\sigma}$	10.48305	147.6707	7.659381	**6.79398**	**8.598523**	**99.37978**	7.07626	**6.56319**	7.952215	80.57193	6.777187	**6.466799**

	$\hat{\xi}$	4.824351	44.76133	4.71572	4.692907	4.783711	44.85283	4.707506	4.678202	4.764127	44.91408	4.70393	4.678316
MDPD	$\hat{\sigma}$	8.76E+34	6.91E+70	8.76E+32	5.66E+10	4.38E+34	1.73E+70	4.38E+32	9.02E+11	3.29E+34	8.63E+69	3.29E+32	4.86E+12
	$\hat{\xi}$	8.424588	181.0953	5.708361	3.846125	10.98358	328.7048	8.199491	6.772762	15.2954	638.7053	11.90977	9.825373
MED	$\hat{\sigma}$	6.35E+08	3.63E+18	70045527	4246577	18521676	3.08E+15	8580440	3483670	12541725	1.41E+15	7108503	4162692
	$\hat{\xi}$	1.331878	2.087769	1.058588	1.007093	1.076177	1.389295	0.864624	0.810872	0.948441	1.119734	0.776657	0.723677
MLE	$\hat{\sigma}$	5634300	2.16E+14	693811.3	10210.73	4812958	1.6E+14	779988.3	16241.2	18258761	1.37E+15	8765726	7730526
	$\hat{\xi}$	2.53924	14.27882	1.467836	1.0557	7.101726	208.3694	2.325915	0.98182	6.322451	175.1367	2.332339	1.050534
MOMENTS	$\hat{\sigma}$	4.82E+34	2.09E+70	4.82E+32	3.2E+10	2.3E+34	4.76E+69	2.3E+32	4.83E+11	1.51E+34	2.05E+69	1.51E+32	2.26E+12
	$\hat{\xi}$	3.718875	39.04546	1.891762	1.423376	1.641193	4.491203	1.41129	1.289709	1.45177	3.848994	1.314136	1.236762
MPLE	$\hat{\sigma}$	1.53E+10	1.87E+21	1.53E+10	1.53E+10	4.82E+10	2.09E+22	4.82E+10	4.82E+10	621171.7	2.49E+12	163438.7	14945.07
	$\hat{\xi}$	1.656576	4.653028	1.598613	1.542404	1.657971	4.682617	1.623886	1.583431	1.063314	2.042272	1.028283	0.980772
PICKANDS	$\hat{\sigma}$	2.56E+09	5.89E+19	1.21E+08	1478077	1.19E+08	1.27E+17	21578741	3206989	32894607	9.73E+15	9947212	2670929
	$\hat{\xi}$	1.716242	3.504617	1.331544	1.090066	1.179785	1.600224	0.936225	0.791736	0.975246	1.124274	*0.767332*	*0.637795*
PWMB	$\hat{\sigma}$	6.59E+33	3.91E+68	6.59E+31	6E+09	1.59E+33	2.27E+67	1.59E+31	4.59E+10	6.98E+32	4.38E+66	6.98E+30	1.43E+11
