Table A.1 Correlation matrix

	Score_A	Score_C	CA_PU	Y1_3	Ymore_6	DO	Mono_V	ALC%14	ALC%15.5	Red	Eco_Practices	TARD	ALB	Imp_oth	AF_LE	AF_AC	AF_oth	IND	OLDV	Pack_ast_cass	AW_U95	AW_M95_LSD	AW_U90_95	AW_M90_95_LSD	AW_M90_95_HSD	AW_U90	AW_M90_LSD	AW_M90_HSD
Score_A	1																											
Score_C	-0.030631	1																										
CA_PU	0.250171	0.028107	1																									
Y1_3	-0.007364	-0.006144	-0.050477	1																								
Ymore_6	-0.057244	0.068491	0.012987	-0.318199	1																							
DO	-0.103788	0.066455	0.048109	0.204504	0.080674	1																						
Mono_V	-0.078773	0.029009	-0.027406	0.058561	0.054266	0.049053	1																					
ALC%14	0.117086	-0.024055	0.010888	-0.086964	-0.048327	-0.044144	-0.090461	1																				
ALC%15.5	-0.059311	0.063107	-0.054533	0.097633	-0.021076	-0.091099	-0.056179	-0.949707	1																			
Red																												
Eco_Practices																												
TARD																												
ALB																												
Imp_oth																												
AF_LE																												
AF_AC																												
AF_oth																												
IND																												
OLDV																												
Pack_ast_cass																												
AW_U95																												
AW_M95_LSD																												
AW_U90_95																												
AW_M90_95_LSD																												
AW_M90_95_HSD																												
AW_U90																												
AW_M90_LSD																												
AW_M90_HSD																												

		-0.0		-0.1				-0.1											
	0.0	0.0	0.0	0.1	0.0	0.1	-	0.1	0.05										
	289	862	337	656	526	447	0.0	269	455										
Red	24	5	84	1	96	4	274	2	3	1									
		-0.0	-0.0	-0.0		-0.1													
Eco_Pr	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0		0.0									
actices	412	648	262	174	054	557	630	612	0.04	612									
	49	2	7	5	57	2	43	97	391	18	1								
	-0.0		-0.0	-0.0		-0.1		-0.1											
TARD	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.03	0.0									
	408	265	063	034	686	075	386	045	894	375	0.104								
	1	99	6	7	87	6	58	6	8	39	414	1							
	-0.1			-0.1				-0.2											
ALB	0.0	0.1	0.1	0.1	0.1	0.2	0.0	0.2	0.22	0.0	-0.1	0.0							
	765	462	060	401	433	156	888	508	597	011	0.122	334							
	3	19	82	9	13	08	26	6	8	2	45	26	1						
	-0.0				-0.0	-0.1						-0.0							
Imp_ot	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1	-	0.0		0.0	-0.2						
h	041	494	707	066	118	497	218	724	0.11	445	0.154	044	0.2						
	4	7	98	17	3	9	1	72	743	29	249	2	823	1					
	-0.1	-0.1						-0.2						-0.1					
	0.0	0.0	0.0	-0.0	0.0	0.1	0.0	0.2	0.15	0.1	-0.1	0.0	0.1	0.2					
	957	349	765	0.2	510	926	645	385	243	534	0.195	629	165	076					
AF_LE	6	8	48	056	6	43	3	9	5	47	26	71	86	4	1				
	-0.0		-0.0		-0.0	-0.0	-0.0			-0.0			-0.0		-0.0				
	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.1	-	0.2		-0.0	0.0	0.1	0.5				
	452	417	554	824	096	589	271	799	0.04	736	0.187	0.0	919	872	608				
AF_AC	4	11	7	02	6	9	7	04	96	1	127	262	7	39	2	1			
							-0.0					-0.0	-0.0		-0.0	-0.0			
	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	-	0.0		0.0	0.0	0.1	0.4	0.2			
	787	182	230	069	611	216	229	224	0.07	740	0.063	302	380	136	268	704			
AF_oth	43	65	11	18	37	95	9	99	095	09	675	9	5	25	7	9	1		
	-0.0			-0.0				-0.0		-0.0			-0.0		-0.0				
IND	0.0	-0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.01	0.0		0.0	0.0	0.0	0.0	0.0	0.0		
	525	0.0	483	129	380	073	155	923	241	220	0.228	341	459	550	323	394	587		
	7	512	56	6	68	34	55	2	6	6	792	36	5	97	3	72	39	1	
		0.1	0.0		0.1	0.1	0.0	-0.0	0.22		-0.0	0.0	0.4	-0.0	0.0	-0.0	0.0		
OLDV	-0.0	332	509	-0.0	625	400	538	0.2	807	-0.0	0.090	931	462	0.0	883	0.0	214	-0.0	
	0.0	39	29	0.1	58	15	81	664	1	0.0	14	76	69	823	05	514	24	0.0	1

