

**Summary Tables for
Robust Growth Mixture Models with Non-ignorable Missingness Data:
Models, Estimation, Selection, and Application**

All tables are available online <http://nd.psychstat.org/research/csda2013>

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1 Results Summary Tables in Study 1

Table 1: SUMMARY OF TN-XS GMM (TRUE MODEL) IN STUDY 1 (N=1500, CLASS SEPARATION=2.7)

		par. ¹	true ²	est. ³	BIAS		SE		CI ($\alpha=0.05$) ⁹			HPD ($\alpha=0.05$) ¹⁰				
					sim. ⁴	rel. ⁵	emp. ⁶	avg. ⁷	MSE ⁸	lower	upper	cover(.95)	lower	upper	cover(.95)	
Growth Curve Parameters	Class 1	I	5	4.968	-0.032	-0.006	0.182	0.158	0.06	4.643	5.265	0.93	4.656	5.274	0.93	
		S	3	3.007	0.007	0.002	0.119	0.116	0.028	2.78	3.234	0.95	2.78	3.233	0.97	
		var(I)	1	1.065	0.065	0.065	0.352	0.292	0.217	0.567	1.708	0.90	0.526	1.641	0.89	
		var(S)	4	4.022	0.022	0.006	0.294	0.308	0.182	3.453	4.663	0.97	3.431	4.634	0.97	
		cov(IS)	0	0.009	0.009	0.009	0.201	0.195	0.079	-0.381	0.383	0.95	-0.375	0.387	0.95	
		var(e)	1	1.06	0.06	0.06	0.107	0.106	0.027	0.863	1.276	0.94	0.857	1.269	0.94	
	Class 2	I	1	1.001	0.001	0.001	0.183	0.155	0.058	0.711	1.319	0.91	0.702	1.307	0.91	
		S	3	3.004	0.004	0.001	0.113	0.118	0.027	2.773	3.235	0.96	2.773	3.235	0.96	
		var(I)	1	0.999	-0.001	-0.001	0.275	0.283	0.158	0.517	1.619	0.95	0.479	1.555	0.94	
		var(S)	4	3.965	-0.035	-0.009	0.318	0.316	0.202	3.38	4.62	0.92	3.36	4.593	0.91	
		cov(IS)	0	0.026	0.026	0.026	0.211	0.194	0.083	-0.361	0.401	0.95	-0.357	0.404	0.95	
		var(e)	1	1.057	0.057	0.057	0.127	0.107	0.031	0.857	1.274	0.85	0.852	1.267	0.85	
	Probit Parameters	Wave 1	CP_1	0.5	0.508	0.008	0.017	0.041	0.04	0.003	0.431	0.587	0.93	0.432	0.586	0.94
			CP_2	0.5	0.492	-0.008	-0.017	0.041	0.04	0.003	0.413	0.569	0.93	0.414	0.568	0.94
Wave 2		γ_{01}	-1	-1.037	-0.037	0.037	0.148	0.149	0.045	-1.339	-0.753	0.96	-1.33	-0.75	0.96	
		γ_{x1}	-1.5	-1.535	-0.035	0.023	0.091	0.103	0.02	-1.748	-1.343	0.96	-1.74	-1.338	0.96	
Wave 3		γ_{S1}	0.5	0.516	0.016	0.033	0.05	0.053	0.006	0.417	0.625	0.97	0.416	0.621	0.98	
		γ_{02}	-1	-1.031	-0.031	0.031	0.147	0.146	0.044	-1.327	-0.754	0.93	-1.32	-0.753	0.94	
Wave 4		γ_{x2}	-1.5	-1.53	-0.03	0.02	0.095	0.1	0.02	-1.736	-1.344	0.95	-1.726	-1.337	0.94	
		γ_{S2}	0.5	0.513	0.013	0.026	0.053	0.051	0.006	0.417	0.618	0.95	0.415	0.613	0.96	
Wave 3		γ_{03}	-1	-1.008	-0.008	0.008	0.139	0.142	0.04	-1.295	-0.738	0.96	-1.287	-0.734	0.96	
		γ_{x3}	-1.5	-1.516	-0.016	0.011	0.098	0.095	0.019	-1.711	-1.338	0.94	-1.703	-1.333	0.94	
Wave 4		γ_{S3}	0.5	0.506	0.006	0.011	0.045	0.049	0.004	0.415	0.605	0.98	0.413	0.601	0.98	
		γ_{04}	-1	-1.034	-0.034	0.034	0.155	0.149	0.047	-1.339	-0.753	0.94	-1.327	-0.748	0.91	
Wave 4		γ_{x4}	-1.5	-1.545	-0.045	0.03	0.1	0.098	0.022	-1.747	-1.362	0.94	-1.74	-1.357	0.94	
		γ_{S4}	0.5	0.518	0.018	0.036	0.052	0.05	0.006	0.424	0.621	0.93	0.422	0.616	0.91	
df	df_{y1}	5	6.164	1.164	0.233	1.913	1.551	8.308	3.999	9.944	0.93	3.797	9.315	0.96		
	df_{y2}	5	6.598	1.598	0.32	2.634	1.717	13.517	4.139	10.656	0.81	3.96	10.09	0.83		

Note: The results are summarized based on 100 converged replications with a convergence rate of $100/101 \approx 99\%$.

1 The estimated parameter.

2 The true value of the corresponding parameter.

3 The parameter estimate, defined by $\text{est.}_j = \hat{\theta}_j = \sum_{i=1}^{100} \hat{\theta}_{ij}/100$.

4 The simple bias, defined by $\text{BIAS.smp}_j = \hat{\theta}_j - \theta_j$.

5 The relative bias, defined by $\text{BIAS.rel}_j = \frac{\hat{\theta}_j - \theta_j}{\theta_j}$ if $\theta_j \neq 0$, and $\frac{\hat{\theta}_j - \theta_j}{\hat{\theta}_j}$ if $\theta_j = 0$.

6 The empirical standard errors, defined by $\text{SE.emp}_j = \sqrt{\sum_{i=1}^{100} (\hat{\theta}_{ij} - \hat{\theta}_j)^2 / 99}$.

7 The average standard errors, defined by $\text{SE.avg}_j = \sum_{i=1}^{100} \hat{s}_{ij}/100$.

8 The mean square error, defined by $\text{MSE}_j = \sum_{i=1}^{100} \text{MSE}_{ij}/100$ where MSE_{ij} is the mean square error for the j^{th} parameter in the i^{th} simulation replication, $\text{MSE}_{ij} = (\text{Bias}_{ij})^2 + (\hat{s}_{ij})^2$.

9 The lower, upper limits, and coverage of percentile confidence interval, defined by $\text{CI.lower}_j = \sum_{i=1}^{100} \hat{\theta}_{ij}^l/100$, and $\text{CI.upper}_j = \sum_{i=1}^{100} \hat{\theta}_{ij}^u/100$ and $\text{CI.cover}_j = \#(\hat{\theta}_{ij}^l \leq \theta_j \text{ and } \theta_j \leq \hat{\theta}_{ij}^u)/100$.

10 The lower, upper limits, and coverage of HPD interval.

Table 2: SUMMARY OF TN-XS MODEL (N=1000, CLASS SEPARATION=2.7)

				BIAS		SE		MSE	CI ($\alpha=0.05$)			HPD ($\alpha=0.05$)			
para.	true	est.	smpl.	rel.	emp.	avg.	lower		upper	cover	lower	upper	cover		
Growth Curve Parameters	Class 1	I	5	4.99	-0.01	-0.002	0.199	0.195	0.081	4.583	5.351	0.95	4.602	5.361	0.95
		S	3	2.984	-0.016	-0.005	0.147	0.146	0.044	2.7	3.275	0.95	2.699	3.272	0.95
		var(I)	1	1.066	0.066	0.066	0.394	0.36	0.298	0.484	1.883	0.9	0.43	1.775	0.89
		var(S)	4	3.993	-0.007	-0.002	0.424	0.389	0.334	3.28	4.808	0.92	3.249	4.766	0.94
		cov(IS)	0	0.041	0.041	0.041	0.254	0.243	0.126	-0.447	0.51	0.93	-0.44	0.515	0.93
		var(e)	1	1.107	0.107	0.107	0.152	0.131	0.052	0.863	1.374	0.82	0.856	1.365	0.87
	Class 2	I	1	1.012	0.012	0.012	0.232	0.192	0.094	0.652	1.41	0.88	0.645	1.394	0.87
		S	3	2.988	-0.012	-0.004	0.149	0.145	0.043	2.704	3.272	0.95	2.705	3.27	0.93
		var(I)	1	1.028	0.028	0.028	0.443	0.356	0.338	0.447	1.832	0.92	0.394	1.726	0.91
		var(S)	4	4.004	0.004	0.001	0.356	0.391	0.281	3.291	4.824	0.99	3.258	4.782	0.97
		cov(IS)	0	0.009	0.009	0.009	0.256	0.24	0.124	-0.474	0.469	0.94	-0.466	0.473	0.94
		var(e)	1	1.095	0.095	0.095	0.17	0.129	0.055	0.854	1.359	0.81	0.848	1.35	0.8
	Probit Parameters	CP_1	0.5	0.501	0.001	0.002	0.057	0.049	0.006	0.405	0.6	0.92	0.405	0.598	0.91
			0.5	0.499	-0.001	-0.002	0.057	0.049	0.006	0.4	0.595	0.92	0.402	0.595	0.91
Wave 1		γ_{01}	-1	-1.022	-0.022	0.022	0.177	0.182	0.065	-1.397	-0.68	0.99	-1.379	-0.671	1
		γ_{x1}	-1.5	-1.553	-0.053	0.035	0.118	0.129	0.033	-1.823	-1.319	0.98	-1.808	-1.309	0.98
		γ_{S1}	0.5	0.516	0.016	0.032	0.057	0.065	0.008	0.396	0.652	0.99	0.393	0.645	0.97
		γ_{02}	-1	-1.072	-0.072	0.072	0.18	0.18	0.07	-1.439	-0.735	0.95	-1.427	-0.731	0.95
Wave 2		γ_{x2}	-1.5	-1.546	-0.046	0.031	0.134	0.125	0.036	-1.809	-1.318	0.9	-1.793	-1.309	0.93
		γ_{S2}	0.5	0.527	0.027	0.055	0.064	0.064	0.009	0.41	0.66	0.94	0.407	0.653	0.95
		γ_{03}	-1	-1.021	-0.021	0.021	0.171	0.175	0.06	-1.377	-0.694	0.98	-1.364	-0.688	0.97
		γ_{x3}	-1.5	-1.531	-0.031	0.02	0.123	0.119	0.03	-1.778	-1.311	0.95	-1.766	-1.303	0.94
Wave 3		γ_{S3}	0.5	0.514	0.014	0.029	0.062	0.06	0.008	0.403	0.639	0.97	0.4	0.632	0.96
		γ_{04}	-1	-1.049	-0.049	0.049	0.178	0.184	0.068	-1.424	-0.705	0.96	-1.408	-0.697	0.96
		γ_{x4}	-1.5	-1.564	-0.064	0.043	0.135	0.123	0.037	-1.819	-1.338	0.91	-1.806	-1.33	0.9
		γ_{S4}	0.5	0.523	0.023	0.046	0.065	0.062	0.009	0.408	0.651	0.92	0.405	0.644	0.93
df		df_{y1}	5	7.58	2.58	0.516	2.831	2.469	22.173	4.259	13.492	0.76	4.028	12.676	0.81
		df_{y2}	5	7.068	2.068	0.414	2.852	2.067	17.788	4.057	11.875	0.82	3.871	11.169	0.85

Note:

1. Results are summarized based on 100 converged replications with a convergence rate of $100/101 \approx 99.01\%$.
2. Abbreviations are as given in Table 1.

Table 3: SUMMARY OF TT-XS MODEL (N=1500, CLASS SEPARATION=2.7)

				BIAS		SE		CI ($\alpha=0.05$)			HPD ($\alpha=0.05$)					
para.		true	est.	smp.	rel.	emp.	avg.	MSE	lower	upper	cover	lower	upper	cover		
Growth Curve Parameters	Class 1	I	5	4.962	-0.038	-0.008	0.18	0.156	0.059	4.641	5.252	0.92	4.653	5.259	0.93	
		S	3	3.011	0.011	0.004	0.116	0.114	0.027	2.787	3.235	0.96	2.787	3.234	0.97	
		var(I)	1	1.039	0.039	0.039	0.338	0.285	0.202	0.554	1.669	0.91	0.516	1.606	0.9	
		var(S)	4	3.842	-0.158	-0.039	0.289	0.315	0.208	3.254	4.489	0.95	3.235	4.464	0.94	
		cov(IS)	0	0	0	0	0.204	0.189	0.077	-0.378	0.364	0.94	-0.373	0.367	0.94	
	var(e)	1	1.06	0.06	0.06	0.103	0.105	0.025	0.864	1.274	0.93	0.859	1.267	0.93		
	Class 2	I	1	0.995	-0.005	-0.005	0.18	0.152	0.057	0.707	1.305	0.88	0.702	1.296	0.89	
		S	3	3	0	0	0.118	0.118	0.028	2.768	3.232	0.94	2.769	3.231	0.94	
		var(I)	1	0.962	-0.038	-0.038	0.259	0.269	0.144	0.499	1.551	0.91	0.465	1.494	0.9	
		var(S)	4	3.799	-0.201	-0.05	0.299	0.321	0.233	3.2	4.459	0.91	3.182	4.435	0.92	
cov(IS)		0	0.02	0.02	0.02	0.2	0.188	0.076	-0.354	0.384	0.93	-0.348	0.388	0.95		
var(e)	1	1.053	0.053	0.053	0.126	0.107	0.03	0.852	1.271	0.84	0.847	1.264	0.85			
Probit Parameters	Wave 1	CP_1	0.5	0.51	0.01	0.02	0.041	0.039	0.003	0.434	0.588	0.93	0.434	0.586	0.92	
		CP_2	0.5	0.49	-0.01	-0.02	0.041	0.039	0.003	0.412	0.566	0.93	0.414	0.566	0.92	
	Wave 2	γ_{01}	-1	-1.038	-0.038	0.038	0.154	0.152	0.048	-1.347	-0.752	0.95	-1.334	-0.746	0.96	
		γ_{x1}	-1.5	-1.538	-0.038	0.025	0.091	0.104	0.021	-1.753	-1.345	0.96	-1.744	-1.34	0.97	
	Wave 3	γ_{S1}	0.5	0.517	0.017	0.033	0.052	0.054	0.006	0.416	0.628	0.96	0.414	0.622	0.96	
		γ_{02}	-1	-1.029	-0.029	0.029	0.154	0.146	0.046	-1.324	-0.754	0.93	-1.314	-0.75	0.92	
	Wave 4	γ_{x2}	-1.5	-1.527	-0.027	0.018	0.098	0.1	0.02	-1.734	-1.341	0.94	-1.724	-1.335	0.94	
		γ_{S2}	0.5	0.511	0.011	0.023	0.054	0.051	0.006	0.416	0.616	0.96	0.414	0.612	0.97	
	Wave 3	γ_{03}	-1	-1.017	-0.017	0.017	0.145	0.145	0.042	-1.31	-0.742	0.94	-1.301	-0.738	0.95	
		γ_{x3}	-1.5	-1.523	-0.023	0.015	0.103	0.096	0.02	-1.72	-1.343	0.96	-1.712	-1.339	0.95	
		γ_{S3}	0.5	0.51	0.01	0.02	0.047	0.049	0.005	0.418	0.611	0.95	0.416	0.607	0.97	
		γ_{04}	-1	-1.028	-0.028	0.028	0.152	0.148	0.046	-1.329	-0.748	0.94	-1.32	-0.745	0.92	
	Wave 4	γ_{x4}	-1.5	-1.54	-0.04	0.026	0.1	0.097	0.021	-1.74	-1.358	0.93	-1.731	-1.353	0.94	
		γ_{S4}	0.5	0.515	0.015	0.031	0.051	0.05	0.005	0.422	0.617	0.92	0.42	0.612	0.93	
		df	df_{y1}	5	6.027	1.027	0.205	1.624	1.448	6.457	3.976	9.618	0.94	3.769	9.03	0.96
		df_{y2}	5	6.514	1.514	0.303	2.487	1.693	12.305	4.116	10.637	0.83	3.916	9.932	0.86	
	$df_{\eta1}$	$+\infty$	59.253	NA	NA	9.641	23.1	NA	20.225	97.649	NA	22.426	97.761	NA		
	$df_{\eta2}$	$+\infty$	60.209	NA	NA	7.867	22.673	NA	21.158	97.748	NA	23.375	98.049	NA		

Note:

1. Results are summarized based on 100 converged replications with a convergence rate of $100/107 \approx 93.46\%$.
2. Abbreviations are as given in Table 1.

