Tables

Table 1: *Comparison between OLS, ML and proposed estimator (based on homoscedastic mixture for the regression errors) of the parameters for the regression function* M_1

			Normal			*Extreme value*			*Gamma*		
			n=25	n=50	n=100	n=25	n=50	n=100	n=25	n=50	n=100
OLS	$\hat{\beta}_0$	Bias	-0.0133	-0.0187	0.0076	-0.0115	0.0090	-0.0014	-0.0174	-0.0018	-0.0015
		MSE	0.0890	0.0462	0.0221	0.0914	0.0408	0.0212	0.0910	0.0437	0.0215
	$\hat{\beta}_1$	Bias	0.0259	0.0013	-0.0078	-0.0021	-0.0073	-0.0013	0.0035	0.0120	-0.0018
		MSE	0.1203	0.0594	0.0281	0.1201	0.0576	0.0297	0.1191	0.0598	0.0320
	$\hat{\beta}_2$	Bias	0.0428	0.0221	-0.0120	0.0326	-0.0282	0.0030	0.0163	0.0122	0.0018
		MSE	0.4330	0.2178	0.1119	0.4727	0.2069	0.1040	0.4478	0.2161	0.1032
MLE	$\hat{\beta}_0$	Bias	-0.0133	-0.0187	0.0076	-0.0473	-0.0095	-0.0100	-0.0599	-0.0178	-0.0139
		MSE	0.0890	0.0462	0.0221	0.0725	0.0324	0.0168	0.0631	0.0282	0.0134
	$\hat{\beta}_1$	Bias	0.0259	0.0013	-0.0078	-0.0011	-0.0002	0.0028	0.0072	0.0044	0.0011
		MSE	0.1203	0.0594	0.0281	0.0903	0.0376	0.0194	0.0502	0.0181	0.0076
	$\hat{\beta}_2$	Bias	0.0428	0.0221	-0.0120	0.1125	0.0146	0.0229	0.1438	0.0602	0.0389
		MSE	0.4330	0.2178	0.1119	0.3315	0.1440	0.0654	0.2074	0.0803	0.0319
Mixture	$\hat{\beta}_0$	Bias	-0.0147	-0.0191	0.0072	-0.0223	0.0058	-0.0055	-0.0288	-0.0025	-0.0002
($k = 2$)		MSE	0.0905	0.0465	0.0224	0.0889	0.0387	0.0199	0.0879	0.0400	0.0188
	$\hat{\beta}_1$	Bias	0.0238	0.0009	-0.0081	-0.0039	-0.0037	0.0003	0.0016	0.0054	0.0049
		MSE	0.1207	0.0603	0.0285	0.1166	0.0539	0.0250	0.1069	0.0453	0.0214
	$\hat{\beta}_2$	Bias	0.0471	0.0231	-0.0105	0.0650	-0.0184	0.0153	0.0504	0.0145	-0.0022
		MSE	0.4469	0.2204	0.1131	0.4577	0.1962	0.0877	0.4232	0.1724	0.0781
Mixture	$\hat{\beta}_0$	Bias	-0.0144	-0.0176	0.0074	-0.0224	0.0033	-0.0053	-0.0317	-0.0031	-0.0044
($k = 3$)		MSE	0.0904	0.0466	0.0226	0.0888	0.0386	0.0196	0.0868	0.0389	0.0179
	$\hat{\beta}_1$	Bias	0.0243	0.0021	-0.0078	-0.0009	-0.0034	0.0034	-0.0043	-0.0015	0.0029
		MSE	0.1220	0.0614	0.0288	0.1168	0.0547	0.0241	0.1099	0.0444	0.0184
	$\hat{\beta}_2$	Bias	0.0461	0.0188	-0.0112	0.0651	-0.0109	0.0149	0.0590	0.0162	0.0104
		MSE	0.4498	0.2237	0.1164	0.4622	0.2005	0.0876	0.4218	0.1694	0.0697
Mixture	$\hat{\beta}_0$	Bias	-0.0143	-0.0178	0.0085	-0.0189	0.0016	-0.0031	-0.0265	-0.0021	-0.0053
($k = 4$)		MSE	0.0904	0.0469	0.0232	0.0913	0.0418	0.0205	0.0895	0.0396	0.0181