	$\hat{\xi}$	1.513673	3.537954	1.329349	1.210082	1.255337	2.86805	1.150038	1.083398	1.158743	2.6849	1.080064	1.029043
PWMU	$\hat{\sigma}$	3.42E+16	1.05E+34	4.92E+14	2.51E+08	9.32E+15	7.83E+32	2.32E+14	1.72E+09	4.62E+17	1.92E+36	5.92E+15	5.66E+09
	$\hat{\xi}$	1.71659	4.583657	1.385417	1.20983	1.279753	2.909369	1.155633	1.077813	1.166909	2.682314	1.080347	1.024936
AD	$\hat{\sigma}$	8.76E+34	6.91E+70	8.76E+32	5.66E+10	4.38E+34	1.73E+70	4.38E+32	9.02E+11	2.92E+34	7.67E+69	2.92E+32	4.32E+12
	$\hat{\xi}$	1.715929	4.676967	1.636236	1.611343	1.639358	4.676275	1.594394	1.586231	1.630171	4.765121	1.594533	1.587285
ADR	$\hat{\sigma}$	8.76E+34	6.91E+70	8.76E+32	5.66E+10	4.38E+34	1.73E+70	4.38E+32	9.02E+11	2.92E+34	7.67E+69	2.92E+32	4.32E+12
	$\hat{\xi}$	1.650327	4.428842	1.591035	1.568026	1.567744	4.354727	1.531995	1.525846	1.552309	4.384697	1.52441	1.524425
AD2R	$\hat{\sigma}$	5.62E+26	2.85E+54	9.1E+24	4.05E+10	8.27E+27	6.16E+56	9.32E+25	7.81E+11	6.14E+33	3.4E+68	6.14E+31	3.95E+12
	$\hat{\xi}$	64.7205	9005.554	50.62945	43.75468	35.19516	2631.463	23.14487	15.07012	23.40617	1247.258	13.45187	6.688118
ADL	$\hat{\sigma}$	8.76E+34	6.91E+70	8.76E+32	5.66E+10	4.38E+34	1.73E+70	4.38E+32	9.02E+11	2.92E+34	7.67E+69	2.92E+32	4.32E+12
	$\hat{\xi}$	6302.779	2.18E+08	243.0032	3.885123	4848.097	1.08E+08	188.1661	7.172151	2643.565	37999031	184.8004	9.674578
AD2L	$\hat{\sigma}$	8.76E+34	6.91E+70	8.76E+32	5.66E+10	4.38E+34	1.73E+70	4.38E+32	9.02E+11	2.92E+34	7.67E+69	2.92E+32	4.32E+12
	$\hat{\xi}$	17151222	1.15E+15	361005.5	60.32285	19585764	2.27E+15	666147	186.1629	84580235	2.97E+16	1518624	330.0451
CM	$\hat{\sigma}$	8.76E+34	6.91E+70	8.76E+32	5.66E+10	4.38E+34	1.73E+70	4.38E+32	9.02E+11	2.92E+34	7.67E+69	2.92E+32	4.32E+12
	$\hat{\xi}$	11.10095	332.01	3.229985	1.9638	14.65345	621.3399	4.205343	2.555052	102.2532	46436.2	6.086032	3.167553