Table 4: SUMMARY OF TT-XS MODEL (N=1000, CLASS SEPARATION=2.7)

	para.	true	est.	BIAS		SE		MSE	CI ($\alpha=0.05$)			HPD ($\alpha=0.05$)			
				smp.	rel.	emp.	avg.		lower	upper	cover	lower	upper	cover	
Growth Curve Parameters	Class 1	I	5	4.973	-0.027	-0.005	0.181	0.183	0.069	4.589	5.309	0.95	4.614	5.324	0.96
		S	3	2.986	-0.014	-0.005	0.15	0.141	0.043	2.71	3.265	0.93	2.709	3.263	0.93
		var(I)	1	1.03	0.03	0.03	0.366	0.337	0.256	0.485	1.797	0.94	0.433	1.695	0.91
		var(S)	4	3.821	-0.179	-0.045	0.402	0.386	0.343	3.104	4.623	0.92	3.079	4.59	0.92
		cov(IS)	0	0.042	0.042	0.042	0.242	0.231	0.114	-0.422	0.488	0.9	-0.414	0.493	0.91
		var(e)	1	1.108	0.108	0.108	0.149	0.129	0.051	0.867	1.368	0.8	0.861	1.359	0.81
	Class 2	I	1	0.992	-0.008	-0.008	0.194	0.18	0.072	0.653	1.362	0.89	0.647	1.351	0.9
		S	3	2.99	-0.01	-0.003	0.145	0.144	0.042	2.707	3.272	0.95	2.708	3.27	0.94
		var(I)	1	0.947	-0.053	-0.053	0.347	0.328	0.241	0.411	1.683	0.88	0.358	1.588	0.86
		var(S)	4	3.811	-0.189	-0.047	0.366	0.401	0.331	3.07	4.642	0.94	3.039	4.602	0.93
		cov(IS)	0	0.006	0.006	0.006	0.242	0.228	0.111	-0.454	0.446	0.94	-0.447	0.45	0.94
		var(e)	1	1.092	0.092	0.092	0.157	0.131	0.05	0.848	1.36	0.82	0.842	1.35	0.83
Probit Parameters	Wave 1	CP_1	0.5	0.506	0.006	0.013	0.046	0.046	0.004	0.416	0.598	0.92	0.415	0.596	0.91
		CP_2	0.5	0.494	-0.006	-0.013	0.046	0.046	0.004	0.402	0.584	0.92	0.404	0.585	0.91
	Wave 2	γ_{01}	-1	-1.022	-0.022	0.022	0.176	0.184	0.065	-1.398	-0.677	0.99	-1.383	-0.671	0.98
		γ_{x1}	-1.5	-1.556	-0.056	0.037	0.12	0.129	0.034	-1.827	-1.321	0.98	-1.814	-1.313	0.98
	Wave 3	γ_{S1}	0.5	0.517	0.017	0.033	0.057	0.066	0.008	0.396	0.653	1	0.392	0.645	0.99
		γ_{02}	-1	-1.065	-0.065	0.065	0.189	0.18	0.072	-1.433	-0.726	0.92	-1.42	-0.72	0.92
	Wave 4	γ_{x2}	-1.5	-1.546	-0.046	0.03	0.135	0.125	0.036	-1.807	-1.316	0.93	-1.793	-1.307	0.93
		γ_{S2}	0.5	0.526	0.026	0.052	0.067	0.064	0.009	0.407	0.659	0.93	0.404	0.652	0.93
	Wave 3	γ_{03}	-1	-1.024	-0.024	0.024	0.179	0.178	0.064	-1.384	-0.689	0.98	-1.369	-0.681	0.97
		γ_{x3}	-1.5	-1.534	-0.034	0.023	0.127	0.12	0.032	-1.783	-1.313	0.93	-1.771	-1.306	0.93
	Wave 4	γ_{S3}	0.5	0.516	0.016	0.031	0.065	0.061	0.008	0.402	0.642	0.97	0.398	0.635	0.97
		γ_{04}	-1	-1.054	-0.054	0.054	0.173	0.185	0.067	-1.432	-0.709	0.97	-1.415	-0.7	0.97
	Wave 4	γ_{x4}	-1.5	-1.564	-0.064	0.043	0.131	0.123	0.036	-1.818	-1.338	0.92	-1.806	-1.331	0.92
		γ_{S4}	0.5	0.525	0.025	0.05	0.064	0.062	0.009	0.41	0.654	0.93	0.407	0.648	0.93
	df	df_{y1}	5	7.521	2.521	0.504	2.828	2.395	21.474	4.21	13.183	0.77	4.013	12.306	0.76
		df_{y2}	5	7.031	2.031	0.406	2.554	2.202	16.757	4.048	12.331	0.82	3.822	11.593	0.87
		$df_{\eta1}$	$+\infty$	57.568	NA	NA	8.539	23.858	NA	16.723	97.472	NA	19.23	97.62	NA
		$df_{\eta2}$	$+\infty$	56.492	NA	NA	9.154	24.233	NA	16.346	97.507	NA	18.081	97.409	NA

Note:

1. Results are summarized based on 100 converged replications with a convergence rate of $100/102 \approx 98.04\%$.
2. Abbreviations are as given in Table 1.

Table 5: SUMMARY OF NT-XS MODEL (N=1500, CLASS SEPARATION=2.7)

				BIAS		SE		CI ($\alpha=0.05$)			HPD ($\alpha=0.05$)					
	para.	true	est.	smp.	rel.	emp.	avg.	MSE	lower	upper	cover	lower	upper	cover		
Growth Curve Parameters	Class 1	I	5	4.894	-0.106	-0.021	0.406	0.174	0.209	4.538	5.223	0.87	4.547	5.226	0.88	
		S	3	3.011	0.011	0.004	0.119	0.117	0.028	2.782	3.24	0.97	2.783	3.239	0.97	
		var(I)	1	1.172	0.172	0.172	0.895	0.32	0.95	0.636	1.882	0.84	0.595	1.808	0.8	
		var(S)	4	3.839	-0.161	-0.04	0.286	0.317	0.209	3.246	4.488	0.95	3.23	4.467	0.95	
		cov(IS)	0	0.004	0.004	0.004	0.233	0.2	0.094	-0.396	0.39	0.93	-0.391	0.393	0.94	
		var(e)	1	1.683	0.683	0.683	0.161	0.101	0.502	1.495	1.887	0.01	1.49	1.881	0.01	
	Class 2	I	1	1.033	0.033	0.033	0.31	0.179	0.135	0.703	1.408	0.87	0.693	1.39	0.87	
		S	3	2.992	-0.008	-0.003	0.142	0.137	0.043	2.725	3.261	0.96	2.725	3.258	0.97	
		var(I)	1	0.981	-0.019	-0.019	0.41	0.344	0.364	0.441	1.767	0.91	0.392	1.659	0.9	
		var(S)	4	3.742	-0.258	-0.065	0.377	0.363	0.366	3.072	4.494	0.9	3.049	4.456	0.91	
		cov(IS)	0	0.035	0.035	0.035	0.225	0.222	0.118	-0.412	0.462	0.93	-0.403	0.466	0.94	
		var(e)	1	1.825	0.825	0.825	1.097	0.175	2.022	1.542	2.224	0.04	1.528	2.186	0.04	
	Probit Parameters	Wave 1	CP_1	0.5	0.526	0.026	0.052	0.091	0.043	0.011	0.44	0.61	0.9	0.442	0.61	0.9
			CP_2	0.5	0.474	-0.026	-0.052	0.091	0.043	0.011	0.39	0.56	0.9	0.39	0.558	0.9
Wave 2		γ_{01}	-1	-1.032	-0.032	0.032	0.148	0.151	0.046	-1.342	-0.748	0.96	-1.329	-0.741	0.95	
		γ_{x1}	-1.5	-1.536	-0.036	0.024	0.092	0.104	0.021	-1.753	-1.344	0.97	-1.743	-1.338	0.97	
Wave 3		γ_{S1}	0.5	0.516	0.016	0.031	0.05	0.054	0.006	0.416	0.627	0.94	0.413	0.621	0.95	
		γ_{02}	-1	-1.025	-0.025	0.025	0.153	0.147	0.046	-1.323	-0.747	0.93	-1.314	-0.744	0.92	
Wave 4		γ_{x2}	-1.5	-1.533	-0.033	0.022	0.098	0.101	0.021	-1.741	-1.345	0.95	-1.731	-1.339	0.94	
		γ_{S2}	0.5	0.512	0.012	0.024	0.056	0.052	0.006	0.415	0.619	0.95	0.412	0.613	0.95	
Wave 4		γ_{03}	-1	-1.01	-0.01	0.01	0.143	0.145	0.042	-1.303	-0.734	0.94	-1.293	-0.73	0.94	
		γ_{x3}	-1.5	-1.523	-0.023	0.015	0.1	0.097	0.02	-1.721	-1.343	0.95	-1.714	-1.338	0.94	
		γ_{S3}	0.5	0.507	0.007	0.015	0.047	0.049	0.005	0.415	0.608	0.98	0.413	0.605	0.98	
		γ_{04}	-1	-1.035	-0.035	0.035	0.148	0.15	0.046	-1.34	-0.75	0.94	-1.33	-0.746	0.94	
df		df_{η_1}	$+\infty$	57.711	NA	NA	11.658	22.476	NA	19.71	96.044	NA	21.693	95.836	NA	
		df_{η_2}	$+\infty$	57.402	NA	NA	12.72	22.338	NA	19.39	95.746	NA	21.516	95.395	NA	

Note:

1. Results are summarized based on 100 converged replications with a convergence rate of $100/105 \approx 95.24\%$.
2. Abbreviations are as given in Table 1.

Table 6: SUMMARY OF NT-XS MODEL (N=1000, CLASS SEPARATION=2.7)

				BIAS		SE		CI ($\alpha=0.05$)			HPD ($\alpha=0.05$)				
	para.	true	est.	smp.	rel.	emp.	avg.	MSE	lower	upper	cover	lower	upper	cover	
Growth Curve Parameters	Class 1	I	5	4.88	-0.12	-0.024	0.395	0.268	0.277	4.365	5.381	0.93	4.375	5.373	0.94
		S	3	2.983	-0.017	-0.006	0.201	0.183	0.094	2.635	3.354	0.94	2.632	3.348	0.94
		var(I)	1	1.264	0.264	0.264	0.897	0.555	1.642	0.512	2.493	0.88	0.445	2.277	0.83
		var(S)	4	3.785	-0.215	-0.054	0.474	0.521	0.92	2.906	4.868	0.92	2.873	4.76	0.92
		cov(IS)	0	0.058	0.058	0.058	0.405	0.337	0.519	-0.638	0.65	0.93	-0.596	0.672	0.93
		var(e)	1	2.141	1.141	1.141	2.27	0.382	8.137	1.607	3.035	0.07	1.565	2.869	0.07
	Class 2	I	1	1.149	0.149	0.149	0.555	0.24	0.406	0.708	1.628	0.87	0.703	1.612	0.86
		S	3	2.987	-0.013	-0.004	0.153	0.165	0.058	2.662	3.308	0.96	2.663	3.306	0.96
		var(I)	1	1.268	0.268	0.268	1.105	0.47	1.693	0.574	2.329	0.86	0.512	2.173	0.85
		var(S)	4	3.74	-0.26	-0.065	0.48	0.446	0.547	2.931	4.673	0.93	2.904	4.616	0.92
		cov(IS)	0	0.022	0.022	0.022	0.274	0.273	0.174	-0.525	0.549	0.95	-0.512	0.558	0.96
		var(e)	1	1.852	0.852	0.852	1.346	0.226	2.822	1.467	2.333	0.07	1.449	2.276	0.07
	Probit Parameters	CP_1	0.5	0.495	-0.005	-0.009	0.141	0.059	0.024	0.383	0.606	0.86	0.384	0.605	0.87
			0.5	0.505	0.005	0.009	0.141	0.059	0.024	0.394	0.617	0.86	0.395	0.616	0.87
Wave 1		γ_{01}	-1	-1.023	-0.023	0.023	0.176	0.183	0.065	-1.398	-0.679	1	-1.384	-0.673	0.99
		γ_{x1}	-1.5	-1.551	-0.051	0.034	0.116	0.128	0.033	-1.819	-1.317	0.98	-1.803	-1.306	0.97
		γ_{S1}	0.5	0.516	0.016	0.031	0.056	0.065	0.008	0.396	0.651	1	0.391	0.643	0.99
		γ_{02}	-1	-1.07	-0.07	0.07	0.192	0.181	0.075	-1.438	-0.728	0.94	-1.425	-0.721	0.94
Wave 2		γ_{x2}	-1.5	-1.551	-0.051	0.034	0.132	0.126	0.036	-1.812	-1.319	0.95	-1.8	-1.312	0.96
		γ_{S2}	0.5	0.529	0.029	0.057	0.067	0.065	0.01	0.409	0.661	0.94	0.406	0.655	0.94
Wave 3		γ_{03}	-1	-1.027	-0.027	0.027	0.179	0.177	0.064	-1.386	-0.692	0.95	-1.373	-0.685	0.96
		γ_{x3}	-1.5	-1.538	-0.038	0.025	0.125	0.12	0.032	-1.788	-1.317	0.93	-1.777	-1.311	0.91
		γ_{S3}	0.5	0.517	0.017	0.035	0.066	0.061	0.008	0.404	0.644	0.96	0.401	0.638	0.95
Wave 4		γ_{04}	-1	-1.051	-0.051	0.051	0.173	0.184	0.066	-1.429	-0.707	0.97	-1.414	-0.7	0.97
		γ_{x4}	-1.5	-1.559	-0.059	0.039	0.134	0.122	0.036	-1.813	-1.334	0.9	-1.802	-1.327	0.91
		γ_{S4}	0.5	0.522	0.022	0.044	0.064	0.062	0.008	0.408	0.651	0.92	0.405	0.645	0.93
df		df_{η_1}	$+\infty$	55.504	NA	NA	10.857	24.118	NA	14.924	96.176	NA	16.963	96.04	NA
		df_{η_2}	$+\infty$	55.329	NA	NA	12.082	23.825	NA	16.424	96.725	NA	18.397	96.257	NA

Note:

1. Results are summarized based on 100 converged replications with a convergence rate of $100/105 \approx 95.24\%$.
2. Abbreviations are as given in Table 1.

Table 7: SUMMARY OF NN-XS MODEL (N=1500, CLASS SEPARATION=2.7)

				BIAS		SE		CI ($\alpha=0.05$)			HPD ($\alpha=0.05$)					
para.		true	est.	smp.	rel.	emp.	avg.	MSE	lower	upper	cover	lower	upper	cover		
Growth Curve Parameters	Class 1	I	5	4.893	-0.107	-0.021	0.471	0.173	0.264	4.548	5.233	0.88	4.556	5.232	0.84	
		S	3	3.011	0.011	0.004	0.131	0.12	0.032	2.775	3.245	0.97	2.776	3.245	0.97	
		var(I)	1	1.244	0.244	0.244	1.03	0.324	1.23	0.682	1.952	0.83	0.642	1.874	0.79	
		var(S)	4	4.021	0.021	0.005	0.301	0.317	0.194	3.434	4.679	0.97	3.413	4.652	0.97	
		cov(IS)	0	-0.006	-0.006	-0.006	0.253	0.208	0.107	-0.423	0.396	0.91	-0.416	0.4	0.91	
		var(e)	1	1.671	0.671	0.671	0.209	0.102	0.504	1.475	1.878	0.04	1.47	1.87	0.03	
	Class 2	I	1	1.08	0.08	0.08	0.405	0.186	0.212	0.732	1.467	0.86	0.725	1.454	0.86	
		S	3	2.994	-0.006	-0.002	0.154	0.14	0.049	2.717	3.267	0.96	2.72	3.266	0.95	
		var(I)	1	1.129	0.129	0.129	0.767	0.371	0.849	0.534	1.964	0.89	0.486	1.857	0.87	
		var(S)	4	3.914	-0.086	-0.021	0.385	0.369	0.336	3.247	4.691	0.95	3.221	4.644	0.95	
		cov(IS)	0	0.035	0.035	0.035	0.245	0.243	0.155	-0.459	0.495	0.93	-0.444	0.505	0.94	
		var(e)	1	1.884	0.884	0.884	1.274	0.179	2.557	1.582	2.281	0.03	1.567	2.244	0.03	
	Probit Parameters	Wave 1	CP_1	0.5	0.522	0.022	0.044	0.114	0.043	0.015	0.434	0.603	0.86	0.436	0.603	0.84
			CP_2	0.5	0.478	-0.022	-0.044	0.114	0.043	0.015	0.397	0.566	0.86	0.397	0.564	0.84
Wave 2		γ_{01}	-1	-1.035	-0.035	0.035	0.149	0.15	0.046	-1.337	-0.751	0.96	-1.327	-0.746	0.96	
		γ_{x1}	-1.5	-1.538	-0.038	0.025	0.093	0.104	0.021	-1.752	-1.347	0.96	-1.742	-1.341	0.97	
		γ_{S1}	0.5	0.517	0.017	0.033	0.05	0.053	0.006	0.417	0.625	0.98	0.416	0.621	0.97	
		γ_{02}	-1	-1.04	-0.04	0.04	0.147	0.147	0.045	-1.337	-0.761	0.94	-1.327	-0.757	0.92	
Wave 3		γ_{x2}	-1.5	-1.532	-0.032	0.022	0.097	0.101	0.021	-1.741	-1.345	0.95	-1.733	-1.341	0.95	
		γ_{S2}	0.5	0.516	0.016	0.032	0.054	0.052	0.006	0.419	0.623	0.96	0.418	0.619	0.96	
		γ_{03}	-1	-1.003	-0.003	0.003	0.139	0.143	0.04	-1.292	-0.732	0.94	-1.282	-0.727	0.94	
		γ_{x3}	-1.5	-1.516	-0.016	0.011	0.098	0.095	0.019	-1.713	-1.338	0.94	-1.705	-1.333	0.94	
Wave 4		γ_{S3}	0.5	0.504	0.004	0.008	0.045	0.049	0.004	0.413	0.603	0.95	0.412	0.6	0.96	
		γ_{04}	-1	-1.033	-0.033	0.033	0.152	0.149	0.046	-1.336	-0.751	0.95	-1.328	-0.75	0.91	
		γ_{x4}	-1.5	-1.545	-0.045	0.03	0.098	0.099	0.021	-1.748	-1.361	0.95	-1.74	-1.357	0.95	
		γ_{S4}	0.5	0.518	0.018	0.035	0.051	0.05	0.005	0.424	0.62	0.93	0.423	0.617	0.93	

Note:

1. Results are summarized based on 100 converged replications with a convergence rate of $100/102 \approx 98.04\%$.
2. Abbreviations are as given in Table 1.