	$\hat{\beta}_1$	Bias	0.0233	0.0031	-0.0066	0.0012	-0.0048	0.0020	0.0014	0.0036	0.0029
		MSE	0.1205	0.0613	0.0292	0.1239	0.0599	0.0284	0.1090	0.0453	0.0164
	$\hat{\beta}_2$	Bias	0.0460	0.0193	-0.0146	0.0548	-0.0058	0.0082	0.0436	0.0132	0.0132
		MSE	0.4475	0.2265	0.1199	0.4784	0.2254	0.0955	0.4304	0.1734	0.0675
Mixture	$\hat{\beta}_0$	Bias	-0.0141	-0.0180	0.0075	-0.0176	0.0043	-0.0027	-0.0225	-0.0005	-0.0039
($k = 5$)		MSE	0.0904	0.0466	0.0229	0.0926	0.0438	0.0222	0.0890	0.0406	0.0176
	$\hat{\beta}_1$	Bias	0.0249	0.0044	-0.0078	0.0069	-0.0072	0.0045	0.0087	0.0066	0.0043
		MSE	0.1210	0.0609	0.0293	0.1219	0.0653	0.0320	0.1117	0.0495	0.0174
	$\hat{\beta}_2$	Bias	0.0452	0.0197	-0.0116	0.0508	-0.0141	0.0071	0.0314	0.0083	0.0090
		MSE	0.4440	0.2243	0.1189	0.4895	0.2359	0.1096	0.4305	0.1856	0.0669

			Lognormal			*t*			*Mixture*		
			n=25	n=50	n=100	n=25	n=50	n=100	n=25	n=50	n=100
OLS	$\hat{\beta}_0$	Bias	-0.0121	0.0069	-0.0044	0.0081	-0.0025	-0.0002	0.0070	-0.0028	0.0028
		MSE	0.0746	0.0425	0.0211	0.0851	0.0483	0.0215	0.0843	0.0443	0.0239
	$\hat{\beta}_1$	Bias	-0.0062	0.0010	0.0023	-0.0064	-0.0044	0.0029	-0.0102	-0.0026	-0.0016
		MSE	0.0873	0.0581	0.0261	0.1207	0.0586	0.0297	0.1099	0.0595	0.0310
	$\hat{\beta}_2$	Bias	0.0133	-0.0045	-0.0010	-0.0142	0.0111	-0.0105	-0.0218	0.0022	-0.0077
		MSE	0.3683	0.2198	0.0988	0.4416	0.2340	0.1046	0.4572	0.2182	0.1143
MLE	$\hat{\beta}_0$	Bias	-0.0613	-0.0297	-0.0207	0.0032	0.0006	-0.0026	0.0004	-0.0021	-0.0002
		MSE	0.0309	0.0144	0.0070	0.0731	0.0388	0.0176	0.0447	0.0184	0.0090
	$\hat{\beta}_1$	Bias	0.0002	-0.0016	0.0015	-0.0136	-0.0027	0.0025	-0.0053	-0.0009	-0.0010
		MSE	0.0070	0.0025	0.0008	0.1070	0.0514	0.0251	0.0805	0.0302	0.0128
	$\hat{\beta}_2$	Bias	0.0593	0.0275	0.0141	-0.0041	0.0047	-0.0021	-0.0038	0.0042	-0.0014
		MSE	0.0336	0.0108	0.0033	0.3904	0.1944	0.0869	0.3251	0.1165	0.0501
Mixture	$\hat{\beta}_0$	Bias	-0.0204	0.0054	-0.0066	0.0085	-0.0016	-0.0004	0.0061	-0.0009	0.0027
($k = 2$)		MSE	0.0501	0.0284	0.0141	0.0836	0.0457	0.0212	0.0849	0.0420	0.0190
	$\hat{\beta}_1$	Bias	0.0056	0.0006	0.0014	-0.0100	-0.0014	0.0040	-0.0117	-0.0016	-0.0008
		MSE	0.0400	0.0210	0.0109	0.1185	0.0554	0.0284	0.1099	0.0546	0.0179
	$\hat{\beta}_2$	Bias	0.0382	-0.0002	0.0056	-0.0155	0.0082	-0.0101	-0.0193	-0.0036	-0.0075
		MSE	0.1600	0.0767	0.0431	0.4272	0.2214	0.1012	0.4578	0.2018	0.0714