METHOD	PARAMETERS	RMSE	MSE	MAE	MDAE
KS	$\hat{\sigma}$	8.76E+34	6.91E+70	8.76E+32	5.66E+10
	$\hat{\xi}$	39.11225	5365.22	3.358333	2.116118

(table continued — n=100, n=200 columns for KS row)

$\hat{\sigma}$ (n=100)				$\hat{\sigma}$ (n=200)			
4.38E+34	1.73E+70	4.38E+32	9.02E+11	2.92E+34	7.67E+69	2.92E+32	4.32E+12
91.41769	34008.09	4.544441	2.122183	118.4619	72627.19	5.652696	2.103481

METHOD	PARAMETERS	n=50				n = 100				n= 200			
		RMSE	MSE	MAE	MDAE	RMSE	MSE	MAE	MDAE	RMSE	MSE	MAE	MDAE
MLEn	$\hat{\sigma}$	11.98032	165.3974	11.97036	11.96848	11.91061	163.8734	11.90565	11.90717	11.87366	163.0769	11.87114	11.873
	$\hat{\xi}$	12722842	1.45E+15	9332400	6890350	9384120	7.89E+14	8113093	7039109	8135042	5.93E+14	7572491	7038623
NLS-P	$\hat{\sigma}$	868271.3	5.67E+12	17105.79	166.0151	396355.7	1.2E+12	19382.79	188.2828	290237.2	6.09E+11	28187.9	206.9446
	$\hat{\xi}$	1.651731	3.936637	1.482465	1.385546	1.4051	3.462907	1.287866	1.234153	1.227959	3.211895	1.143552	1.138109
NLS-S	$\hat{\sigma}$	1.06E+11	1.01E+23	8.81E+09	48676345	5.92E+09	3.16E+20	7.01E+08	10336815	5.35E+08	2.57E+18	97718850	6016799
	$\hat{\xi}$	0.881346	1.240972	0.708593	0.621981	0.641895	0.674359	0.493722	0.407049	0.472961	0.374435	0.351625	0.283315
WNLS-P	$\hat{\sigma}$	1156623	9.86E+12	27159.16	187.0216	523695.8	2.09E+12	24973.42	207.8547	405722	1.24E+12	34169.61	220.0279
	$\hat{\xi}$	1.590449	3.810197	1.441697	1.366086	1.347976	3.383603	1.249261	1.211691	1.180479	3.167407	1.109863	1.11844
ZHANG	$\hat{\sigma}$	12981077	1.51E+15	9502860	6997160	9444958	7.99E+14	8160538	7078962	8162949	5.97E+14	7596992	7061474
	$\hat{\xi}$	0.928645	1.051806	0.880529	0.86631	1.080589	1.482161	1.047484	1.041668	1.228853	2.085981	1.207409	1.206202
LME	$\hat{\sigma}$	**7.198232**	**65.18845**	6.507128	**6.375696**	**6.451317**	**57.24843**	6.333722	**6.303608**	**6.320484**	**56.60839**	6.277356	**6.255676**
	$\hat{\xi}$	4.738832	44.94726	4.696206	4.673119	4.712593	45.01746	4.688178	4.670712	4.695325	45.02921	4.679165	4.667732
MDPD	$\hat{\sigma}$	1.97E+34	3.11E+69	1.97E+32	4.08E+13	9.86E+33	7.77E+68	9.86E+31	6.41E+14	7.98E+34	5.1E+70	8.49E+32	9.09E+15
	$\hat{\xi}$	23.67512	1635.845	16.52208	12.5106	54.5626	12568.75	22.05826	17.14871	121.759	66914.2	28.02889	20.11527
MED	$\hat{\sigma}$	9193054	7.58E+14	5784307	3550688	6426571	3.7E+14	5048127	4128004	4997756	2.24E+14	4553368	4247108
	$\hat{\xi}$	0.824073	0.915992	0.691727	0.636858	0.667269	0.703613	0.586879	0.563645	0.581171	0.630076	0.522088	0.494203
MLE	$\hat{\sigma}$	34546404	6.4E+15	10532043	6354093	1.13E+08	8E+16	1.01E+08	99107325	15252536	1.63E+15	3189442	163099
	$\hat{\xi}$	8.752847	423.1353	3.114928	0.987159	3.528533	60.95623	1.722629	0.893599	1.435562	5.005832	0.966331	0.831739
MOMENTS	$\hat{\sigma}$	8.94E+33	7.19E+68	8.94E+31	1.86E+13	4.42E+33	1.76E+68	4.42E+31	2.88E+14	3.56E+34	1.14E+70	3.79E+32	4.07E+15
	$\hat{\xi}$	1.303595	3.503057	1.228837	1.180683	1.199706	3.347125	1.155223	1.126182	1.135961	3.28195	1.107623	1.088857
MPLE	$\hat{\sigma}$	15012020	9.02E+14	7617386	6352299	5.03E+09	2.02E+20	3.61E+09	3.6E+09	18428541	2.38E+15	3400476	137004.7
	$\hat{\xi}$	1.191258	2.478011	1.169653	1.132525	1.164406	2.43717	1.148806	1.110902	0.936785	1.87141	0.923058	0.909938