Table 8: SUMMARY OF NN-XS MODEL (N=1000, CLASS SEPARATION=2.7)

				BIAS		SE		CI ($\alpha=0.05$)			HPD ($\alpha=0.05$)					
para.		true	est.	smp.	rel.	emp.	avg.	MSE	lower	upper	cover	lower	upper	cover		
Growth Curve Parameters	Class 1	I	5	4.838	-0.162	-0.032	0.498	0.254	0.37	4.34	5.317	0.89	4.357	5.307	0.89	
		S	3	2.974	-0.026	-0.009	0.209	0.181	0.097	2.622	3.332	0.93	2.623	3.33	0.93	
		var(I)	1	1.422	0.422	0.422	1.167	0.585	2.898	0.668	2.641	0.85	0.61	2.408	0.81	
		var(S)	4	3.983	-0.017	-0.004	0.491	0.507	0.865	3.142	5.063	0.96	3.097	4.944	0.97	
		cov(IS)	0	0.068	0.068	0.068	0.457	0.354	0.633	-0.644	0.691	0.95	-0.605	0.704	0.95	
		var(e)	1	2.138	1.138	1.138	2.298	0.376	8.305	1.617	3.007	0.07	1.574	2.848	0.07	
	Class 2	I	1	1.165	0.165	0.165	0.578	0.243	0.446	0.707	1.645	0.87	0.706	1.633	0.83	
		S	3	2.993	-0.007	-0.002	0.161	0.174	0.069	2.65	3.334	0.97	2.65	3.332	0.96	
		var(I)	1	1.362	0.362	0.362	1.201	0.515	2.18	0.612	2.527	0.85	0.542	2.324	0.84	
		var(S)	4	3.921	-0.079	-0.02	0.496	0.48	0.626	3.089	4.95	0.94	3.043	4.85	0.95	
		cov(IS)	0	0.034	0.034	0.034	0.374	0.319	0.338	-0.619	0.621	0.94	-0.588	0.638	0.94	
		var(e)	1	1.947	0.947	0.947	1.48	0.296	3.86	1.531	2.646	0.06	1.51	2.529	0.06	
	Probit Parameters	Wave 1	CP_1	0.5	0.504	0.004	0.008	0.155	0.056	0.028	0.398	0.609	0.83	0.399	0.607	0.83
			CP_2	0.5	0.496	-0.004	-0.008	0.155	0.056	0.028	0.391	0.602	0.83	0.393	0.601	0.83
Wave 2		γ_{01}	-1	-1.037	-0.037	0.037	0.184	0.185	0.069	-1.415	-0.689	0.97	-1.401	-0.682	0.97	
		γ_{x1}	-1.5	-1.565	-0.065	0.043	0.124	0.131	0.037	-1.838	-1.328	0.96	-1.822	-1.317	0.95	
Wave 3		γ_{S1}	0.5	0.522	0.022	0.044	0.062	0.066	0.009	0.4	0.659	0.98	0.397	0.653	0.97	
		γ_{02}	-1	-1.066	-0.066	0.066	0.188	0.181	0.072	-1.436	-0.725	0.93	-1.419	-0.717	0.95	
Wave 4		γ_{x2}	-1.5	-1.547	-0.047	0.032	0.128	0.126	0.035	-1.811	-1.317	0.94	-1.796	-1.308	0.95	
		γ_{S2}	0.5	0.527	0.027	0.053	0.066	0.064	0.009	0.408	0.661	0.94	0.404	0.653	0.94	
Wave 4		γ_{03}	-1	-1.019	-0.019	0.019	0.177	0.177	0.063	-1.38	-0.687	0.97	-1.366	-0.681	0.97	
		γ_{x3}	-1.5	-1.532	-0.032	0.022	0.128	0.12	0.032	-1.782	-1.313	0.93	-1.769	-1.305	0.93	
		γ_{S3}	0.5	0.514	0.014	0.028	0.066	0.061	0.008	0.401	0.639	0.94	0.399	0.634	0.93	
		γ_{04}	-1	-1.047	-0.047	0.047	0.177	0.185	0.068	-1.429	-0.701	0.97	-1.414	-0.694	0.97	
Wave 4		γ_{x4}	-1.5	-1.561	-0.061	0.041	0.136	0.123	0.037	-1.816	-1.334	0.91	-1.804	-1.326	0.92	
		γ_{S4}	0.5	0.522	0.022	0.045	0.066	0.063	0.009	0.407	0.653	0.93	0.403	0.645	0.92	

Note:

1. Results are summarized based on 100 converged replications with a convergence rate of $100/108 \approx 92.59\%$.
2. Abbreviations are as given in Table 1.

Table 9: SUMMARY OF TN-XI MODEL (N=1500, CLASS SEPARATION=2.7)

				BIAS		SE		MSE	CI ($\alpha=0.05$)			HPD ($\alpha=0.05$)			
para.	true	est.	smp.	rel.	emp.	avg.	lower		upper	cover	lower	upper	cover		
Growth Curve Parameters	Class 1	I	5	4.858	-0.142	-0.028	0.275	0.176	0.129	4.5	5.19	0.8	4.514	5.196	0.81
		S	3	2.771	-0.229	-0.076	0.106	0.1	0.074	2.576	2.968	0.39	2.575	2.966	0.39
		var(I)	1	1.515	0.515	0.515	0.731	0.432	1.01	0.78	2.449	0.76	0.729	2.354	0.78
		var(S)	4	3.411	-0.589	-0.147	0.285	0.258	0.494	2.935	3.944	0.41	2.917	3.92	0.39
		cov(IS)	0	0.45	0.45	0.45	0.3	0.211	0.337	0.038	0.868	0.44	0.037	0.864	0.47
		var(e)	1	1.168	0.168	0.168	0.126	0.121	0.059	0.944	1.416	0.7	0.938	1.408	0.7
	Class 2	I	1	0.951	-0.049	-0.049	0.222	0.173	0.082	0.631	1.314	0.87	0.621	1.298	0.85
		S	3	2.599	-0.401	-0.134	0.166	0.142	0.211	2.323	2.881	0.16	2.324	2.879	0.15
		var(I)	1	0.766	-0.234	-0.234	0.282	0.258	0.204	0.346	1.351	0.78	0.304	1.272	0.72
		var(S)	4	3.496	-0.504	-0.126	0.337	0.326	0.48	2.893	4.177	0.64	2.874	4.149	0.62
		cov(IS)	0	0.23	0.23	0.23	0.208	0.192	0.133	-0.152	0.602	0.69	-0.147	0.604	0.67
		var(e)	1	1.097	0.097	0.097	0.141	0.126	0.045	0.859	1.349	0.84	0.855	1.343	0.85
	Probit Parameters	CP_1	0.5	0.618	0.118	0.236	0.074	0.047	0.022	0.526	0.708	0.37	0.527	0.708	0.36
			0.5	0.382	-0.118	-0.236	0.074	0.047	0.022	0.292	0.474	0.37	0.292	0.473	0.36
Wave 1		γ_{01}	NA	-0.524	NA	NA	0.256	0.16	NA	-0.852	-0.226	NA	-0.838	-0.22	NA
		γ_{x1}	NA	-1.209	NA	NA	0.078	0.071	NA	-1.356	-1.077	NA	-1.349	-1.073	NA
		γ_{I1}	NA	0.259	NA	NA	0.068	0.043	NA	0.18	0.346	NA	0.178	0.342	NA
		γ_{02}	NA	-0.408	NA	NA	0.242	0.146	NA	-0.707	-0.133	NA	-0.695	-0.129	NA
Wave 2		γ_{x2}	NA	-1.175	NA	NA	0.079	0.067	NA	-1.312	-1.051	NA	-1.307	-1.048	NA
		γ_{I2}	NA	0.225	NA	NA	0.066	0.039	NA	0.152	0.306	NA	0.151	0.303	NA
Wave 3		γ_{03}	NA	-0.333	NA	NA	0.252	0.137	NA	-0.607	-0.073	NA	-0.6	-0.07	NA
		γ_{x3}	NA	-1.155	NA	NA	0.072	0.064	NA	-1.285	-1.035	NA	-1.281	-1.033	NA
Wave 4		γ_{I3}	NA	0.204	NA	NA	0.068	0.037	NA	0.135	0.279	NA	0.135	0.277	NA
		γ_{04}	NA	-0.346	NA	NA	0.215	0.139	NA	-0.626	-0.083	NA	-0.617	-0.08	NA
		γ_{x4}	NA	-1.164	NA	NA	0.07	0.065	NA	-1.296	-1.043	NA	-1.292	-1.04	NA
		γ_{I4}	NA	0.209	NA	NA	0.059	0.037	NA	0.139	0.285	NA	0.138	0.282	NA
df		df_{y1}	5	5.849	0.849	0.17	1.554	1.376	5.596	3.909	9.305	0.94	3.704	8.707	0.98
		df_{y2}	5	6.353	1.353	0.271	2.425	1.788	12.127	3.839	10.656	0.9	3.672	9.95	0.88

Note:

1. Results are summarized based on 100 converged replications with a convergence rate of $100/103 \approx 97.09\%$.
2. Abbreviations are as given in Table 1.

Table 10: SUMMARY OF TN-XI MODEL (N=1000, CLASS SEPARATION=2.7)

				BIAS		SE		MSE	CI ($\alpha=0.05$)			HPD ($\alpha=0.05$)			
para.	true	est.	smpl.	rel.	emp.	avg.	lower		upper	cover	lower	upper	cover		
Growth Curve Parameters	Class 1	I	5	4.803	-0.197	-0.039	0.335	0.219	0.204	4.355	5.216	0.82	4.377	5.225	0.81
		S	3	2.751	-0.249	-0.083	0.141	0.123	0.097	2.511	2.996	0.44	2.511	2.993	0.44
		var(I)	1	1.575	0.575	0.575	0.855	0.529	1.377	0.715	2.763	0.79	0.642	2.599	0.81
		var(S)	4	3.346	-0.654	-0.163	0.394	0.318	0.684	2.764	4.01	0.56	2.74	3.978	0.54
		cov(IS)	0	0.57	0.57	0.57	0.458	0.259	0.602	0.066	1.087	0.44	0.064	1.08	0.45
		var(e)	1	1.267	0.267	0.267	0.306	0.154	0.189	0.983	1.584	0.64	0.975	1.571	0.64
	Class 2	I	1	0.956	-0.044	-0.044	0.333	0.222	0.167	0.554	1.427	0.82	0.537	1.4	0.85
		S	3	2.612	-0.388	-0.129	0.217	0.184	0.237	2.257	2.984	0.37	2.254	2.974	0.37
		var(I)	1	0.835	-0.165	-0.165	0.542	0.334	0.448	0.33	1.619	0.85	0.275	1.491	0.79
		var(S)	4	3.485	-0.515	-0.129	0.466	0.426	0.681	2.719	4.389	0.8	2.682	4.334	0.75
		cov(IS)	0	0.227	0.227	0.227	0.265	0.244	0.183	-0.265	0.694	0.83	-0.253	0.701	0.84
		var(e)	1	1.115	0.115	0.115	0.192	0.156	0.075	0.821	1.431	0.81	0.814	1.421	0.84
	Probit Parameters	CP_1	0.5	0.626	0.126	0.252	0.087	0.059	0.027	0.508	0.739	0.47	0.51	0.738	0.5
			0.5	0.374	-0.126	-0.252	0.087	0.059	0.027	0.261	0.492	0.47	0.262	0.49	0.5
Wave 1		γ_{01}	NA	-0.606	NA	NA	0.341	0.206	NA	-1.032	-0.226	NA	-1.011	-0.217	NA
		γ_{x1}	NA	-1.239	NA	NA	0.103	0.092	NA	-1.43	-1.071	NA	-1.421	-1.065	NA
		γ_{I1}	NA	0.284	NA	NA	0.094	0.056	NA	0.183	0.399	NA	0.18	0.393	NA
		γ_{02}	NA	-0.494	NA	NA	0.348	0.189	NA	-0.886	-0.144	NA	-0.864	-0.134	NA
Wave 2		γ_{x2}	NA	-1.184	NA	NA	0.106	0.085	NA	-1.36	-1.028	NA	-1.351	-1.022	NA
		γ_{I2}	NA	0.247	NA	NA	0.095	0.051	NA	0.154	0.354	NA	0.151	0.348	NA
Wave 3		γ_{03}	NA	-0.412	NA	NA	0.321	0.178	NA	-0.778	-0.08	NA	-0.761	-0.073	NA
		γ_{x3}	NA	-1.172	NA	NA	0.103	0.081	NA	-1.34	-1.022	NA	-1.333	-1.017	NA
		γ_{I3}	NA	0.227	NA	NA	0.086	0.048	NA	0.138	0.327	NA	0.136	0.321	NA
Wave 4		γ_{04}	NA	-0.459	NA	NA	0.345	0.182	NA	-0.836	-0.119	NA	-0.816	-0.11	NA
		γ_{x4}	NA	-1.195	NA	NA	0.107	0.084	NA	-1.37	-1.039	NA	-1.362	-1.035	NA
		γ_{I4}	NA	0.24	NA	NA	0.094	0.049	NA	0.149	0.343	NA	0.146	0.337	NA
df		df_{y1}	5	6.96	1.96	0.392	2.719	2.154	17.405	4.017	12.04	0.81	3.82	11.36	0.82
		df_{y2}	5	7.433	2.433	0.487	2.925	2.582	22.835	3.901	13.456	0.84	3.702	12.624	0.81

Note:

1. Results are summarized based on 100 converged replications with a convergence rate of $100/109 \approx 91.74\%$.
2. Abbreviations are as given in Table 1.

Table 11: SUMMARY OF TT-XI MODEL (N=1500, CLASS SEPARATION=2.7)

				BIAS		SE		CI ($\alpha=0.05$)			HPD ($\alpha=0.05$)					
	para.	true	est.	smp.	rel.	emp.	avg.	MSE	lower	upper	cover	lower	upper	cover		
Growth Curve Parameters	Class 1	I	5	4.866	-0.134	-0.027	0.256	0.173	0.115	4.513	5.19	0.84	4.527	5.198	0.84	
		S	3	2.772	-0.228	-0.076	0.104	0.1	0.073	2.578	2.97	0.41	2.577	2.967	0.39	
		var(I)	1	1.431	0.431	0.431	0.643	0.417	0.796	0.738	2.35	0.82	0.682	2.247	0.82	
		var(S)	4	3.248	-0.752	-0.188	0.3	0.267	0.726	2.745	3.793	0.31	2.732	3.775	0.3	
		cov(IS)	0	0.43	0.43	0.43	0.272	0.203	0.3	0.035	0.834	0.46	0.034	0.831	0.46	
		var(e)	1	1.161	0.161	0.161	0.124	0.12	0.056	0.94	1.405	0.73	0.932	1.394	0.74	
	Class 2	I	1	0.961	-0.039	-0.039	0.207	0.173	0.075	0.639	1.318	0.91	0.63	1.303	0.91	
		S	3	2.593	-0.407	-0.136	0.163	0.141	0.215	2.317	2.873	0.19	2.317	2.869	0.18	
		var(I)	1	0.739	-0.261	-0.261	0.257	0.25	0.2	0.332	1.301	0.77	0.292	1.222	0.72	
		var(S)	4	3.336	-0.664	-0.166	0.332	0.325	0.663	2.726	4.006	0.45	2.707	3.98	0.41	
		cov(IS)	0	0.222	0.222	0.222	0.201	0.185	0.125	-0.147	0.583	0.68	-0.143	0.585	0.65	
		var(e)	1	1.104	0.104	0.104	0.135	0.127	0.045	0.866	1.359	0.87	0.86	1.351	0.87	
	Probit Parameters	Wave 1	CP_1	0.5	0.618	0.118	0.235	0.07	0.046	0.021	0.529	0.707	0.33	0.529	0.706	0.33
			CP_2	0.5	0.382	-0.118	-0.235	0.07	0.046	0.021	0.293	0.471	0.33	0.294	0.471	0.33
Wave 2		γ_{01}	NA	-0.536	NA	NA	0.262	0.161	NA	-0.865	-0.235	NA	-0.851	-0.229	NA	
		γ_{x1}	NA	-1.212	NA	NA	0.079	0.072	NA	-1.359	-1.079	NA	-1.353	-1.075	NA	
		γ_{I1}	NA	0.261	NA	NA	0.07	0.043	NA	0.181	0.349	NA	0.181	0.346	NA	
		γ_{02}	NA	-0.419	NA	NA	0.244	0.147	NA	-0.719	-0.144	NA	-0.706	-0.138	NA	
Wave 3		γ_{x2}	NA	-1.178	NA	NA	0.08	0.067	NA	-1.317	-1.053	NA	-1.311	-1.049	NA	
		γ_{I2}	NA	0.228	NA	NA	0.066	0.039	NA	0.155	0.309	NA	0.154	0.305	NA	
		γ_{03}	NA	-0.342	NA	NA	0.26	0.138	NA	-0.619	-0.079	NA	-0.614	-0.08	NA	
		γ_{x3}	NA	-1.157	NA	NA	0.075	0.064	NA	-1.288	-1.037	NA	-1.284	-1.034	NA	
Wave 4		γ_{I3}	NA	0.206	NA	NA	0.07	0.037	NA	0.137	0.281	NA	0.136	0.279	NA	
		γ_{04}	NA	-0.353	NA	NA	0.217	0.138	NA	-0.632	-0.088	NA	-0.622	-0.084	NA	
		γ_{x4}	NA	-1.166	NA	NA	0.071	0.065	NA	-1.299	-1.044	NA	-1.294	-1.042	NA	
		γ_{I4}	NA	0.211	NA	NA	0.06	0.037	NA	0.141	0.286	NA	0.139	0.283	NA	
df		df_{y1}	5	5.711	0.711	0.142	1.458	1.331	5.066	3.848	8.937	0.96	3.667	8.428	0.97	
		df_{y2}	5	6.321	1.321	0.264	2.272	1.811	11.396	3.877	10.773	0.9	3.667	9.973	0.92	
		df_{η_1}	$+\infty$	55.905	NA	NA	12.281	22.812	NA	18.511	95.165	NA	19.97	94.637	NA	
		df_{η_2}	$+\infty$	59.288	NA	NA	8.468	23.233	NA	19.275	97.676	NA	21.645	97.88	NA	

Note:

1. Results are summarized based on 100 converged replications with a convergence rate of $100/103 \approx 97.09\%$.
2. Abbreviations are as given in Table 1.