Mixture	$\hat{\beta}_0$	Bias	-0.0213	0.0023	-0.0063	0.0084	0.0005	-0.0027	0.0068	-0.0001	0.0041
($k = 3$)		MSE	0.0495	0.0248	0.0121	0.0839	0.0472	0.0217	0.0848	0.0426	0.0194
	$\hat{\beta}_1$	Bias	0.0057	-0.0009	-0.0004	-0.0063	-0.0015	0.0011	-0.0126	0.0001	-0.0018
		MSE	0.0379	0.0121	0.0063	0.1222	0.0581	0.0291	0.1105	0.0553	0.0196
	$\hat{\beta}_2$	Bias	0.0409	0.0090	0.0047	-0.0153	0.0021	-0.0030	-0.0213	-0.0059	-0.0117
		MSE	0.1629	0.0463	0.0235	0.4298	0.2328	0.1025	0.4575	0.2068	0.0755
Mixture	$\hat{\beta}_0$	Bias	-0.0180	0.0006	-0.0050	0.0091	-0.0033	-0.0023	0.0054	0.0006	0.0047
($k = 4$)		MSE	0.0506	0.0241	0.0117	0.0864	0.0492	0.0229	0.0853	0.0438	0.0207
	$\hat{\beta}_1$	Bias	0.0016	0.0001	0.0013	-0.0067	-0.0025	0.0011	-0.0115	-0.0006	-0.0025
		MSE	0.0405	0.0101	0.0044	0.1208	0.0624	0.0320	0.1109	0.0577	0.0225
	$\hat{\beta}_2$	Bias	0.0312	0.0144	0.0007	-0.0172	0.0134	-0.0043	-0.0172	-0.0080	-0.0134
		MSE	0.1751	0.0386	0.0179	0.4502	0.2588	0.1136	0.4599	0.2153	0.0839
Mixture	$\hat{\beta}_0$	Bias	-0.0114	0.0011	-0.0064	0.0068	-0.0017	-0.0034	0.0066	0.0002	0.0049
($k = 5$)		MSE	0.0556	0.0240	0.0110	0.0855	0.0491	0.0245	0.0852	0.0435	0.0225
	$\hat{\beta}_1$	Bias	0.0051	-0.0012	0.0011	-0.0084	-0.0023	-0.0014	-0.0103	-0.0002	-0.0004
		MSE	0.0515	0.0109	0.0034	0.1203	0.0643	0.0346	0.1103	0.0582	0.0262
	$\hat{\beta}_2$	Bias	0.0111	0.0128	0.0049	-0.0102	0.0085	-0.0009	-0.0205	-0.0069	-0.0139
		MSE	0.2118	0.0402	0.0146	0.4437	0.2562	0.1219	0.4613	0.2161	0.0986

Table 2: *Comparison between OLS, ML and proposed estimator (based on homoscedastic mixture for the regression errors) of the parameters for the regression function M_2*

			Normal			*Extreme value*			*Gamma*		
			n=25	n=50	n=100	n=25	n=50	n=100	n=25	n=50	n=100
OLS	$\hat{\beta}_0$	Bias	0.2617	0.2015	0.1756	0.2451	0.2144	0.1668	0.2374	0.1780	0.1951
		MSE	0.3010	0.1905	0.1312	0.3670	0.2248	0.1667	0.3357	0.1927	0.1672
	$\hat{\beta}_1$	Bias	-0.0298	-0.0157	-0.0109	-0.0241	-0.0151	-0.0099	-0.0247	-0.0129	-0.0120
		MSE	0.0040	0.0011	0.0005	0.0038	0.0012	0.0006	0.0036	0.0010	0.0006
MLE	$\hat{\beta}_0$	Bias	0.2617	0.2015	0.1756	0.1742	0.1415	0.1204	0.1139	0.0832	0.0941
		MSE	0.3010	0.1905	0.1312	0.2564	0.1340	0.1032	0.1677	0.0709	0.0547
	$\hat{\beta}_1$	Bias	-0.0298	-0.0157	-0.0109	-0.0175	-0.0100	-0.0073	-0.0121	-0.0061	-0.0058
		MSE	0.0040	0.0011	0.0005	0.0027	0.0007	0.0003	0.0015	0.0003	0.0002