METHOD	PARAMETERS												
PICKANDS	$\hat{\sigma}$	15536562	2.17E+15	6434594	2927851	7684342	5.3E+14	5214195	3510759	5261280	2.48E+14	4318294	3556549
	$\hat{\xi}$	*0.742559*	*0.646904*	*0.587713*	*0.491776*	*0.521455*	*0.316783*	*0.414633*	*0.348485*	*0.370022*	*0.160017*	*0.294997*	*0.249213*
PWMB	$\hat{\sigma}$	2.49E+32	5.57E+65	2.49E+30	6.72E+11	6.18E+31	3.43E+64	6.18E+29	5.59E+12	2.49E+32	5.59E+65	2.65E+30	3.9E+13
	$\hat{\xi}$	1.066687	2.540554	1.009913	0.971994	0.982022	2.438979	0.943274	0.918882	0.923931	2.387985	0.897243	0.880911
PWMU	$\hat{\sigma}$	1.88E+17	3.2E+35	4.17E+15	2.81E+10	9.45E+18	8.03E+38	1.55E+17	2.12E+11	2.56E+22	5.91E+45	2.58E+20	1.61E+12
	$\hat{\xi}$	1.068047	2.528284	1.008427	0.969585	0.981379	2.430006	0.941748	0.916753	0.923216	2.382916	0.896229	0.87983
AD	$\hat{\sigma}$	1.75E+34	2.76E+69	1.75E+32	3.63E+13	8.76E+33	6.91E+68	8.76E+31	5.7E+14	7.09E+34	4.53E+70	7.55E+32	8.08E+15
	$\hat{\xi}$	1.668596	5.264317	1.642118	1.656728	1.659712	5.360016	1.639897	1.652008	1.649186	5.354538	1.634992	1.64313
ADR	$\hat{\sigma}$	1.75E+34	2.76E+69	1.75E+32	3.63E+13	8.76E+33	6.91E+68	8.76E+31	5.7E+14	7.09E+34	4.53E+70	7.55E+32	8.08E+15
	$\hat{\xi}$	1.639512	5.111342	1.618097	1.64187	1.658931	5.355154	1.644791	1.65022	1.665737	5.398714	1.654071	1.652946
AD2R	$\hat{\sigma}$	3.69E+33	1.22E+68	3.69E+31	3.22E+13	1.84E+33	3.06E+67	1.92E+31	4.99E+14	5.2E+44	2.43E+90	5.2E+42	7.6E+15
	$\hat{\xi}$	13.2436	498.9405	6.885612	2.286044	6.19936	120.9759	3.020387	1.672562	2.9038	15.99853	1.813609	1.665861
ADL	$\hat{\sigma}$	1.75E+34	2.76E+69	1.75E+32	3.63E+13	8.76E+33	6.91E+68	8.76E+31	5.7E+14	7.09E+34	4.53E+70	7.55E+32	8.08E+15
	$\hat{\xi}$	4017.931	64993640	213.062	13.31885	6819.235	2.8E+08	241.3699	20.14429	107896	9.72E+10	1305.291	31.71393
AD2L	$\hat{\sigma}$	1.75E+34	2.76E+69	1.75E+32	3.63E+13	8.76E+33	6.91E+68	8.76E+31	5.7E+14	7.09E+34	4.53E+70	7.55E+32	8.08E+15
	$\hat{\xi}$	51641405	1.51E+16	1090878	476.2927	53186924	1.28E+16	1477107	1844.107	39882959	5.95E+15	1185231	13824.7
CM	$\hat{\sigma}$	1.75E+34	2.76E+69	1.75E+32	3.63E+13	8.76E+33	6.91E+68	8.76E+31	5.7E+14	7.09E+34	4.53E+70	7.55E+32	8.08E+15
	$\hat{\xi}$	39.24945	6825.017	6.708381	4.078304	78.9215	29881.66	9.874382	5.527712	90.39677	35049.99	12.66902	7.310742
KS	$\hat{\sigma}$	1.75E+34	2.76E+69	1.75E+32	3.63E+13	8.76E+33	6.91E+68	8.76E+31	5.7E+14	7.09E+34	4.53E+70	7.55E+32	8.08E+15
	$\hat{\xi}$	80.53223	28394.72	4.788809	2.083655	168.8538	114034.8	8.428904	2.077659	87.61552	26799.75	6.681147	2.081499

METHOD	PARAMETERS	n= 500				n=1000			
		RMSE	MSE	MAE	MDAE	RMSE	MSE	MAE	MDAE
MLEn	$\hat{\sigma}$	11.84749	162.5076	11.84646	11.84676	11.83585	162.2533	11.83532	11.83556
	$\hat{\xi}$	7416261	4.92E+14	7213069	7021076	7239235	4.69E+14	7136788	7044526
NLS-P	$\hat{\sigma}$	582182.6	2.64E+12	64833.28	33568.51	925705.2	6.97E+12	126717.9	42441.28