Table 12: SUMMARY OF TT-XI MODEL (N=1000, CLASS SEPARATION=2.7)

				BIAS		SE		CI ($\alpha=0.05$)			HPD ($\alpha=0.05$)					
	para.	true	est.	smpl.	rel.	emp.	avg.	MSE	lower	upper	cover	lower	upper	cover		
Growth Curve Parameters	Class 1	I	5	4.823	-0.177	-0.035	0.337	0.208	0.191	4.4	5.211	0.79	4.416	5.218	0.79	
		S	3	2.74	-0.26	-0.087	0.164	0.133	0.118	2.467	2.994	0.42	2.483	2.994	0.44	
		var(I)	1	1.507	0.507	0.507	0.843	0.491	1.231	0.73	2.618	0.77	0.658	2.47	0.8	
		var(S)	4	3.203	-0.797	-0.199	0.36	0.352	0.925	2.57	3.901	0.4	2.555	3.878	0.34	
		cov(IS)	0	0.501	0.501	0.501	0.395	0.258	0.476	0	1.01	0.47	0.001	1.006	0.48	
		var(e)	1	1.23	0.23	0.23	0.22	0.155	0.126	0.946	1.55	0.65	0.936	1.535	0.66	
	Class 2	I	1	0.994	-0.006	-0.006	0.423	0.209	0.225	0.606	1.43	0.84	0.598	1.414	0.85	
		S	3	2.604	-0.396	-0.132	0.193	0.177	0.228	2.262	2.958	0.35	2.261	2.952	0.35	
		var(I)	1	0.807	-0.193	-0.193	0.47	0.305	0.361	0.332	1.513	0.83	0.281	1.407	0.75	
		var(S)	4	3.292	-0.708	-0.177	0.396	0.415	0.842	2.535	4.165	0.62	2.502	4.116	0.58	
		cov(IS)	0	0.246	0.246	0.246	0.319	0.233	0.218	-0.224	0.693	0.8	-0.212	0.7	0.82	
		var(e)	1	1.139	0.139	0.139	0.297	0.154	0.132	0.847	1.452	0.81	0.84	1.441	0.82	
	Probit Parameters	Wave 1	CP_1	0.5	0.618	0.118	0.236	0.099	0.055	0.027	0.51	0.726	0.42	0.51	0.724	0.44
			CP_2	0.5	0.382	-0.118	-0.236	0.099	0.055	0.027	0.274	0.49	0.42	0.276	0.49	0.44
Wave 2		γ_{01}	NA	-0.603	NA	NA	0.352	0.205	NA	-1.022	-0.219	NA	-1.001	-0.21	NA	
		γ_{x1}	NA	-1.242	NA	NA	0.107	0.091	NA	-1.432	-1.074	NA	-1.422	-1.068	NA	
Wave 3		γ_{11}	NA	0.284	NA	NA	0.095	0.055	NA	0.181	0.398	NA	0.179	0.391	NA	
		γ_{02}	NA	-0.504	NA	NA	0.376	0.189	NA	-0.895	-0.153	NA	-0.877	-0.147	NA	
Wave 4		γ_{x2}	NA	-1.188	NA	NA	0.112	0.085	NA	-1.365	-1.031	NA	-1.355	-1.025	NA	
		γ_{12}	NA	0.25	NA	NA	0.104	0.051	NA	0.156	0.357	NA	0.154	0.351	NA	
Wave 3		γ_{03}	NA	-0.417	NA	NA	0.326	0.177	NA	-0.777	-0.085	NA	-0.761	-0.078	NA	
		γ_{x3}	NA	-1.169	NA	NA	0.098	0.081	NA	-1.336	-1.02	NA	-1.329	-1.015	NA	
Wave 4		γ_{13}	NA	0.228	NA	NA	0.088	0.048	NA	0.139	0.328	NA	0.137	0.323	NA	
		γ_{04}	NA	-0.448	NA	NA	0.342	0.181	NA	-0.817	-0.107	NA	-0.804	-0.103	NA	
df		γ_{x4}	NA	-1.19	NA	NA	0.105	0.083	NA	-1.362	-1.035	NA	-1.355	-1.031	NA	
		γ_{14}	NA	0.237	NA	NA	0.093	0.049	NA	0.145	0.338	NA	0.143	0.333	NA	
df		df_{y1}	5	6.866	1.866	0.373	2.498	2.123	15.436	3.989	12.177	0.87	3.751	11.259	0.9	
		df_{y2}	5	7.337	2.337	0.467	3.085	2.429	22.588	3.886	12.884	0.85	3.716	12.172	0.88	
		$df_{\eta1}$	$+\infty$	55.413	NA	NA	9.998	24.28	NA	15.61	97.261	NA	17.586	96.886	NA	
		$df_{\eta2}$	$+\infty$	54.75	NA	NA	8.062	24.656	NA	14.526	97.239	NA	16.151	96.962	NA	

Note:

1. Results are summarized based on 100 converged replications with a convergence rate of $100/108 \approx 92.59\%$.
2. Abbreviations are as given in Table 1.

Table 13: SUMMARY OF NT-XI MODEL (N=1500, CLASS SEPARATION=2.7)

				BIAS		SE		CI ($\alpha=0.05$)			HPD ($\alpha=0.05$)					
	para.	true	est.	smp.	rel.	emp.	avg.	MSE	lower	upper	cover	lower	upper	cover		
Growth Curve Parameters	Class 1	I	5	4.496	-0.504	-0.101	0.538	0.204	0.593	4.107	4.895	0.5	4.115	4.88	0.5	
		S	3	2.762	-0.238	-0.079	0.109	0.101	0.08	2.565	2.963	0.34	2.564	2.961	0.33	
		var(I)	1	2.31	1.31	1.31	1.318	0.55	3.825	1.373	3.494	0.49	1.345	3.371	0.51	
		var(S)	4	3.152	-0.848	-0.212	0.378	0.27	0.939	2.64	3.7	0.21	2.626	3.682	0.2	
		cov(IS)	0	0.594	0.594	0.594	0.449	0.235	0.612	0.141	1.062	0.39	0.14	1.056	0.38	
		var(e)	1	2.141	1.141	1.141	1.094	0.184	2.601	1.814	2.526	0.02	1.797	2.491	0.02	
	Class 2	I	1	1.092	0.092	0.092	0.782	0.206	0.672	0.702	1.506	0.61	0.7	1.482	0.59	
		S	3	2.57	-0.43	-0.143	0.204	0.187	0.268	2.194	2.931	0.34	2.202	2.934	0.36	
		var(I)	1	0.973	-0.027	-0.027	1.045	0.334	1.273	0.46	1.751	0.63	0.422	1.613	0.54	
		var(S)	4	3.306	-0.694	-0.174	0.49	0.439	0.948	2.506	4.228	0.63	2.469	4.169	0.56	
		cov(IS)	0	0.218	0.218	0.218	0.431	0.241	0.3	-0.271	0.682	0.75	-0.259	0.687	0.76	
		var(e)	1	1.781	0.781	0.781	1.704	0.268	3.872	1.294	2.322	0.43	1.282	2.269	0.4	
	Probit Parameters	Wave 1	CP_1	0.5	0.671	0.171	0.342	0.159	0.053	0.058	0.569	0.773	0.22	0.573	0.772	0.22
			CP_2	0.5	0.329	-0.171	-0.342	0.159	0.053	0.058	0.227	0.431	0.22	0.228	0.427	0.22
Wave 2		γ_{01}	NA	-0.633	NA	NA	0.324	0.171	NA	-0.983	-0.314	NA	-0.966	-0.307	NA	
		γ_{x1}	NA	-1.234	NA	NA	0.093	0.075	NA	-1.388	-1.095	NA	-1.381	-1.091	NA	
		γ_{I1}	NA	0.29	NA	NA	0.087	0.046	NA	0.205	0.385	NA	0.203	0.381	NA	
		γ_{02}	NA	-0.487	NA	NA	0.298	0.152	NA	-0.8	-0.2	NA	-0.786	-0.195	NA	
Wave 3		γ_{x2}	NA	-1.196	NA	NA	0.095	0.069	NA	-1.337	-1.067	NA	-1.332	-1.063	NA	
		γ_{I2}	NA	0.248	NA	NA	0.083	0.041	NA	0.172	0.334	NA	0.17	0.33	NA	
		γ_{03}	NA	-0.409	NA	NA	0.301	0.143	NA	-0.696	-0.136	NA	-0.686	-0.133	NA	
		γ_{x3}	NA	-1.171	NA	NA	0.09	0.066	NA	-1.305	-1.047	NA	-1.3	-1.044	NA	
Wave 4		γ_{I3}	NA	0.226	NA	NA	0.084	0.039	NA	0.153	0.304	NA	0.151	0.301	NA	
		γ_{04}	NA	-0.423	NA	NA	0.266	0.144	NA	-0.718	-0.151	NA	-0.704	-0.146	NA	
		γ_{x4}	NA	-1.18	NA	NA	0.085	0.067	NA	-1.316	-1.054	NA	-1.311	-1.051	NA	
		γ_{I4}	NA	0.23	NA	NA	0.075	0.039	NA	0.157	0.311	NA	0.155	0.306	NA	
df		df_{η_1}	$+\infty$	54.559	NA	NA	15.154	21.98	NA	18.629	93.369	NA	20.193	92.186	NA	
		df_{η_2}	$+\infty$	56.708	NA	NA	10.967	23.605	NA	17.22	96.334	NA	19.595	96.391	NA	

Note:

1. Results are summarized based on 100 converged replications with a convergence rate of $100/106 \approx 94.34\%$.
2. Abbreviations are as given in Table 1.

Table 14: SUMMARY OF NT-XI MODEL (N=1000, CLASS SEPARATION=2.7)

				BIAS		SE		CI ($\alpha=0.05$)			HPD ($\alpha=0.05$)				
	para.	true	est.	smp.	rel.	emp.	avg.	MSE	lower	upper	cover	lower	upper	cover	
Growth Curve Parameters	Class 1	I	5	4.449	-0.551	-0.11	0.595	0.231	0.732	4.015	4.917	0.52	4.019	4.893	0.53
		S	3	2.768	-0.232	-0.077	0.177	0.135	0.106	2.507	3.041	0.46	2.506	3.038	0.46
		var(I)	1	2.41	1.41	1.41	1.511	0.63	4.923	1.424	3.841	0.52	1.355	3.629	0.54
		var(S)	4	3.113	-0.887	-0.222	0.49	0.352	1.165	2.467	3.849	0.37	2.44	3.807	0.37
		cov(IS)	0	0.63	0.63	0.63	0.589	0.297	0.849	0.062	1.228	0.45	0.062	1.217	0.44
		var(e)	1	2.26	1.26	1.26	1.719	0.307	5.127	1.785	2.981	0.11	1.754	2.866	0.11
	Class 2	I	1	1.439	0.439	0.439	1.034	0.232	1.318	0.995	1.899	0.58	0.991	1.882	0.56
		S	3	2.584	-0.416	-0.139	0.236	0.206	0.278	2.17	2.983	0.4	2.177	2.984	0.38
		var(I)	1	1.374	0.374	0.374	1.381	0.414	2.265	0.732	2.324	0.61	0.667	2.175	0.56
		var(S)	4	3.193	-0.807	-0.202	0.547	0.493	1.228	2.3	4.238	0.56	2.259	4.168	0.52
		cov(IS)	0	0.419	0.419	0.419	0.694	0.291	0.751	-0.155	0.992	0.7	-0.151	0.989	0.7
		var(e)	1	2.085	1.085	1.085	1.772	0.285	4.48	1.592	2.702	0.38	1.564	2.639	0.35
	Probit Parameters	CP_1	0.5	0.631	0.131	0.263	0.171	0.06	0.051	0.515	0.747	0.36	0.519	0.748	0.35
			0.5	0.369	-0.131	-0.263	0.171	0.06	0.051	0.253	0.485	0.36	0.252	0.481	0.35
Wave 1		γ_{01}	NA	-0.691	NA	NA	0.389	0.216	NA	-1.15	-0.301	NA	-1.118	-0.284	NA
		γ_{x1}	NA	-1.27	NA	NA	0.121	0.096	NA	-1.47	-1.095	NA	-1.459	-1.088	NA
		γ_{I1}	NA	0.312	NA	NA	0.113	0.059	NA	0.206	0.439	NA	0.201	0.43	NA
		γ_{02}	NA	-0.566	NA	NA	0.393	0.193	NA	-0.968	-0.213	NA	-0.947	-0.204	NA
Wave 2		γ_{x2}	NA	-1.207	NA	NA	0.118	0.087	NA	-1.387	-1.046	NA	-1.379	-1.041	NA
		γ_{I2}	NA	0.271	NA	NA	0.112	0.053	NA	0.175	0.383	NA	0.171	0.376	NA
Wave 3		γ_{03}	NA	-0.489	NA	NA	0.355	0.185	NA	-0.866	-0.144	NA	-0.851	-0.137	NA
		γ_{x3}	NA	-1.19	NA	NA	0.108	0.083	NA	-1.362	-1.036	NA	-1.356	-1.032	NA
		γ_{I3}	NA	0.251	NA	NA	0.1	0.051	NA	0.157	0.356	NA	0.155	0.352	NA
Wave 4		γ_{04}	NA	-0.521	NA	NA	0.387	0.186	NA	-0.908	-0.175	NA	-0.887	-0.166	NA
		γ_{x4}	NA	-1.217	NA	NA	0.131	0.087	NA	-1.397	-1.056	NA	-1.389	-1.051	NA
		γ_{I4}	NA	0.26	NA	NA	0.113	0.052	NA	0.166	0.369	NA	0.164	0.364	NA
df		df_{η_1}	$+\infty$	54.498	NA	NA	13.404	23.145	NA	16.586	94.867	NA	18.427	93.849	NA
		df_{η_2}	$+\infty$	55.325	NA	NA	10.413	24.627	NA	14.452	96.959	NA	16.198	96.597	NA

Note:

1. Results are summarized based on 100 converged replications with a convergence rate of $100/111 \approx 90.09\%$.
2. Abbreviations are as given in Table 1.

Table 15: SUMMARY OF NN-XI MODEL (N=1500, CLASS SEPARATION=2.7)

				BIAS		SE		CI ($\alpha=0.05$)			HPD ($\alpha=0.05$)					
para.		true	est.	smp.	rel.	emp.	avg.	MSE	lower	upper	cover	lower	upper	cover		
Growth Curve Parameters	Class 1	I	5	4.463	-0.537	-0.107	0.595	0.203	0.69	4.085	4.85	0.46	4.086	4.831	0.44	
		S	3	2.755	-0.245	-0.082	0.102	0.102	0.082	2.557	2.958	0.28	2.555	2.955	0.28	
		var(I)	1	2.516	1.516	1.516	1.51	0.543	4.95	1.63	3.643	0.5	1.604	3.547	0.52	
		var(S)	4	3.357	-0.643	-0.161	0.338	0.262	0.601	2.872	3.899	0.35	2.854	3.875	0.34	
		cov(IS)	0	0.584	0.584	0.584	0.431	0.236	0.584	0.122	1.049	0.43	0.122	1.045	0.42	
		var(e)	1	1.986	0.986	0.986	0.924	0.155	1.884	1.714	2.32	0.06	1.701	2.294	0.05	
	Class 2	I	1	1.226	0.226	0.226	0.916	0.217	0.946	0.826	1.662	0.54	0.818	1.647	0.53	
		S	3	2.603	-0.397	-0.132	0.243	0.197	0.264	2.205	2.984	0.35	2.21	2.983	0.38	
		var(I)	1	1.146	0.146	0.146	1.123	0.405	1.632	0.554	2.105	0.62	0.494	1.938	0.56	
		var(S)	4	3.366	-0.634	-0.159	0.628	0.453	1.041	2.537	4.325	0.7	2.498	4.261	0.65	
		cov(IS)	0	0.345	0.345	0.345	0.61	0.278	0.591	-0.195	0.896	0.71	-0.191	0.889	0.69	
		var(e)	1	2.137	1.137	1.137	2.187	0.323	6.429	1.588	2.822	0.4	1.556	2.76	0.38	
	Probit Parameters	Wave 1	CP_1	0.5	0.678	0.178	0.355	0.163	0.052	0.061	0.577	0.774	0.3	0.582	0.774	0.27
			CP_2	0.5	0.322	-0.178	-0.355	0.163	0.052	0.061	0.226	0.423	0.3	0.226	0.418	0.27
Wave 2		γ_{01}	NA	-0.63	NA	NA	0.309	0.173	NA	-0.991	-0.313	NA	-0.968	-0.303	NA	
		γ_{x1}	NA	-1.235	NA	NA	0.092	0.075	NA	-1.391	-1.096	NA	-1.384	-1.091	NA	
		γ_{I1}	NA	0.29	NA	NA	0.084	0.047	NA	0.205	0.388	NA	0.203	0.383	NA	
Wave 3		γ_{02}	NA	-0.489	NA	NA	0.291	0.154	NA	-0.805	-0.202	NA	-0.791	-0.196	NA	
		γ_{x2}	NA	-1.191	NA	NA	0.097	0.069	NA	-1.332	-1.062	NA	-1.327	-1.059	NA	
		γ_{I2}	NA	0.249	NA	NA	0.081	0.042	NA	0.171	0.335	NA	0.169	0.33	NA	
Wave 4		γ_{03}	NA	-0.41	NA	NA	0.298	0.144	NA	-0.703	-0.138	NA	-0.693	-0.135	NA	
		γ_{x3}	NA	-1.169	NA	NA	0.088	0.066	NA	-1.303	-1.046	NA	-1.299	-1.043	NA	
		γ_{I3}	NA	0.226	NA	NA	0.083	0.039	NA	0.153	0.306	NA	0.152	0.303	NA	
Wave 4		γ_{04}	NA	-0.418	NA	NA	0.269	0.145	NA	-0.716	-0.146	NA	-0.704	-0.142	NA	
		γ_{x4}	NA	-1.18	NA	NA	0.087	0.067	NA	-1.316	-1.055	NA	-1.312	-1.052	NA	
		γ_{I4}	NA	0.23	NA	NA	0.076	0.04	NA	0.157	0.312	NA	0.156	0.309	NA	

Note:

1. Results are summarized based on 100 converged replications with a convergence rate of $100/103 \approx 97.09\%$.
2. Abbreviations are as given in Table 1.