Mixture	$\hat{\beta}_0$	Bias	0.2593	0.1995	0.1761	0.2287	0.1902	0.1355	0.2081	0.1309	0.1398
($k = 2$)		MSE	0.3038	0.1900	0.1323	0.3474	0.1976	0.1226	0.3077	0.1456	0.1126
	$\hat{\beta}_1$	Bias	-0.0295	-0.0155	-0.0110	-0.0225	-0.0134	-0.0081	-0.0217	-0.0095	-0.0086
		MSE	0.0040	0.0011	0.0005	0.0036	0.0010	0.0004	0.0032	0.0007	0.0004
Mixture	$\hat{\beta}_0$	Bias	0.2590	0.1977	0.1766	0.2283	0.1775	0.1229	0.2078	0.1185	0.1235
($k = 3$)		MSE	0.3022	0.1880	0.1323	0.3510	0.1937	0.1176	0.3068	0.1340	0.0976
	$\hat{\beta}_1$	Bias	-0.0295	-0.0154	-0.0110	-0.0227	-0.0124	-0.0073	-0.0216	-0.0086	-0.0076
		MSE	0.0040	0.0011	0.0005	0.0037	0.0010	0.0004	0.0032	0.0007	0.0003
Mixture	$\hat{\beta}_0$	Bias	0.2598	0.1998	0.1764	0.2300	0.1790	0.1214	0.2115	0.1281	0.1156
($k = 4$)		MSE	0.3051	0.1915	0.1341	0.3572	0.2021	0.1277	0.3086	0.1452	0.0957
	$\hat{\beta}_1$	Bias	-0.0296	-0.0156	-0.0110	-0.0228	-0.0126	-0.0072	-0.0220	-0.0094	-0.0071
		MSE	0.0041	0.0011	0.0005	0.0038	0.0011	0.0004	0.0032	0.0007	0.0003
Mixture	$\hat{\beta}_0$	Bias	0.2606	0.2000	0.1749	0.2399	0.1804	0.1299	0.2156	0.1320	0.1160
($k = 5$)		MSE	0.3050	0.1910	0.1350	0.3637	0.2081	0.1454	0.3214	0.1491	0.0926
	$\hat{\beta}_1$	Bias	-0.0298	-0.0156	-0.0109	-0.0238	-0.0126	-0.0077	-0.0223	-0.0097	-0.0072
		MSE	0.0041	0.0011	0.0005	0.0038	0.0011	0.0005	0.0035	0.0008	0.0003

			Lognormal			*t*			*Mixture*		
			n=25	n=50	n=100	n=25	n=50	n=100	n=25	n=50	n=100
OLS	$\hat{\beta}_0$	Bias	0.2077	0.1843	0.1381	0.2584	0.1850	0.1692	0.2296	0.1969	0.1583
		MSE	0.7479	0.2764	0.1971	0.3267	0.1808	0.1509	0.2526	0.1910	0.1396
	$\hat{\beta}_1$	Bias	-0.0186	-0.0131	-0.0083	-0.0287	-0.0140	-0.0103	-0.0251	-0.0153	-0.0099
		MSE	0.0036	0.0013	0.0006	0.0041	0.0010	0.0005	0.0032	0.0011	0.0005
MLE	$\hat{\beta}_0$	Bias	-0.0100	0.0040	0.0065	0.2204	0.1482	0.1308	0.1301	0.0904	0.0775
		MSE	0.0376	0.0192	0.0100	0.2841	0.1425	0.1077	0.1527	0.0865	0.0623
	$\hat{\beta}_1$	Bias	-0.0022	-0.0016	-0.0010	-0.0247	-0.0115	-0.0080	-0.0133	-0.0070	-0.0047
		MSE	0.0001	0.0000	0.0000	0.0036	0.0008	0.0004	0.0018	0.0005	0.0002
Mixture	$\hat{\beta}_0$	Bias	0.1153	0.0816	0.0627	0.2383	0.1655	0.1521	0.2238	0.1642	0.0894
($k = 2$)		MSE	0.5595	0.0883	0.0577	0.3056	0.1585	0.1346	0.2482	0.1657	0.0858
	$\hat{\beta}_1$	Bias	-0.0107	-0.0058	-0.0039	-0.0266	-0.0126	-0.0092	-0.0244	-0.0128	-0.0056
		MSE	0.0022	0.0003	0.0002	0.0039	0.0009	0.0005	0.0031	0.0010	0.0003