	$\hat{\xi}$	1.058297	3.020497	0.995711	0.953138	0.956498	2.934772	0.913445	0.890204
NLS-S	$\hat{\sigma}$	50859159	2.33E+16	17163989	4389124	16549651	2.46E+15	8426801	3884041
	$\hat{\xi}$	0.336912	0.203582	0.234706	0.178152	0.271088	0.14828	0.176145	0.125728
WNLS-P	$\hat{\sigma}$	597968.4	2.77E+12	67799.32	35724.97	971306.5	7.69E+12	132055.5	43765.29
	$\hat{\xi}$	1.027213	3.002374	0.972543	0.935161	0.933919	2.926004	0.896537	0.876757
ZHANG	$\hat{\sigma}$	7423759	4.93E+14	7220088	7026525	7242458	4.69E+14	7139895	7047453
	$\hat{\xi}$	1.414992	3.083097	1.404286	1.404422	1.545463	3.942997	1.539672	1.539952
LME	$\hat{\sigma}$	**6.257567**	**56.31526**	6.232285	**6.219898**	**6.227914**	**56.19428**	6.209827	**6.201423**
	$\hat{\xi}$	4.678918	44.99946	4.669198	4.663929	4.67017	45.00262	4.664877	4.662649
MDPD	$\hat{\sigma}$	7.49E+35	4.49E+72	7.85E+33	3.33E+17	2.17E+38	3.78E+77	2.18E+36	5.78E+18
	$\hat{\xi}$	66.04548	17478.17	30.48607	27.60109	80.1136	21717.6	34.39229	28.44624
MED	$\hat{\sigma}$	4404048	1.74E+14	4258579	3985179	3879712	1.35E+14	3825629	3970460
	$\hat{\xi}$	0.48106	0.552787	0.44534	0.429916	0.441484	0.533175	0.408354	0.403981
MLE	$\hat{\sigma}$	335322.3	7.76E+11	226580.1	135232.6	10428.62	6.52E+08	351.1051	39.20457
	$\hat{\xi}$	0.903032	1.817432	0.882828	0.858989	0.801469	1.796549	0.777844	0.757595
MOMENTS	$\hat{\sigma}$	3.34E+35	1E+72	3.49E+33	1.49E+17	9.67E+37	8.42E+76	9.69E+35	2.57E+18
	$\hat{\xi}$	1.083421	3.245607	1.066823	1.056167	1.058698	3.234171	1.047066	1.039194
MPLE	$\hat{\sigma}$	335322.6	7.76E+11	226584.8	135211.4	45407875	1.44E+16	22917419	335598
	$\hat{\xi}$	0.933382	1.89	0.918163	0.884348	0.877382	1.778498	0.865069	0.848109
PICKANDS	$\hat{\sigma}$	4152477	1.54E+14	3829466	3535189	3867891	1.34E+14	3713020	3567847
	$\hat{\xi}$	*0.234735*	*0.064389*	*0.186954*	*0.157738*	*0.1662*	*0.032368*	*0.132507*	*0.111854*
PWMB	$\hat{\sigma}$	9.33E+32	7.84E+66	9.78E+30	5.5E+14	1.35E+35	1.65E+71	1.36E+33	4.84E+15
	$\hat{\xi}$	0.873752	2.357001	0.857066	0.84753	0.848944	2.346401	0.837008	0.8304
PWMU	$\hat{\sigma}$	7.18E+21	4.64E+44	1.12E+20	2.46E+13	5.05E+24	2.3E+50	5.61E+22	2.01E+14
	$\hat{\xi}$	0.873337	2.354848	0.856583	0.84704	0.848705	2.345308	0.836739	0.830066
AD	$\hat{\sigma}$	6.66E+35	3.99E+72	6.98E+33	2.96E+17	1.93E+38	3.36E+77	1.94E+36	5.13E+18
	$\hat{\xi}$	1.638859	5.308486	1.627705	1.638678	1.631263	5.330635	1.625085	1.633313
ADR	$\hat{\sigma}$	6.66E+35	3.99E+72	6.98E+33	2.96E+17	1.93E+38	3.36E+77	1.94E+36	5.13E+18
	$\hat{\xi}$	1.649767	5.386057	1.643591	1.640586	1.662471	5.398161	1.652456	1.643635

AD2R	$\hat{\sigma}$	2.08E+44	3.89E+89	2.08E+42	2.96E+17	1.04E+44	9.72E+88	1.04E+42	4.68E+18
	$\hat{\xi}$	1.90241	5.844954	1.680621	1.658115	1.744299	5.483734	1.666174	1.659251
ADL	$\hat{\sigma}$	6.66E+35	3.99E+72	6.98E+33	2.96E+17	1.93E+38	3.36E+77	1.94E+36	5.13E+18
	$\hat{\xi}$	4863.779	75782095	331.7301	61.23566	5741.734	1.47E+08	444.2902	115.4026
AD2L	$\hat{\sigma}$	6.66E+35	3.99E+72	6.98E+33	2.96E+17	1.93E+38	3.36E+77	1.94E+36	5.13E+18
	$\hat{\xi}$	39233398	1.11E+16	1081241	90812.36	15038128	1.56E+15	1154187	163873.2
CM	$\hat{\sigma}$	6.66E+35	3.99E+72	6.98E+33	2.96E+17	1.93E+38	3.36E+77	1.94E+36	5.13E+18
	$\hat{\xi}$	91.31065	34265.5	18.32658	10.41714	140.4765	63556.23	24.99763	13.98102
KS	$\hat{\sigma}$	6.66E+35	3.99E+72	6.98E+33	2.96E+17	1.93E+38	3.36E+77	1.94E+36	5.13E+18
	$\hat{\xi}$	209.5519	196501.6	10.51781	2.100172	698.4373	3529669	19.24458	2.131224