Table 16: SUMMARY OF NN-XI MODEL (N=1000, CLASS SEPARATION=2.7)

				BIAS		SE		CI ($\alpha=0.05$)			HPD ($\alpha=0.05$)					
para.		true	est.	smp.	rel.	emp.	avg.	MSE	lower	upper	cover	lower	upper	cover		
Growth Curve Parameters	Class 1	I	5	4.427	-0.573	-0.115	0.61	0.241	0.779	3.986	4.914	0.51	3.985	4.878	0.52	
		S	3	2.772	-0.228	-0.076	0.195	0.145	0.116	2.494	3.065	0.49	2.49	3.057	0.49	
		var(I)	1	2.653	1.653	1.653	1.756	0.75	6.987	1.556	4.38	0.48	1.474	4.098	0.52	
		var(S)	4	3.282	-0.718	-0.18	0.517	0.372	0.961	2.623	4.077	0.53	2.588	4.018	0.5	
		cov(IS)	0	0.738	0.738	0.738	0.779	0.342	1.331	0.105	1.453	0.44	0.095	1.415	0.44	
		var(e)	1	2.489	1.489	1.489	2.196	0.375	7.701	1.904	3.352	0.12	1.855	3.216	0.12	
	Class 2	I	1	1.545	0.545	0.545	1.065	0.26	1.532	1.05	2.056	0.57	1.046	2.034	0.57	
		S	3	2.589	-0.411	-0.137	0.234	0.212	0.279	2.173	3.007	0.41	2.175	3.002	0.41	
		var(I)	1	1.648	0.648	0.648	1.587	0.566	4.109	0.895	2.898	0.68	0.827	2.651	0.6	
		var(S)	4	3.341	-0.659	-0.165	0.598	0.499	1.091	2.444	4.393	0.66	2.398	4.314	0.63	
		cov(IS)	0	0.488	0.488	0.488	0.736	0.333	0.939	-0.148	1.149	0.67	-0.148	1.135	0.67	
		var(e)	1	2.281	1.281	1.281	2.286	0.435	8.107	1.641	3.275	0.36	1.609	3.133	0.31	
	Probit Parameters	Wave 1	CP_1	0.5	0.614	0.114	0.228	0.196	0.06	0.055	0.497	0.73	0.35	0.503	0.73	0.36
			CP_2	0.5	0.386	-0.114	-0.228	0.196	0.06	0.055	0.27	0.503	0.35	0.27	0.497	0.36
Wave 2		γ_{01}	NA	-0.699	NA	NA	0.384	0.211	NA	-1.14	-0.313	NA	-1.114	-0.301	NA	
		γ_{x1}	NA	-1.267	NA	NA	0.119	0.095	NA	-1.465	-1.093	NA	-1.455	-1.086	NA	
Wave 3		γ_{I1}	NA	0.315	NA	NA	0.112	0.058	NA	0.209	0.437	NA	0.207	0.43	NA	
		γ_{02}	NA	-0.586	NA	NA	0.421	0.197	NA	-0.996	-0.228	NA	-0.973	-0.218	NA	
Wave 4		γ_{x2}	NA	-1.209	NA	NA	0.123	0.088	NA	-1.391	-1.047	NA	-1.382	-1.042	NA	
		γ_{I2}	NA	0.277	NA	NA	0.12	0.054	NA	0.179	0.392	NA	0.176	0.385	NA	
Wave 3		γ_{03}	NA	-0.507	NA	NA	0.4	0.185	NA	-0.891	-0.164	NA	-0.87	-0.156	NA	
		γ_{x3}	NA	-1.193	NA	NA	0.113	0.084	NA	-1.366	-1.038	NA	-1.358	-1.032	NA	
Wave 4		γ_{I3}	NA	0.256	NA	NA	0.113	0.051	NA	0.163	0.364	NA	0.16	0.357	NA	
		γ_{04}	NA	-0.543	NA	NA	0.42	0.187	NA	-0.932	-0.197	NA	-0.906	-0.186	NA	
Wave 4		γ_{x4}	NA	-1.219	NA	NA	0.13	0.087	NA	-1.399	-1.058	NA	-1.39	-1.053	NA	
		γ_{I4}	NA	0.268	NA	NA	0.122	0.052	NA	0.173	0.377	NA	0.169	0.369	NA	

Note:

1. Results are summarized based on 100 converged replications with a convergence rate of $100/110 \approx 90.91\%$.
2. Abbreviations are as given in Table 1.

Table 17: SUMMARY OF TN-XY MODEL (N=1500, CLASS SEPARATION=2.7)

				BIAS		SE		CI ($\alpha=0.05$)			HPD ($\alpha=0.05$)					
	para.	true	est.	smp.	rel.	emp.	avg.	MSE	lower	upper	cover	lower	upper	cover		
Growth Curve Parameters	Class 1	I	5	5.068	0.068	0.014	0.141	0.151	0.049	4.755	5.35	0.922	4.769	5.36	0.922	
		S	3	2.995	-0.005	-0.002	0.095	0.107	0.02	2.786	3.207	0.987	2.785	3.205	0.987	
		var(I)	1	1.162	0.162	0.162	0.393	0.327	0.296	0.61	1.892	0.883	0.565	1.815	0.87	
		var(S)	4	3.964	-0.036	-0.009	0.291	0.3	0.176	3.411	4.588	0.974	3.389	4.56	0.987	
		cov(IS)	0	0.165	0.165	0.165	0.207	0.201	0.111	-0.232	0.56	0.844	-0.231	0.558	0.857	
		var(e)	1	1.074	0.074	0.074	0.099	0.109	0.027	0.873	1.296	0.922	0.867	1.287	0.935	
	Class 2	I	1	1.036	0.036	0.036	0.168	0.165	0.058	0.727	1.376	0.922	0.721	1.366	0.922	
		S	3	2.912	-0.088	-0.029	0.131	0.126	0.041	2.665	3.159	0.896	2.665	3.158	0.896	
		var(I)	1	0.926	-0.074	-0.074	0.263	0.282	0.157	0.444	1.548	0.935	0.408	1.487	0.922	
		var(S)	4	3.924	-0.076	-0.019	0.285	0.325	0.193	3.324	4.6	0.948	3.303	4.571	0.948	
		cov(IS)	0	0.111	0.111	0.111	0.19	0.194	0.086	-0.272	0.488	0.948	-0.269	0.489	0.948	
		var(e)	1	1.075	0.075	0.075	0.125	0.112	0.034	0.865	1.301	0.831	0.86	1.295	0.844	
	Probit Parameters	Wave 1	CP_1	0.5	0.567	0.067	0.134	0.041	0.04	0.008	0.489	0.645	0.571	0.489	0.644	0.597
			CP_2	0.5	0.433	-0.067	-0.134	0.041	0.04	0.008	0.355	0.511	0.571	0.356	0.511	0.597
Wave 2		γ_{01}	NA	-0.05	NA	NA	0.115	0.117	NA	-0.283	0.175	NA	-0.279	0.175	NA	
		γ_{x1}	NA	-1.098	NA	NA	0.063	0.057	NA	-1.212	-0.991	NA	-1.209	-0.989	NA	
		γ_{y1}	NA	0.117	NA	NA	0.029	0.028	NA	0.064	0.172	NA	0.064	0.171	NA	
Wave 3		γ_{02}	NA	-0.984	NA	NA	0.157	0.156	NA	-1.295	-0.685	NA	-1.286	-0.683	NA	
		γ_{x2}	NA	-1.278	NA	NA	0.08	0.071	NA	-1.422	-1.144	NA	-1.417	-1.14	NA	
		γ_{y2}	NA	0.218	NA	NA	0.024	0.022	NA	0.175	0.263	NA	0.175	0.262	NA	
Wave 4		γ_{03}	NA	-1.205	NA	NA	0.155	0.161	NA	-1.531	-0.896	NA	-1.521	-0.895	NA	
		γ_{x3}	NA	-1.387	NA	NA	0.09	0.079	NA	-1.547	-1.238	NA	-1.542	-1.236	NA	
		γ_{y3}	NA	0.179	NA	NA	0.017	0.017	NA	0.148	0.213	NA	0.147	0.212	NA	
Wave 4		γ_{04}	NA	-1.204	NA	NA	0.16	0.16	NA	-1.522	-0.896	NA	-1.517	-0.898	NA	
		γ_{x4}	NA	-1.419	NA	NA	0.083	0.082	NA	-1.585	-1.264	NA	-1.58	-1.261	NA	
		γ_{y4}	NA	0.137	NA	NA	0.013	0.013	NA	0.113	0.163	NA	0.113	0.162	NA	
df		df_{y1}	5	5.892	0.892	0.178	1.549	1.429	5.859	3.898	9.39	0.948	3.706	8.786	0.948	
		df_{y2}	5	6.345	1.345	0.269	2.152	1.705	10.429	3.993	10.402	0.831	3.787	9.84	0.909	

Note:

1. Results are summarized based on 77 converged replications with a convergence rate of $77/140 \approx 55\%$.
2. Abbreviations are as given in Table 1.

Table 18: SUMMARY OF TN-XY MODEL (N=1000, CLASS SEPARATION=2.7)

	para.	true	BIAS		SE		MSE	CI ($\alpha=0.05$)			HPD ($\alpha=0.05$)				
			est.	smpl.	rel.	emp.		avg.	lower	upper	cover	lower	upper	cover	
Growth Curve Parameters	Class 1	I	5	5.09	0.09	0.018	0.195	0.181	0.081	4.716	5.432	0.908	4.73	5.44	0.908
		S	3	2.981	-0.019	-0.006	0.145	0.138	0.041	2.714	3.257	0.961	2.713	3.253	0.947
		var(I)	1	1.083	0.083	0.083	0.519	0.384	0.439	0.467	1.959	0.895	0.406	1.84	0.882
		var(S)	4	3.947	-0.053	-0.013	0.424	0.376	0.324	3.261	4.736	0.934	3.232	4.697	0.934
		cov(IS)	0	0.192	0.192	0.192	0.259	0.245	0.164	-0.297	0.667	0.868	-0.291	0.67	0.868
		var(e)	1	1.153	0.153	0.153	0.166	0.137	0.07	0.902	1.432	0.737	0.894	1.421	0.75
	Class 2	I	1	1.067	0.067	0.067	0.258	0.21	0.119	0.686	1.512	0.882	0.669	1.485	0.882
		S	3	2.9	-0.1	-0.033	0.186	0.153	0.068	2.602	3.204	0.842	2.601	3.201	0.816
		var(I)	1	1.001	0.001	0.001	0.443	0.367	0.348	0.416	1.839	0.895	0.357	1.726	0.882
		var(S)	4	3.932	-0.068	-0.017	0.396	0.398	0.32	3.209	4.77	0.947	3.176	4.724	0.947
		cov(IS)	0	0.101	0.101	0.101	0.262	0.24	0.137	-0.376	0.569	0.934	-0.368	0.574	0.934
		var(e)	1	1.101	0.101	0.101	0.154	0.136	0.053	0.849	1.381	0.829	0.841	1.369	0.855
Probit Parameters	CP_1	0.5	0.56	0.06	0.12	0.058	0.049	0.01	0.461	0.655	0.737	0.463	0.655	0.75	
		0.5	0.44	-0.06	-0.12	0.058	0.049	0.01	0.345	0.539	0.737	0.345	0.537	0.75	
	Wave 1	γ_{01}	NA	-0.072	NA	NA	0.147	0.144	NA	-0.361	0.202	NA	-0.352	0.207	NA
		γ_{x1}	NA	-1.111	NA	NA	0.071	0.071	NA	-1.254	-0.978	NA	-1.25	-0.975	NA
		γ_{y1}	NA	0.12	NA	NA	0.037	0.034	NA	0.055	0.188	NA	0.055	0.186	NA
		γ_{02}	NA	-1.048	NA	NA	0.233	0.198	NA	-1.451	-0.675	NA	-1.436	-0.669	NA
	Wave 2	γ_{x2}	NA	-1.289	NA	NA	0.1	0.089	NA	-1.471	-1.122	NA	-1.464	-1.119	NA
		γ_{y2}	NA	0.225	NA	NA	0.036	0.029	NA	0.172	0.284	NA	0.171	0.282	NA
	Wave 3	γ_{03}	NA	-1.255	NA	NA	0.201	0.199	NA	-1.656	-0.877	NA	-1.648	-0.877	NA
		γ_{x3}	NA	-1.396	NA	NA	0.109	0.098	NA	-1.598	-1.213	NA	-1.59	-1.208	NA
		γ_{y3}	NA	0.185	NA	NA	0.022	0.021	NA	0.145	0.226	NA	0.145	0.225	NA
	Wave 4	γ_{04}	NA	-1.237	NA	NA	0.222	0.199	NA	-1.636	-0.857	NA	-1.628	-0.857	NA
		γ_{x4}	NA	-1.451	NA	NA	0.115	0.103	NA	-1.663	-1.257	NA	-1.654	-1.251	NA
		γ_{y4}	NA	0.141	NA	NA	0.019	0.016	NA	0.11	0.172	NA	0.11	0.171	NA
	df	df_{y1}	5	7.356	2.356	0.471	2.669	2.378	19.752	4.172	12.968	0.855	3.94	12.167	0.842
		df_{y2}	5	7.298	2.298	0.46	2.728	2.412	19.987	4.04	13.032	0.803	3.835	12.232	0.829

Note:

1. Results are summarized based on 76 converged replications with a convergence rate of $76/140 \approx 54.29\%$.
2. Abbreviations are as given in Table 1.

Table 19: SUMMARY OF TT-XY MODEL (N=1500, CLASS SEPARATION=2.7)

				BIAS		SE		CI ($\alpha=0.05$)			HPD ($\alpha=0.05$)					
	para.	true	est.	smp.	rel.	emp.	avg.	MSE	lower	upper	cover	lower	upper	cover		
Growth Curve Parameters	Class 1	I	5	5.066	0.066	0.013	0.154	0.143	0.049	4.779	5.34	0.905	4.785	5.343	0.905	
		S	3	2.996	-0.004	-0.001	0.095	0.107	0.02	2.787	3.207	1	2.787	3.206	1	
		var(I)	1	1.073	0.073	0.073	0.356	0.3	0.226	0.559	1.728	0.905	0.519	1.665	0.919	
		var(S)	4	3.874	-0.126	-0.032	0.291	0.311	0.197	3.294	4.515	0.932	3.276	4.491	0.932	
		cov(IS)	0	0.146	0.146	0.146	0.225	0.191	0.109	-0.233	0.519	0.784	-0.229	0.522	0.811	
		var(e)	1	1.089	0.089	0.089	0.11	0.11	0.032	0.884	1.312	0.892	0.879	1.305	0.905	
	Class 2	I	1	1.034	0.034	0.034	0.179	0.159	0.059	0.741	1.366	0.905	0.73	1.351	0.905	
		S	3	2.915	-0.085	-0.028	0.137	0.123	0.041	2.675	3.157	0.919	2.675	3.157	0.905	
		var(I)	1	0.912	-0.088	-0.088	0.249	0.271	0.145	0.452	1.507	0.946	0.416	1.449	0.905	
		var(S)	4	3.756	-0.244	-0.061	0.303	0.328	0.259	3.143	4.433	0.878	3.125	4.409	0.878	
		cov(IS)	0	0.085	0.085	0.085	0.214	0.187	0.088	-0.288	0.448	0.932	-0.283	0.45	0.919	
		var(e)	1	1.07	0.07	0.07	0.129	0.112	0.034	0.859	1.294	0.865	0.855	1.289	0.865	
	Probit Parameters	Wave 1	CP_1	0.5	0.564	0.064	0.128	0.041	0.038	0.007	0.488	0.637	0.581	0.489	0.638	0.581
			CP_2	0.5	0.436	-0.064	-0.128	0.041	0.038	0.007	0.363	0.512	0.581	0.362	0.511	0.581
Wave 2		γ_{01}	NA	-0.051	NA	NA	0.119	0.116	NA	-0.282	0.172	NA	-0.276	0.173	NA	
		γ_{x1}	NA	-1.107	NA	NA	0.068	0.057	NA	-1.222	-0.999	NA	-1.22	-0.997	NA	
		γ_{y1}	NA	0.119	NA	NA	0.032	0.027	NA	0.066	0.173	NA	0.065	0.172	NA	
		γ_{02}	NA	-0.991	NA	NA	0.162	0.155	NA	-1.302	-0.694	NA	-1.294	-0.692	NA	
Wave 3		γ_{x2}	NA	-1.276	NA	NA	0.084	0.071	NA	-1.419	-1.142	NA	-1.414	-1.139	NA	
		γ_{y2}	NA	0.217	NA	NA	0.024	0.022	NA	0.174	0.262	NA	0.173	0.26	NA	
		γ_{03}	NA	-1.2	NA	NA	0.149	0.16	NA	-1.52	-0.893	NA	-1.514	-0.894	NA	
		γ_{x3}	NA	-1.377	NA	NA	0.074	0.078	NA	-1.534	-1.229	NA	-1.531	-1.228	NA	
Wave 4		γ_{y3}	NA	0.178	NA	NA	0.015	0.016	NA	0.146	0.211	NA	0.146	0.21	NA	
		γ_{04}	NA	-1.228	NA	NA	0.173	0.161	NA	-1.554	-0.922	NA	-1.543	-0.92	NA	
		γ_{x4}	NA	-1.426	NA	NA	0.083	0.083	NA	-1.595	-1.27	NA	-1.589	-1.268	NA	
		γ_{y4}	NA	0.139	NA	NA	0.014	0.013	NA	0.115	0.165	NA	0.115	0.164	NA	
df		df_{y1}	5	6.056	1.056	0.211	1.746	1.486	6.998	3.953	9.686	0.946	3.761	9.079	0.946	
		df_{y2}	5	6.448	1.448	0.29	2.052	1.783	10.483	3.986	10.896	0.824	3.747	10.19	0.932	
		df_{η_1}	$+\infty$	58.903	NA	NA	10.672	22.438	NA	21.416	97.36	NA	23.392	97.098	NA	
		df_{η_2}	$+\infty$	60.037	NA	NA	7.446	22.974	NA	20.55	97.769	NA	22.986	98.232	NA	

Note:

1. Results are summarized based on 74 converged replications with a convergence rate of $74/140 \approx 52.86\%$.
2. Abbreviations are as given in Table 1.