Mixture	$\hat{\beta}_0$	Bias	0.1067	0.0656	0.0404	0.2448	0.1573	0.1378	0.2226	0.1647	0.0965
($k = 3$)		MSE	0.5470	0.1032	0.0364	0.3132	0.1633	0.1295	0.2488	0.1675	0.0989
	$\hat{\beta}_1$	Bias	-0.0099	-0.0047	-0.0025	-0.0274	-0.0120	-0.0083	-0.0242	-0.0129	-0.0060
		MSE	0.0021	0.0004	0.0001	0.0040	0.0010	0.0005	0.0031	0.0010	0.0004
Mixture	$\hat{\beta}_0$	Bias	0.1135	0.0562	0.0318	0.2440	0.1570	0.1388	0.2222	0.1719	0.0962
($k = 4$)		MSE	0.5733	0.0634	0.0279	0.3122	0.1750	0.1387	0.2503	0.1739	0.1034
	$\hat{\beta}_1$	Bias	-0.0102	-0.0041	-0.0020	-0.0272	-0.0120	-0.0084	-0.0242	-0.0134	-0.0060
		MSE	0.0023	0.0002	0.0001	0.0040	0.0010	0.0005	0.0031	0.0011	0.0004
Mixture	$\hat{\beta}_0$	Bias	0.1303	0.0598	0.0273	0.2469	0.1583	0.1390	0.2247	0.1768	0.1061
($k = 5$)		MSE	0.5990	0.0655	0.0265	0.3170	0.1824	0.1499	0.2519	0.1770	0.1145
	$\hat{\beta}_1$	Bias	-0.0117	-0.0044	-0.0017	-0.0275	-0.0120	-0.0084	-0.0244	-0.0138	-0.0066
		MSE	0.0024	0.0002	0.0001	0.0040	0.0011	0.0005	0.0031	0.0011	0.0004

Table 3: *Comparison between OLS confidence intervals and confidence intervals computed according to the proposed approach for the regression function* M_1

			Normal			*Extreme value*			*Gamma*		
			n=25	n=50	n=100	n=25	n=50	n=100	n=25	n=50	n=100
OLS	$\hat{\beta}_0$	width	1.1644	0.8291	0.5892	1.1461	0.8197	0.5854	1.1605	0.8241	0.5852
		coverage	0.929	0.944	0.953	0.921	0.940	0.957	0.942	0.942	0.955
	$\hat{\beta}_1$	width	1.3438	0.9572	0.6803	1.3227	0.9463	0.6760	1.3393	0.9515	0.6757
		coverage	0.945	0.955	0.950	0.934	0.944	0.951	0.939	0.947	0.952
	$\hat{\beta}_2$	width	2.6105	1.8551	1.3177	2.5696	1.8340	1.3093	2.6018	1.8441	1.3090
		coverage	0.938	0.941	0.952	0.931	0.947	0.958	0.950	0.940	0.938
Mixture	$\hat{\beta}_0$	width	1.1641	0.8301	0.5903	1.1381	0.8068	0.5709	1.1417	0.7909	0.5531
		coverage	0.929	0.943	0.951	0.921	0.950	0.958	0.944	0.945	0.955
	$\hat{\beta}_1$	width	1.3499	0.9604	0.6815	1.3407	0.9244	0.6429	1.3346	0.8869	0.6160
		coverage	0.944	0.954	0.951	0.937	0.948	0.965	0.945	0.958	0.978
	$\hat{\beta}_2$	width	2.6243	1.8623	1.3215	2.6116	1.8098	1.2557	2.6203	1.7447	1.1900
		coverage	0.937	0.942	0.949	0.939	0.952	0.957	0.949	0.961	0.963
			Lognormal			t			*Mixture*		
			n=25	n=50	n=100	n=25	n=50	n=100	n=25	n=50	n=100
OLS	$\hat{\beta}_0$	width	1.0277	0.7341	0.5348	1.1349	0.8297	0.5801	1.1780	0.8274	0.5883