	5946			4822						4932								5045										
Pack_ast_cass	-0.04016	-0.03911	0.036937	-0.05317	0.047791	0.112646	-0.00528	-0.14265	0.041887	0.036937	-0.06348	-0.01974	0.054003	-0.09829	0.183992	-0.10282	-0.08395	0.036735	-0.01308	1								
AW_U95	0.080965	0.017749	-0.1318	-0.01265	-0.01596	0.063437	0.048768	-0.09539	-0.00248	-0.09597	-0.00514	-0.01473	0.010462	-0.01692	-0.045	0.085791	-0.02583	0.018375	-0.03117	-0.03932	1							
AW_M95_LSD	-0.04638	-0.04517	0.042659	-0.15794	-0.0845	0.181884	0.043931	-0.18045	0.223044	0.042659	-0.00352	-0.0317	0.211391	-0.07943	0.153231	-0.04265	-0.08557	0.036714	0.138418	0.056407	-0.07594	1						
AW_U90_95	-0.01305	0.025052	0.044265	-0.08633	0.036014	-0.04646	0.045584	0.101054	0.029522	-0.03165	0.008132	0.047907	-0.05775	0.030808	-0.01363	0.071317	-0.05903	-0.08046	-0.07918	-0.03346	-0.07879	-0.07098	1					
AW_M90_95_LSD	0.06849	0.02023	0.029662	0.028755	-0.02915	-0.00439	0.030546	-0.00327	-0.03204	-0.02484	-0.06825	0.037385	0.071196	0.063322	0.106544	-0.08872	-0.03649	-0.05391	0.051002	-0.04118	-0.0528	-0.04756	-0.04935	1				
AW_M90_95_HSD	-0.03257	-0.03025	0.056373	-0.03423	0.057117	0.111007	0.058053	-0.12566	0.032127	0.025297	-0.05468	-0.07858	-0.00873	-0.06891	0.149727	-0.09378	-0.03873	-0.02999	-0.03205	0.196788	-0.10035	-0.09039	-0.0938	-0.06285	1			
AW_U90	0.078853	-0.04038	0.038135	-0.10199	0.018499	-0.05511	-0.12911	0.057179	0.013242	-0.00515	0.058564	-0.02235	-0.00161	0.011148	-0.02705	0.063872	-0.01471	0.006385	-0.00115	0.0109	-0.06788	-0.06115	-0.06345	-0.04252	-0.08081	1		
AW_M90_LSD	-0.01305	0.096974	0.044265	0.106673	-0.0522	-0.0829	0.008667	-0.05699	-0.05067	-0.10757	-0.06519	0.020315	0.008227	0.129878	-0.07405	0.098741	-0.01095	-0.0362	0.078362	0.022534	-0.07879	-0.07098	-0.07365	-0.04935	-0.0938	-0.06345	1	
AW_M90_HSD	-0.05678	-0.0553	0.052225	-0.01087	0.004212	0.138787	0.053781	-0.03902	-0.00239	0.019188	-0.07231	-0.02566	0.090353	-0.05275	0.045854	-0.19217	0.091865	0.00138	0.179904	0.024962	-0.09296	-0.08374	-0.08689	-0.05823	-0.11066	-0.07486	-0.08689	1

The correlation matrix shows the absence of relevant correlations among the independent variables. confirming that multicollinearity is not an issue in the model specification.

Table A.2 Wald test results (p-value)

Variable	Q10 vs Q50 (p-value)	Q25 vs Q75 (p-value)	Q50 vs Q90 (p-value)
Score_C	0.3919	0.2096	0.6430
Ymore_6	0.3029	0.1404	0.4536
DO	0.0087(***)	0.0472(**)	0.8081
ALC%15.5	0.6166	0.0501(**)	0.0802(*)
Eco_Practices	0.0365(**)	0.2723	0.5846
ALB	0.8068	0.1151	0.0658(*)
AF_LE	0.7939	0.0967(*)	0.6325
IND	0.6682	0.0392(**)	0.1833
OLDV	0.1079	0.9140	0.1538
Pack_ast_cass	0.3743	0.1185	0.4849
AW_U95	0.8825	0.0932(*)	0.7903
AW_M95_LSD	0.1836	0.5723	0.6438
AW_M90_95_LSD	0.8529	0.6045	0.0378(**)
AW_U90	0.7880	0.0395(**)	0.2243

Note: The table reports p-values from Wald tests for equality of coefficients across selected quantiles (Q10 vs Q50. Q25 vs Q75. Q50 vs Q90). Significance levels are denoted as *. *. *and* *** *for 10%. 5% and 1% respectively. Results indicate where coefficient estimates differ significantly across the conditional distribution. highlighting heterogeneity in the effects.*