Table 20: SUMMARY OF TT-XY MODEL (N=1000, CLASS SEPARATION=2.7)

				BIAS		SE		CI ($\alpha=0.05$)			HPD ($\alpha=0.05$)				
	para.	true	est.	smpl.	rel.	emp.	avg.	MSE	lower	upper	cover	lower	upper	cover	
Growth Curve Parameters	Class 1	I	5	5.083	0.083	0.017	0.168	0.177	0.068	4.711	5.41	0.929	4.73	5.422	0.917
		S	3	2.979	-0.021	-0.007	0.136	0.132	0.036	2.722	3.241	0.917	2.722	3.239	0.917
		var(I)	1	1.079	0.079	0.079	0.441	0.378	0.358	0.484	1.961	0.952	0.419	1.829	0.94
		var(S)	4	3.753	-0.247	-0.062	0.389	0.382	0.359	3.045	4.545	0.869	3.02	4.512	0.833
		cov(IS)	0	0.178	0.178	0.178	0.275	0.234	0.162	-0.284	0.639	0.81	-0.281	0.641	0.81
	var(e)	1	1.101	0.101	0.101	0.164	0.133	0.055	0.855	1.372	0.857	0.848	1.363	0.845	
	Class 2	I	1	1.056	0.056	0.056	0.203	0.198	0.086	0.686	1.461	0.94	0.675	1.445	0.94
		S	3	2.908	-0.092	-0.031	0.165	0.153	0.059	2.606	3.207	0.857	2.608	3.207	0.845
		var(I)	1	0.934	-0.066	-0.066	0.361	0.338	0.257	0.383	1.692	0.929	0.332	1.596	0.869
		var(S)	4	3.771	-0.229	-0.057	0.415	0.411	0.394	3.008	4.625	0.893	2.981	4.587	0.893
cov(IS)		0	0.105	0.105	0.105	0.26	0.231	0.133	-0.357	0.556	0.905	-0.352	0.558	0.905	
	var(e)	1	1.129	0.129	0.129	0.17	0.14	0.065	0.871	1.416	0.786	0.863	1.405	0.762	
Probit Parameters	CP_1	0.5	0.561	0.061	0.122	0.045	0.047	0.008	0.468	0.655	0.762	0.468	0.653	0.774	
		0.5	0.439	-0.061	-0.122	0.045	0.047	0.008	0.345	0.532	0.762	0.347	0.532	0.774	
	Wave 1	γ_{01}	NA	-0.075	NA	NA	0.145	0.143	NA	-0.362	0.199	NA	-0.353	0.202	NA
		γ_{x1}	NA	-1.107	NA	NA	0.074	0.07	NA	-1.249	-0.974	NA	-1.245	-0.971	NA
		γ_{y1}	NA	0.122	NA	NA	0.035	0.034	NA	0.056	0.189	NA	0.056	0.187	NA
		γ_{02}	NA	-1.045	NA	NA	0.216	0.194	NA	-1.438	-0.677	NA	-1.425	-0.673	NA
	Wave 2	γ_{x2}	NA	-1.291	NA	NA	0.103	0.089	NA	-1.472	-1.124	NA	-1.465	-1.12	NA
		γ_{y2}	NA	0.226	NA	NA	0.033	0.028	NA	0.173	0.283	NA	0.172	0.281	NA
	Wave 3	γ_{03}	NA	-1.25	NA	NA	0.194	0.194	NA	-1.643	-0.879	NA	-1.632	-0.878	NA
		γ_{x3}	NA	-1.389	NA	NA	0.104	0.097	NA	-1.587	-1.207	NA	-1.58	-1.203	NA
		γ_{y3}	NA	0.183	NA	NA	0.021	0.02	NA	0.145	0.224	NA	0.145	0.223	NA
	Wave 4	γ_{04}	NA	-1.263	NA	NA	0.18	0.199	NA	-1.664	-0.884	NA	-1.652	-0.882	NA
		γ_{x4}	NA	-1.441	NA	NA	0.109	0.103	NA	-1.652	-1.248	NA	-1.643	-1.243	NA
		γ_{y4}	NA	0.142	NA	NA	0.015	0.016	NA	0.112	0.174	NA	0.112	0.173	NA
	df	df_{y1}	5	6.923	1.923	0.385	2.595	2.244	16.881	3.923	12.351	0.845	3.688	11.527	0.869
		df_{y2}	5	7.215	2.215	0.443	2.673	2.36	18.759	3.995	12.925	0.845	3.759	12.016	0.881
		df_{η_1}	$+\infty$	55.45	NA	NA	9.599	24.27	NA	15.894	97.304	NA	17.642	96.752	NA
		df_{η_2}	$+\infty$	55.499	NA	NA	9.19	24.298	NA	15.791	97.427	NA	17.577	97.275	NA

Note:

1. Results are summarized based on 84 converged replications with a convergence rate of $84/140 \approx 60\%$.
2. Abbreviations are as given in Table 1.

Table 21: SUMMARY OF NT-XY MODEL (N=1500, CLASS SEPARATION=2.7)

				BIAS		SE		CI ($\alpha=0.05$)			HPD ($\alpha=0.05$)				
		para.	true	est.	smpl.	rel.	emp.	avg.	MSE	lower	upper	cover	lower	upper	cover
Growth Curve Parameters	Class 1	I	5	4.977	-0.023	-0.005	0.391	0.202	0.239	4.597	5.392	0.78	4.601	5.37	0.78
		S	3	3.012	0.012	0.004	0.163	0.14	0.067	2.748	3.3	0.963	2.744	3.292	0.963
		var(I)	1	1.445	0.445	0.445	1.632	0.615	6.606	0.652	2.976	0.817	0.595	2.624	0.793
		var(S)	4	3.747	-0.253	-0.063	0.368	0.395	0.515	3.038	4.582	0.89	3.011	4.507	0.878
		cov(IS)	0	0.247	0.247	0.247	0.475	0.284	0.56	-0.304	0.82	0.854	-0.311	0.805	0.854
		var(e)	1	2.165	1.165	1.165	2.541	0.306	8.82	1.727	2.896	0.024	1.696	2.793	0.024
	Class 2	I	1	1.169	0.169	0.169	0.562	0.186	0.386	0.833	1.555	0.829	0.823	1.539	0.829
		S	3	2.909	-0.091	-0.03	0.183	0.139	0.064	2.637	3.182	0.866	2.638	3.181	0.854
		var(I)	1	1.096	0.096	0.096	1.018	0.329	1.199	0.575	1.833	0.805	0.528	1.747	0.793
		var(S)	4	3.743	-0.257	-0.064	0.393	0.372	0.381	3.058	4.518	0.866	3.031	4.478	0.866
		cov(IS)	0	0.106	0.106	0.106	0.255	0.216	0.134	-0.327	0.523	0.89	-0.322	0.527	0.89
		var(e)	1	1.713	0.713	0.713	0.606	0.142	0.922	1.456	2.009	0.085	1.448	1.989	0.073
Probit Parameters	Wave 1	CP_1	0.5	0.56	0.06	0.12	0.132	0.044	0.023	0.471	0.644	0.549	0.474	0.644	0.561
		CP_2	0.5	0.44	-0.06	-0.12	0.132	0.044	0.023	0.356	0.529	0.549	0.356	0.526	0.561
	Wave 2	γ_{01}	NA	-0.059	NA	NA	0.124	0.117	NA	-0.295	0.167	NA	-0.288	0.169	NA
		γ_{x1}	NA	-1.109	NA	NA	0.065	0.057	NA	-1.225	-1	NA	-1.221	-0.998	NA
	Wave 3	γ_{y1}	NA	0.119	NA	NA	0.032	0.028	NA	0.065	0.174	NA	0.065	0.173	NA
		γ_{02}	NA	-0.977	NA	NA	0.155	0.155	NA	-1.29	-0.682	NA	-1.281	-0.679	NA
	Wave 4	γ_{x2}	NA	-1.286	NA	NA	0.079	0.071	NA	-1.43	-1.15	NA	-1.426	-1.148	NA
		γ_{y2}	NA	0.216	NA	NA	0.024	0.022	NA	0.174	0.261	NA	0.174	0.26	NA
	Wave 4	γ_{03}	NA	-1.206	NA	NA	0.161	0.158	NA	-1.526	-0.906	NA	-1.516	-0.903	NA
		γ_{x3}	NA	-1.376	NA	NA	0.077	0.078	NA	-1.534	-1.229	NA	-1.529	-1.225	NA
		γ_{y3}	NA	0.178	NA	NA	0.017	0.016	NA	0.147	0.211	NA	0.147	0.21	NA
		γ_{04}	NA	-1.242	NA	NA	0.165	0.162	NA	-1.572	-0.934	NA	-1.558	-0.929	NA
	df	df_{η_1}	$+\infty$	56.469	NA	NA	13.697	22.453	NA	18.985	95.053	NA	20.556	94.44	NA
		df_{η_2}	$+\infty$	55.479	NA	NA	14.783	22.347	NA	19.03	94.444	NA	20.786	93.416	NA

Note:

1. Results are summarized based on 82 converged replications with a convergence rate of $82/140 \approx 58.57\%$.
2. Abbreviations are as given in Table 1.

Table 22: SUMMARY OF NT-XY MODEL (N=1000, CLASS SEPARATION=2.7)

				BIAS		SE		CI ($\alpha=0.05$)			HPD ($\alpha=0.05$)					
		para.	true	est.	smp.	rel.	emp.	avg.	MSE	lower	upper	cover	lower	upper	cover	
Growth Curve Parameters	Class 1	I	5	4.841	-0.159	-0.032	0.545	0.267	0.461	4.367	5.404	0.771	4.358	5.355	0.757	
		S	3	2.998	-0.002	-0.001	0.199	0.167	0.089	2.682	3.336	0.886	2.679	3.33	0.914	
		var(I)	1	1.757	0.757	0.757	1.488	0.619	3.592	0.879	3.133	0.814	0.809	2.89	0.771	
		var(S)	4	3.736	-0.264	-0.066	0.418	0.498	0.833	2.938	4.791	0.886	2.899	4.667	0.886	
		cov(IS)	0	0.25	0.25	0.25	0.397	0.333	0.477	-0.408	0.88	0.814	-0.394	0.881	0.814	
		var(e)	1	2.189	1.189	1.189	2.498	0.437	10.73	1.607	3.275	0.071	1.571	3.061	0.071	
	Class 2	I	1	1.316	0.316	0.316	0.753	0.299	0.822	0.773	1.916	0.829	0.761	1.885	0.843	
		S	3	2.9	-0.1	-0.033	0.234	0.247	0.194	2.457	3.419	0.857	2.446	3.387	0.871	
		var(I)	1	1.279	0.279	0.279	1.206	0.668	3.059	0.55	2.665	0.843	0.478	2.368	0.8	
		var(S)	4	3.68	-0.32	-0.08	0.5	0.704	1.593	2.62	5.114	0.929	2.569	4.908	0.929	
		cov(IS)	0	0.153	0.153	0.153	0.355	0.445	0.722	-0.683	0.897	0.9	-0.637	0.911	0.9	
		var(e)	1	2.468	1.468	1.468	2.945	0.811	17.518	1.654	4.125	0.114	1.584	3.722	0.1	
	Probit Parameters	Wave 1	CP_1	0.5	0.585	0.085	0.17	0.172	0.056	0.04	0.473	0.689	0.6	0.481	0.69	0.629
			CP_2	0.5	0.415	-0.085	-0.17	0.172	0.056	0.04	0.311	0.527	0.6	0.31	0.519	0.629
Wave 2		γ_{01}	NA	-0.099	NA	NA	0.165	0.147	NA	-0.397	0.179	NA	-0.387	0.184	NA	
		γ_{x1}	NA	-1.107	NA	NA	0.067	0.07	NA	-1.25	-0.974	NA	-1.245	-0.97	NA	
		γ_{y1}	NA	0.126	NA	NA	0.038	0.034	NA	0.06	0.195	NA	0.06	0.193	NA	
		γ_{02}	NA	-1.072	NA	NA	0.244	0.196	NA	-1.469	-0.699	NA	-1.456	-0.695	NA	
Wave 3		γ_{x2}	NA	-1.292	NA	NA	0.101	0.088	NA	-1.472	-1.126	NA	-1.466	-1.122	NA	
		γ_{y2}	NA	0.228	NA	NA	0.036	0.028	NA	0.174	0.285	NA	0.174	0.283	NA	
		γ_{03}	NA	-1.272	NA	NA	0.197	0.199	NA	-1.673	-0.892	NA	-1.663	-0.892	NA	
		γ_{x3}	NA	-1.395	NA	NA	0.097	0.098	NA	-1.594	-1.212	NA	-1.587	-1.208	NA	
Wave 4		γ_{y3}	NA	0.185	NA	NA	0.021	0.021	NA	0.146	0.227	NA	0.146	0.226	NA	
		γ_{04}	NA	-1.228	NA	NA	0.194	0.198	NA	-1.632	-0.855	NA	-1.621	-0.852	NA	
		γ_{x4}	NA	-1.44	NA	NA	0.12	0.103	NA	-1.651	-1.247	NA	-1.643	-1.243	NA	
		γ_{y4}	NA	0.14	NA	NA	0.016	0.016	NA	0.11	0.172	NA	0.11	0.171	NA	
df		df_{η_1}	$+\infty$	55.908	NA	NA	13.808	23.184	NA	17.238	95.355	NA	19.556	94.91	NA	
		df_{η_2}	$+\infty$	54.604	NA	NA	10.726	24.831	NA	13.368	96.517	NA	15.44	96.127	NA	

Note:

1. Results are summarized based on 70 converged replications with a convergence rate of $70/140 = 50\%$.
2. Abbreviations are as given in Table 1.

Table 23: SUMMARY OF NN-XY MODEL (N=1500, CLASS SEPARATION=2.7)

				BIAS		SE		CI ($\alpha=0.05$)			HPD ($\alpha=0.05$)					
para.		true	est.	smp.	rel.	emp.	avg.	MSE	lower	upper	cover	lower	upper	cover		
Growth Curve Parameters	Class 1	I	5	4.999	-0.001	0	0.439	0.17	0.224	4.665	5.33	0.771	4.669	5.327	0.759	
		S	3	2.987	-0.013	-0.004	0.117	0.127	0.037	2.741	3.243	0.976	2.738	3.235	0.976	
		var(I)	1	1.355	0.355	0.355	1.166	0.401	1.746	0.71	2.253	0.819	0.66	2.141	0.771	
		var(S)	4	3.95	-0.05	-0.013	0.311	0.355	0.294	3.313	4.692	0.976	3.284	4.643	0.988	
		cov(IS)	0	0.202	0.202	0.202	0.324	0.243	0.237	-0.279	0.676	0.819	-0.274	0.678	0.795	
		var(e)	1	1.835	0.835	0.835	0.828	0.159	1.479	1.555	2.176	0.036	1.54	2.146	0.036	
	Class 2	I	1	1.22	0.22	0.22	0.595	0.191	0.444	0.86	1.616	0.783	0.854	1.603	0.783	
		S	3	2.925	-0.075	-0.025	0.163	0.14	0.057	2.65	3.202	0.867	2.65	3.2	0.867	
		var(I)	1	1.242	0.242	0.242	1.11	0.361	1.471	0.663	2.067	0.795	0.612	1.955	0.831	
		var(S)	4	3.928	-0.072	-0.018	0.48	0.362	0.403	3.273	4.69	0.904	3.246	4.649	0.904	
		cov(IS)	0	0.103	0.103	0.103	0.259	0.235	0.153	-0.366	0.559	0.916	-0.358	0.564	0.904	
		var(e)	1	1.897	0.897	0.897	1.402	0.185	2.965	1.589	2.31	0.06	1.571	2.27	0.06	
	Probit Parameters	Wave 1	CP_1	0.5	0.553	0.053	0.106	0.135	0.041	0.023	0.471	0.633	0.602	0.472	0.633	0.566
			CP_2	0.5	0.447	-0.053	-0.106	0.135	0.041	0.023	0.367	0.529	0.602	0.367	0.528	0.566
Wave 2		γ_{01}	NA	-0.06	NA	NA	0.119	0.117	NA	-0.293	0.164	NA	-0.287	0.166	NA	
		γ_{x1}	NA	-1.114	NA	NA	0.06	0.058	NA	-1.23	-1.005	NA	-1.227	-1.002	NA	
Wave 3		γ_{y1}	NA	0.12	NA	NA	0.03	0.027	NA	0.067	0.175	NA	0.067	0.174	NA	
		γ_{02}	NA	-0.989	NA	NA	0.154	0.156	NA	-1.304	-0.691	NA	-1.293	-0.687	NA	
		γ_{x2}	NA	-1.285	NA	NA	0.08	0.071	NA	-1.43	-1.15	NA	-1.425	-1.147	NA	
		γ_{y2}	NA	0.218	NA	NA	0.023	0.023	NA	0.175	0.263	NA	0.174	0.262	NA	
Wave 4		γ_{03}	NA	-1.211	NA	NA	0.167	0.159	NA	-1.532	-0.908	NA	-1.521	-0.906	NA	
		γ_{x3}	NA	-1.376	NA	NA	0.084	0.078	NA	-1.534	-1.228	NA	-1.53	-1.226	NA	
		γ_{y3}	NA	0.179	NA	NA	0.018	0.016	NA	0.148	0.212	NA	0.148	0.211	NA	
		γ_{04}	NA	-1.22	NA	NA	0.165	0.161	NA	-1.546	-0.914	NA	-1.533	-0.909	NA	
		γ_{x4}	NA	-1.427	NA	NA	0.08	0.083	NA	-1.595	-1.271	NA	-1.591	-1.269	NA	
		γ_{y4}	NA	0.139	NA	NA	0.013	0.013	NA	0.115	0.165	NA	0.114	0.164	NA	

Note:

1. Results are summarized based on 83 converged replications with a convergence rate of $83/140 \approx 59.29\%$.
2. Abbreviations are as given in Table 1.