		coverage	0.892	0.918	0.931	0.934	0.951	0.957	0.948	0.955	0.944
	$\hat{\beta}_1$	width	1.1860	0.8476	0.6175	1.3098	0.9579	0.6698	1.3595	0.9553	0.6792
		coverage	0.955	0.954	0.958	0.943	0.946	0.925	0.944	0.941	0.945
	$\hat{\beta}_2$	width	2.3041	1.6426	1.1959	2.5445	1.8564	1.2974	2.6410	1.8514	1.3156
		coverage	0.941	0.942	0.960	0.935	0.941	0.943	0.948	0.945	0.942
Mixture	$\hat{\beta}_0$	width	0.8879	0.6028	0.4406	1.1336	0.8228	0.5739	1.1737	0.8024	0.5237
		coverage	0.894	0.912	0.941	0.942	0.953	0.950	0.946	0.947	0.939
	$\hat{\beta}_1$	width	0.9940	0.5669	0.4173	1.3469	0.9455	0.6655	1.3607	0.8963	0.5245
		coverage	0.962	0.975	0.978	0.942	0.948	0.937	0.941	0.935	0.943
	$\hat{\beta}_2$	width	1.9119	1.1180	0.8136	2.5976	1.8557	1.2805	2.6513	1.7452	1.0246
		coverage	0.959	0.963	0.975	0.941	0.948	0.949	0.946	0.934	0.939

Table 4: *Comparison between OLS confidence intervals and confidence intervals computed according to the proposed approach for the regression function M_2*

			Normal			*Extreme value*			*Gamma*		
			n=25	n=50	n=100	n=25	n=50	n=100	n=25	n=50	n=100
OLS	$\hat{\beta}_0$	width	1.6939	1.4013	1.2281	1.6619	1.4160	1.2338	1.6637	1.3896	1.2130
		coverage	0.925	0.916	0.930	0.906	0.911	0.895	0.923	0.926	0.922
	$\hat{\beta}_1$	width	0.1858	0.1046	0.0726	0.1805	0.1030	0.0724	0.1758	0.1009	0.0716
		coverage	0.914	0.915	0.921	0.895	0.910	0.907	0.920	0.922	0.924
Mixture	$\hat{\beta}_0$	width	1.6953	1.3997	1.2306	1.6562	1.3768	1.2083	1.6582	1.3506	1.1363
		coverage	0.923	0.913	0.929	0.901	0.924	0.920	0.922	0.942	0.954
	$\hat{\beta}_1$	width	0.1859	0.1045	0.0728	0.1769	0.0984	0.0704	0.1716	0.0950	0.0654
		coverage	0.910	0.913	0.921	0.885	0.911	0.932	0.912	0.950	0.960
			Lognormal			*t*			*Mixture*		
			n=25	n=50	n=100	n=25	n=50	n=100	n=25	n=50	n=100
OLS	$\hat{\beta}_0$	width	1.4046	1.2787	1.1289	1.6716	1.3685	1.2034	1.6995	1.3929	1.2155
		coverage	0.891	0.896	0.902	0.917	0.914	0.946	0.919	0.932	0.936
	$\hat{\beta}_1$	width	0.1437	0.0899	0.0658	0.1808	0.1010	0.0712	0.1858	0.1032	0.0721
		coverage	0.899	0.908	0.916	0.910	0.930	0.944	0.911	0.928	0.928
Mixture	$\hat{\beta}_0$	width	1.3090	1.0770	0.8308	1.6729	1.3682	1.2193	1.6582	1.2751	1.0186
		coverage	0.912	0.954	0.964	0.920	0.922	0.958	0.913	0.926	0.938
	$\hat{\beta}_1$	width	0.1210	0.0682	0.0445	0.1794	0.1002	0.0721	0.1788	0.0919	0.0585
		coverage	0.932	0.976	0.978	0.909	0.926	0.962	0.901	0.908	0.936