Table 24: SUMMARY OF NN-XY MODEL (N=1000, CLASS SEPARATION=2.7)

				BIAS		SE		CI ($\alpha=0.05$)			HPD ($\alpha=0.05$)					
		para.	true	est.	smp.	rel.	emp.	avg.	MSE	lower	upper	cover	lower	upper	cover	
Growth Curve Parameters	Class 1	I	5	4.978	-0.022	-0.004	0.443	0.227	0.263	4.52	5.403	0.789	4.53	5.4	0.789	
		S	3	2.953	-0.047	-0.016	0.161	0.162	0.063	2.635	3.272	0.944	2.639	3.268	0.915	
		var(I)	1	1.413	0.413	0.413	1.273	0.508	2.214	0.678	2.59	0.789	0.612	2.423	0.789	
		var(S)	4	3.98	-0.02	-0.005	0.453	0.441	0.485	3.195	4.92	0.944	3.157	4.854	0.944	
		cov(IS)	0	0.228	0.228	0.228	0.333	0.295	0.292	-0.352	0.822	0.845	-0.351	0.81	0.845	
		var(e)	1	1.772	0.772	0.772	0.98	0.201	1.742	1.437	2.207	0.028	1.422	2.149	0.028	
		I	1	1.247	0.247	0.247	0.605	0.274	0.527	0.752	1.816	0.817	0.736	1.785	0.831	
	S	3	2.92	-0.08	-0.027	0.165	0.188	0.082	2.549	3.291	0.901	2.548	3.287	0.887		
	var(I)	1	1.313	0.313	0.313	1.156	0.53	1.956	0.55	2.547	0.887	0.479	2.351	0.887		
	var(S)	4	3.93	-0.07	-0.018	0.597	0.509	0.787	3.01	5.008	0.93	2.979	4.918	0.93		
	cov(IS)	0	0.164	0.164	0.164	0.376	0.31	0.313	-0.445	0.777	0.944	-0.436	0.781	0.944		
	var(e)	1	1.99	0.99	0.99	1.671	0.255	4.089	1.552	2.547	0.127	1.532	2.491	0.099		
	Probit Parameters	Wave 1	CP_1	0.5	0.559	0.059	0.118	0.136	0.059	0.026	0.442	0.671	0.761	0.448	0.673	0.746
			CP_2	0.5	0.441	-0.059	-0.118	0.136	0.059	0.026	0.329	0.558	0.761	0.327	0.552	0.746
Wave 2		γ_{01}	NA	-0.07	NA	NA	0.144	0.145	NA	-0.362	0.207	NA	-0.355	0.209	NA	
		γ_{x1}	NA	-1.117	NA	NA	0.072	0.071	NA	-1.261	-0.982	NA	-1.257	-0.979	NA	
Wave 3		γ_{y1}	NA	0.124	NA	NA	0.034	0.034	NA	0.058	0.192	NA	0.059	0.191	NA	
		γ_{02}	NA	-1.043	NA	NA	0.235	0.194	NA	-1.434	-0.676	NA	-1.422	-0.671	NA	
Wave 4		γ_{x2}	NA	-1.289	NA	NA	0.099	0.089	NA	-1.47	-1.124	NA	-1.464	-1.12	NA	
		γ_{y2}	NA	0.226	NA	NA	0.036	0.028	NA	0.173	0.283	NA	0.173	0.282	NA	
Wave 3		γ_{03}	NA	-1.256	NA	NA	0.183	0.198	NA	-1.657	-0.88	NA	-1.644	-0.876	NA	
		γ_{x3}	NA	-1.395	NA	NA	0.109	0.098	NA	-1.595	-1.211	NA	-1.589	-1.207	NA	
Wave 4		γ_{y3}	NA	0.185	NA	NA	0.019	0.021	NA	0.146	0.226	NA	0.145	0.225	NA	
		γ_{04}	NA	-1.244	NA	NA	0.187	0.195	NA	-1.637	-0.873	NA	-1.629	-0.873	NA	
Wave 4		γ_{x4}	NA	-1.441	NA	NA	0.117	0.103	NA	-1.65	-1.249	NA	-1.643	-1.245	NA	
		γ_{y4}	NA	0.14	NA	NA	0.017	0.015	NA	0.111	0.171	NA	0.111	0.17	NA	

Note:

1. Results are summarized based on 71 converged replications with a convergence rate of $71/140 \approx 50.71\%$.
2. Abbreviations are as given in Table 1.

Table 25: SUMMARY OF TN-IGNORABLE MODEL (N=1500, CLASS SEPARATION=2.7)

				BIAS		SE		CI ($\alpha=0.05$)			HPD ($\alpha=0.05$)				
		para.	true	est.	smp.	rel.	emp.	avg.	MSE	lower	upper	cover	lower	upper	cover
Growth Curve Parameters	Class 1	I	5	4.968	-0.032	-0.006	0.19	0.16	0.064	4.64	5.269	0.93	4.651	5.276	0.93
		S	3	2.704	-0.296	-0.099	0.11	0.112	0.112	2.484	2.923	0.25	2.485	2.923	0.24
		var(I)	1	1.087	0.087	0.087	0.389	0.306	0.258	0.561	1.758	0.88	0.522	1.697	0.88
		var(S)	4	3.861	-0.139	-0.035	0.281	0.293	0.184	3.319	4.469	0.92	3.3	4.444	0.91
		cov(IS)	0	0.008	0.008	0.008	0.204	0.194	0.08	-0.381	0.383	0.96	-0.376	0.386	0.96
		var(e)	1	1.063	0.063	0.063	0.106	0.109	0.027	0.861	1.284	0.95	0.856	1.277	0.96
		I	1	1.001	0.001	0.001	0.183	0.16	0.06	0.703	1.33	0.92	0.695	1.318	0.94
	S	3	2.699	-0.301	-0.1	0.115	0.118	0.117	2.467	2.93	0.24	2.469	2.93	0.24	
	var(I)	1	0.982	-0.018	-0.018	0.29	0.289	0.171	0.492	1.619	0.95	0.454	1.556	0.94	
	var(S)	4	3.814	-0.186	-0.046	0.319	0.306	0.23	3.25	4.45	0.89	3.228	4.421	0.89	
	cov(IS)	0	0.02	0.02	0.02	0.206	0.193	0.08	-0.366	0.392	0.97	-0.361	0.395	0.97	
	var(e)	1	1.05	0.05	0.05	0.12	0.108	0.029	0.848	1.269	0.86	0.843	1.262	0.86	
	df	CP_1	0.5	0.516	0.016	0.032	0.044	0.041	0.004	0.436	0.596	0.92	0.437	0.595	0.93
		CP_2	0.5	0.484	-0.016	-0.032	0.044	0.041	0.004	0.404	0.564	0.92	0.405	0.563	0.93
df	df_{y1}	5	6.184	1.184	0.237	1.775	1.592	7.976	3.965	10.081	0.96	3.755	9.451	0.97	
	df_{y2}	5	6.326	1.326	0.265	2.396	1.62	11.138	4.019	10.19	0.89	3.861	9.612	0.9	

Note:

1. Results are summarized based on 100 converged replications with a convergence rate of $100/103 \approx 97.09\%$.
2. Abbreviations are as given in Table 1.

Table 26: SUMMARY OF TN-IGNORABLE MODEL (N=1000, CLASS SEPARATION=2.7)

				BIAS		SE		MSE	CI ($\alpha=0.05$)			HPD ($\alpha=0.05$)			
para.	true	est.	smp.	rel.	emp.	avg.	lower		upper	cover	lower	upper	cover		
Growth Curve Parameters	Class 1	I	5	4.977	-0.023	-0.005	0.199	0.196	0.081	4.567	5.341	0.96	4.587	5.355	0.96
		S	3	2.676	-0.324	-0.108	0.151	0.142	0.148	2.398	2.958	0.35	2.398	2.955	0.34
		var(I)	1	1.09	0.09	0.09	0.439	0.373	0.351	0.484	1.94	0.9	0.427	1.834	0.9
		var(S)	4	3.823	-0.177	-0.044	0.409	0.368	0.335	3.145	4.59	0.89	3.119	4.555	0.86
		cov(IS)	0	0.047	0.047	0.047	0.262	0.241	0.129	-0.438	0.51	0.91	-0.428	0.517	0.92
		var(e)	1	1.11	0.11	0.11	0.16	0.133	0.055	0.862	1.378	0.83	0.856	1.369	0.84
	Class 2	I	1	1.005	0.005	0.005	0.227	0.198	0.094	0.638	1.419	0.91	0.626	1.4	0.91
		S	3	2.689	-0.311	-0.104	0.147	0.145	0.139	2.405	2.975	0.4	2.405	2.974	0.4
		var(I)	1	1.002	0.002	0.002	0.434	0.364	0.335	0.42	1.835	0.91	0.362	1.724	0.87
		var(S)	4	3.845	-0.155	-0.039	0.358	0.379	0.296	3.152	4.64	0.94	3.12	4.597	0.93
		cov(IS)	0	0.026	0.026	0.026	0.252	0.238	0.121	-0.453	0.486	0.94	-0.446	0.49	0.94
		var(e)	1	1.092	0.092	0.092	0.166	0.132	0.054	0.846	1.359	0.82	0.84	1.351	0.81
		CP_1	0.5	0.511	0.011	0.022	0.055	0.05	0.006	0.411	0.61	0.89	0.412	0.609	0.89
		CP_2	0.5	0.489	-0.011	-0.022	0.055	0.05	0.006	0.39	0.589	0.89	0.391	0.588	0.89
df	df_{y1}	5	7.673	2.673	0.535	2.904	2.489	23.153	4.201	13.441	0.82	4.003	12.672	0.81	
	df_{y2}	5	7.054	2.054	0.411	2.786	2.129	17.859	4.006	11.998	0.88	3.847	11.307	0.88	

Note:

1. Results are summarized based on 100 converged replications with a convergence rate of $100/100 = 100\%$.
2. Abbreviations are as given in Table 1.

Table 27: SUMMARY OF TT-IGNORABLE MODEL (N=1500, CLASS SEPARATION=2.7)

				BIAS		SE		MSE	CI ($\alpha=0.05$)			HPD ($\alpha=0.05$)			
para.	true	est.	smp.	rel.	emp.	avg.	lower		upper	cover	lower	upper	cover		
Growth Curve Parameters	Class 1	I	5	4.968	-0.032	-0.006	0.196	0.158	0.065	4.647	5.268	0.9	4.657	5.274	0.88
		S	3	2.708	-0.292	-0.097	0.111	0.112	0.11	2.488	2.926	0.3	2.489	2.926	0.29
		var(I)	1	1.043	0.043	0.043	0.378	0.294	0.237	0.539	1.685	0.88	0.501	1.626	0.89
		var(S)	4	3.709	-0.291	-0.073	0.273	0.3	0.249	3.147	4.325	0.82	3.13	4.303	0.81
		cov(IS)	0	0.003	0.003	0.003	0.195	0.188	0.074	-0.373	0.365	0.95	-0.366	0.37	0.96
		var(e)	1	1.065	0.065	0.065	0.105	0.109	0.027	0.863	1.287	0.96	0.857	1.279	0.96
	Class 2	I	1	1.005	0.005	0.005	0.179	0.158	0.058	0.713	1.332	0.92	0.702	1.317	0.92
		S	3	2.694	-0.306	-0.102	0.116	0.117	0.121	2.463	2.923	0.19	2.465	2.923	0.21
		var(I)	1	0.95	-0.05	-0.05	0.268	0.283	0.157	0.475	1.574	0.93	0.436	1.51	0.93
		var(S)	4	3.652	-0.348	-0.087	0.305	0.31	0.311	3.071	4.289	0.79	3.054	4.266	0.78
		cov(IS)	0	0.016	0.016	0.016	0.196	0.187	0.074	-0.359	0.378	0.96	-0.352	0.383	0.96
		var(e)	1	1.054	0.054	0.054	0.123	0.107	0.03	0.853	1.272	0.88	0.848	1.264	0.87
		CP_1	0.5	0.515	0.015	0.031	0.044	0.04	0.004	0.435	0.594	0.91	0.437	0.594	0.91
		CP_2	0.5	0.485	-0.015	-0.031	0.044	0.04	0.004	0.406	0.565	0.91	0.406	0.563	0.91
df	df_{y1}	5	6.186	1.186	0.237	1.622	1.636	7.562	3.982	10.307	0.93	3.769	9.566	0.95	
	df_{y2}	5	6.416	1.416	0.283	2.344	1.641	11.12	4.068	10.372	0.85	3.883	9.688	0.9	
	$df_{\eta1}$	$+\infty$	60.087	NA	NA	7.716	22.794	NA	21.02	97.814	NA	22.994	97.996	NA	
	$df_{\eta2}$	$+\infty$	60.09	NA	NA	8.586	22.846	NA	20.75	97.726	NA	23.127	98.031	NA	

Note:

1. Results are summarized based on 100 converged replications with a convergence rate of $100/100 = 100\%$.
2. Abbreviations are as given in Table 1.

Table 28: SUMMARY OF TT-IGNORABLE MODEL (N=1000, CLASS SEPARATION=2.7)

				BIAS		SE		CI ($\alpha=0.05$)			HPD ($\alpha=0.05$)				
	para.	true	est.	smp.	rel.	emp.	avg.	MSE	lower	upper	cover	lower	upper	cover	
Growth Curve Parameters	Class 1	I	5	4.983	-0.017	-0.003	0.191	0.191	0.076	4.579	5.338	0.96	4.601	5.352	0.96
		S	3	2.683	-0.317	-0.106	0.152	0.142	0.144	2.406	2.964	0.36	2.407	2.963	0.34
		var(I)	1	1.036	0.036	0.036	0.398	0.357	0.296	0.454	1.852	0.92	0.399	1.747	0.91
		var(S)	4	3.671	-0.329	-0.082	0.384	0.374	0.397	2.974	4.443	0.83	2.954	4.415	0.8
		cov(IS)	0	0.039	0.039	0.039	0.251	0.233	0.119	-0.43	0.487	0.89	-0.422	0.493	0.91
	var(e)	1	1.115	0.115	0.115	0.155	0.132	0.055	0.867	1.383	0.82	0.86	1.374	0.8	
	Class 2	I	1	1.007	0.007	0.007	0.211	0.192	0.084	0.648	1.407	0.93	0.638	1.388	0.92
		S	3	2.683	-0.317	-0.106	0.147	0.144	0.143	2.399	2.965	0.4	2.401	2.965	0.39
		var(I)	1	0.968	-0.032	-0.032	0.401	0.346	0.294	0.408	1.755	0.88	0.351	1.645	0.87
		var(S)	4	3.677	-0.323	-0.081	0.355	0.385	0.379	2.961	4.476	0.91	2.941	4.445	0.89
cov(IS)		0	0.016	0.016	0.016	0.249	0.229	0.115	-0.445	0.457	0.94	-0.439	0.46	0.93	
	var(e)	1	1.092	0.092	0.092	0.17	0.134	0.056	0.845	1.365	0.83	0.837	1.354	0.84	
	CP_1	0.5	0.509	0.009	0.019	0.052	0.049	0.005	0.413	0.607	0.91	0.414	0.605	0.91	
	CP_2	0.5	0.491	-0.009	-0.019	0.052	0.049	0.005	0.393	0.587	0.91	0.395	0.586	0.91	
df	df_{y1}	5	7.828	2.828	0.566	2.964	2.577	24.975	4.219	13.73	0.78	4.03	12.984	0.79	
	df_{y2}	5	7.214	2.214	0.443	2.942	2.308	20.367	4.04	12.63	0.85	3.839	11.863	0.88	
	df_{η_1}	$+\infty$	59.058	NA	NA	8.28	23.652	NA	17.464	97.771	NA	20.057	98.15	NA	
	df_{η_2}	$+\infty$	57.734	NA	NA	7.41	24.146	NA	16.838	97.674	NA	18.808	97.886	NA	

Note:

1. Results are summarized based on 100 converged replications with a convergence rate of $100/102 \approx 98.04\%$.
2. Abbreviations are as given in Table 1.

Table 29: SUMMARY OF NT-IGNORABLE MODEL (N=1500, CLASS SEPARATION=2.7)

				BIAS		SE		CI ($\alpha=0.05$)			HPD ($\alpha=0.05$)				
	para.	true	est.	smp.	rel.	emp.	avg.	MSE	lower	upper	cover	lower	upper	cover	
Growth Curve Parameters	Class 1	I	5	4.852	-0.148	-0.03	0.475	0.176	0.281	4.495	5.192	0.84	4.509	5.19	0.84
		S	3	2.709	-0.291	-0.097	0.124	0.118	0.117	2.479	2.94	0.29	2.48	2.938	0.28
		var(I)	1	1.259	0.259	0.259	1.031	0.345	1.286	0.695	2.042	0.82	0.652	1.934	0.8
		var(S)	4	3.662	-0.338	-0.084	0.31	0.315	0.333	3.082	4.314	0.81	3.065	4.282	0.79
		cov(IS)	0	0.015	0.015	0.015	0.244	0.206	0.112	-0.397	0.411	0.91	-0.389	0.418	0.91
	var(e)	1	1.817	0.817	0.817	1.393	0.153	2.879	1.561	2.156	0.02	1.544	2.114	0.02	
	Class 2	I	1	1.06	0.06	0.06	0.397	0.184	0.202	0.712	1.44	0.86	0.704	1.427	0.87
		S	3	2.695	-0.305	-0.102	0.165	0.137	0.144	2.425	2.963	0.27	2.426	2.963	0.27
		var(I)	1	1.001	0.001	0.001	0.619	0.355	0.607	0.441	1.813	0.91	0.392	1.702	0.89
		var(S)	4	3.56	-0.44	-0.11	0.404	0.364	0.524	2.889	4.315	0.79	2.865	4.275	0.75
cov(IS)		0	0.024	0.024	0.024	0.22	0.226	0.125	-0.44	0.452	0.94	-0.428	0.46	0.93	
	var(e)	1	1.873	0.873	0.873	1.309	0.182	2.641	1.564	2.271	0.04	1.548	2.233	0.04	
	CP_1	0.5	0.535	0.035	0.07	0.115	0.042	0.016	0.451	0.618	0.88	0.452	0.617	0.88	
	CP_2	0.5	0.465	-0.035	-0.07	0.115	0.042	0.016	0.382	0.549	0.88	0.383	0.548	0.88	
df	df_{η_1}	$+\infty$	58.084	NA	NA	12.751	22.55	NA	20.199	96.009	NA	22.152	95.814	NA	
	df_{η_2}	$+\infty$	54.084	NA	NA	14.758	22.396	NA	16.952	93.533	NA	18.677	92.233	NA	

Note:

1. Results are summarized based on 100 converged replications with a convergence rate of $100/103 \approx 97.09\%$.
2. Abbreviations are as given in Table 1.

Table 30: SUMMARY OF NT-IGNORABLE MODEL (N=1000, CLASS SEPARATION=2.7)

	para.	true	est.	BIAS		SE		MSE	CI ($\alpha=0.05$)			HPD ($\alpha=0.05$)			
				smp.	rel.	emp.	avg.		lower	upper	cover	lower	upper	cover	
Growth Curve Parameters	Class 1	I	5	4.797	-0.203	-0.041	0.529	0.251	0.403	4.322	5.284	0.87	4.325	5.266	0.88
		S	3	2.672	-0.328	-0.109	0.222	0.174	0.202	2.337	3.011	0.36	2.338	3.006	0.37
		var(I)	1	1.412	0.412	0.412	1.157	0.574	2.544	0.666	2.547	0.84	0.601	2.361	0.82
		var(S)	4	3.628	-0.372	-0.093	0.504	0.483	0.865	2.845	4.584	0.84	2.806	4.503	0.82
		cov(IS)	0	0.078	0.078	0.078	0.391	0.345	0.566	-0.522	0.648	0.95	-0.505	0.657	0.94
		var(e)	1	2.054	1.054	1.054	1.91	0.366	5.968	1.575	2.842	0.06	1.542	2.63	0.04
		Class 2	I	1	1.176	0.176	0.176	0.581	0.254	0.466	0.692	1.697	0.87	0.693	1.673
	S	3	2.681	-0.319	-0.106	0.164	0.187	0.186	0.186	2.315	3.049	0.43	2.317	3.048	0.45
	var(I)	1	1.351	0.351	0.351	1.5	0.549	3.456	0.559	2.639	0.86	0.513	2.398	0.81	
	var(S)	4	3.603	-0.397	-0.099	0.691	0.54	1.4	2.72	4.703	0.87	2.676	4.588	0.84	
	cov(IS)	0	-0.028	-0.028	-0.028	0.889	0.342	1.271	-0.73	0.591	0.94	-0.681	0.607	0.96	
	var(e)	1	2.018	1.018	1.018	1.784	0.32	4.943	1.549	2.717	0.1	1.503	2.604	0.1	
		CP_1	0.5	0.517	0.017	0.035	0.159	0.055	0.029	0.405	0.623	0.82	0.409	0.622	0.82
		CP_2	0.5	0.483	-0.017	-0.035	0.159	0.055	0.029	0.377	0.595	0.82	0.378	0.591	0.82
df	df_{η_1}	$+\infty$	56.718	NA	NA	11.651	23.431	NA	17.098	95.867	NA	19.483	95.992	NA	
	df_{η_2}	$+\infty$	53.72	NA	NA	13.718	23.431	NA	15.539	94.33	NA	17.21	93.45	NA	

Note:

1. Results are summarized based on 100 converged replications with a convergence rate of $100/104 \approx 96.15\%$.
2. Abbreviations are as given in Table 1.

Table 31: SUMMARY OF NN-IGNORABLE MODEL (N=1500, CLASS SEPARATION=2.7)

	para.	true	est.	BIAS		SE		MSE	CI ($\alpha=0.05$)			HPD ($\alpha=0.05$)			
				smp.	rel.	emp.	avg.		lower	upper	cover	lower	upper	cover	
Growth Curve Parameters	Class 1	I	5	4.857	-0.143	-0.029	0.488	0.195	0.309	4.481	5.224	0.88	4.489	5.222	0.88
		S	3	2.708	-0.292	-0.097	0.113	0.12	0.116	2.473	2.944	0.32	2.473	2.942	0.3
		var(I)	1	1.314	0.314	0.314	1.094	0.38	1.502	0.696	2.138	0.84	0.653	2.046	0.81
		var(S)	4	3.842	-0.158	-0.039	0.295	0.315	0.237	3.266	4.497	0.93	3.244	4.463	0.92
		cov(IS)	0	0.017	0.017	0.017	0.255	0.219	0.129	-0.416	0.44	0.91	-0.409	0.444	0.94
		var(e)	1	1.74	0.74	0.74	0.54	0.14	0.927	1.51	2.036	0.02	1.498	2.014	0.02
		Class 2	I	1	1.096	0.096	0.096	0.424	0.208	0.256	0.706	1.511	0.87	0.699	1.497
	S	3	2.698	-0.302	-0.101	0.185	0.145	0.159	2.415	2.985	0.21	2.415	2.984	0.23	
	var(I)	1	1.209	0.209	0.209	0.985	0.488	2.003	0.513	2.296	0.89	0.455	2.101	0.88	
	var(S)	4	3.759	-0.241	-0.06	0.444	0.383	0.526	3.105	4.575	0.89	3.072	4.5	0.89	
	cov(IS)	0	0.047	0.047	0.047	0.376	0.267	0.312	-0.468	0.562	0.94	-0.459	0.56	0.95	
	var(e)	1	1.996	0.996	0.996	1.746	0.283	4.962	1.561	2.63	0.05	1.534	2.513	0.04	
		CP_1	0.5	0.532	0.032	0.065	0.125	0.045	0.019	0.442	0.617	0.85	0.444	0.618	0.85
		CP_2	0.5	0.468	-0.032	-0.065	0.125	0.045	0.019	0.383	0.558	0.85	0.382	0.556	0.85

Note:

1. Results are summarized based on 100 converged replications with a convergence rate of $100/102 \approx 98.04\%$.
2. Abbreviations are as given in Table 1.

Table 32: SUMMARY OF NN-IGNORABLE MODEL (N=1000, CLASS SEPARATION=2.7)

				BIAS		SE		CI ($\alpha=0.05$)			HPD ($\alpha=0.05$)				
para.		true	est.	smp.	rel.	emp.	avg.	MSE	lower	upper	cover	lower	upper	cover	
Growth Curve Parameters	Class 1	I	5	4.74	-0.26	-0.052	0.597	0.268	0.531	4.242	5.273	0.84	4.248	5.25	0.84
		S	3	2.658	-0.342	-0.114	0.273	0.194	0.262	2.286	3.039	0.33	2.288	3.036	0.33
		var(I)	1	1.625	0.625	0.625	1.383	0.648	3.817	0.81	2.923	0.82	0.744	2.675	0.77
		var(S)	4	3.842	-0.158	-0.04	0.529	0.709	6.402	2.987	4.975	0.93	2.939	4.832	0.9
		cov(IS)	0	0.061	0.061	0.061	0.464	0.406	1.15	-0.7	0.709	0.96	-0.657	0.73	0.96
		var(e)	1	2.248	1.248	1.248	2.564	0.49	11.289	1.61	3.37	0.07	1.553	3.115	0.07
	Class 2	I	1	1.235	0.235	0.235	0.667	0.269	0.609	0.7	1.748	0.83	0.707	1.74	0.81
		S	3	2.692	-0.308	-0.103	0.16	0.195	0.183	2.309	3.079	0.48	2.311	3.076	0.47
		var(I)	1	1.569	0.569	0.569	1.713	0.72	6.352	0.657	2.922	0.85	0.586	2.68	0.8
		var(S)	4	3.82	-0.18	-0.045	0.763	0.553	1.364	2.886	5.018	0.94	2.836	4.884	0.92
		cov(IS)	0	-0.039	-0.039	-0.039	1.01	0.377	1.534	-0.829	0.646	0.95	-0.77	0.67	0.97
		var(e)	1	2.088	1.088	1.088	1.887	0.332	5.405	1.59	2.846	0.09	1.543	2.72	0.09
		CP_1	0.5	0.517	0.017	0.034	0.189	0.056	0.04	0.409	0.628	0.77	0.411	0.627	0.76
		CP_2	0.5	0.483	-0.017	-0.034	0.189	0.056	0.04	0.372	0.591	0.77	0.373	0.589	0.76

Note:

1. Results are summarized based on 100 converged replications with a convergence rate of $100/106 \approx 94.34\%$.
2. Abbreviations are as given in Table 1.

2 Results Summary Tables in Study 2

Table 33: SUMMARY OF TN-CXS EXTENDED GMM (TRUE MODEL) IN STUDY 2
(N=1500, CLASS SEPARATION=2.7)

		para.	true	est.	BIAS		SE		MSE	CI ($\alpha=0.05$)			HPD ($\alpha=0.05$)		
					smp.	rel.	emp.	avg.		lower	upper	cover	lower	upper	cover
Growth Curve Parameters	Class 1	I	5	5.009	0.009	0.002	0.094	0.092	0.017	4.825	5.187	0.95	4.828	5.189	0.95
		S	3	2.986	-0.014	-0.005	0.099	0.104	0.021	2.783	3.189	0.91	2.783	3.188	0.91
		var(I)	1	0.966	-0.034	-0.034	0.203	0.19	0.078	0.622	1.366	0.94	0.605	1.342	0.9
		var(S)	4	3.977	-0.023	-0.006	0.298	0.296	0.177	3.433	4.592	0.95	3.41	4.562	0.92
		cov(IS)	0	0.029	0.029	0.029	0.163	0.162	0.054	-0.294	0.344	0.93	-0.289	0.347	0.93
	var(e)	1	1.049	0.049	0.049	0.106	0.098	0.023	0.867	1.25	0.9	0.861	1.242	0.9	
	Class 2	I	1	1.027	0.027	0.027	0.131	0.124	0.034	0.794	1.28	0.92	0.788	1.272	0.91
		S	3	3.017	0.017	0.006	0.116	0.114	0.027	2.796	3.242	0.94	2.795	3.24	0.94
		var(I)	1	1.053	0.053	0.053	0.261	0.254	0.137	0.608	1.601	0.94	0.579	1.556	0.94
		var(S)	4	4.024	0.024	0.006	0.322	0.337	0.217	3.407	4.728	0.94	3.38	4.693	0.95
cov(IS)		0	0.04	0.04	0.04	0.221	0.203	0.091	-0.366	0.431	0.92	-0.361	0.434	0.93	
var(e)	1	1.07	0.07	0.07	0.132	0.122	0.037	0.844	1.32	0.87	0.837	1.31	0.88		
Probit Parameters	Wave 1	φ_{10}	-1	-1.041	-0.041	0.041	0.139	0.118	0.035	-1.276	-0.816	0.93	-1.269	-0.815	0.89
		φ_{11}	0.5	0.51	0.01	0.021	0.049	0.044	0.004	0.427	0.599	0.9	0.426	0.596	0.9
	Wave 1	γ_{01}^*	-1	-1.124	-0.124	0.124	0.26	0.266	0.155	-1.671	-0.629	0.93	-1.65	-0.625	0.92
		γ_{11}^*	0.5	0.592	0.092	0.184	0.242	0.225	0.119	0.168	1.05	0.93	0.162	1.031	0.92
		γ_{x1}	-1.5	-1.55	-0.05	0.033	0.11	0.112	0.027	-1.781	-1.344	0.94	-1.77	-1.337	0.94
		γ_{S1}	0.5	0.525	0.025	0.05	0.053	0.057	0.007	0.42	0.641	0.95	0.418	0.637	0.96
		γ_{02}^*	-1	-1.068	-0.068	0.068	0.271	0.242	0.137	-1.568	-0.615	0.88	-1.545	-0.607	0.89
	Wave 2	γ_{12}^*	0.5	0.553	0.053	0.107	0.222	0.205	0.094	0.167	0.97	0.93	0.163	0.955	0.93
		γ_{x2}	-1.5	-1.519	-0.019	0.013	0.108	0.105	0.023	-1.735	-1.325	0.94	-1.726	-1.319	0.94
		γ_{S2}	0.5	0.51	0.01	0.021	0.056	0.053	0.006	0.411	0.621	0.92	0.409	0.615	0.92
		γ_{03}^*	-1	-1.078	-0.078	0.078	0.26	0.244	0.134	-1.582	-0.628	0.93	-1.558	-0.617	0.93
	Wave 3	γ_{13}^*	0.5	0.552	0.052	0.104	0.208	0.205	0.088	0.166	0.971	0.93	0.163	0.958	0.93
		γ_{x3}	-1.5	-1.527	-0.027	0.018	0.083	0.104	0.018	-1.742	-1.335	0.98	-1.733	-1.33	1
		γ_{S3}	0.5	0.514	0.014	0.029	0.052	0.053	0.006	0.417	0.626	0.93	0.413	0.619	0.91
	Wave 4	γ_{04}^*	-1	-1.059	-0.059	0.059	0.291	0.242	0.147	-1.555	-0.604	0.88	-1.525	-0.593	0.87
		γ_{14}^*	0.5	0.539	0.039	0.077	0.244	0.204	0.103	0.149	0.951	0.87	0.146	0.936	0.87
γ_{x4}		-1.5	-1.559	-0.059	0.039	0.134	0.105	0.033	-1.776	-1.363	0.88	-1.766	-1.357	0.88	
γ_{S4}		0.5	0.519	0.019	0.038	0.061	0.053	0.007	0.421	0.629	0.9	0.419	0.623	0.91	
df	df_{y1}	5	6.051	1.051	0.21	1.636	1.376	6.187	4.084	9.47	0.9	3.862	8.87	0.94	
	df_{y2}	5	6.668	1.668	0.334	2.243	1.899	12.449	4.048	11.285	0.81	3.851	10.57	0.87	

Note:

1. Results are summarized based on 100 converged replications with a convergence rate of $100/102 \approx 98.04\%$.
2. Abbreviations are as given in Table 1.

Table 34: SUMMARY OF TN-CXS MODEL (N=1000, CLASS SEPARATION=2.7)

				BIAS		SE		MSE	CI ($\alpha=0.05$)			HPD ($\alpha=0.05$)			
para.	true	est.	smp.	rel.	emp.	avg.	lower		upper	cover	lower	upper	cover		
Growth Curve Parameters	Class 1	I	5	5.006	0.006	0.001	0.107	0.114	0.025	4.777	5.225	0.97	4.781	5.227	0.97
		S	3	2.978	-0.022	-0.007	0.132	0.127	0.034	2.73	3.227	0.94	2.729	3.225	0.94
		var(I)	1	0.955	-0.045	-0.045	0.233	0.236	0.113	0.537	1.46	0.93	0.513	1.424	0.92
		var(S)	4	3.996	-0.004	-0.001	0.374	0.363	0.271	3.337	4.76	0.97	3.306	4.719	0.96
		cov(IS)	0	0.012	0.012	0.012	0.249	0.2	0.102	-0.387	0.397	0.91	-0.382	0.4	0.93
	var(e)	1	1.064	0.064	0.064	0.122	0.119	0.033	0.845	1.308	0.93	0.838	1.299	0.94	
	Class 2	I	1	1.043	0.043	0.043	0.165	0.154	0.053	0.753	1.363	0.93	0.745	1.35	0.93
		S	3	2.985	-0.015	-0.005	0.148	0.14	0.042	2.714	3.262	0.91	2.712	3.259	0.92
		var(I)	1	0.994	-0.006	-0.006	0.362	0.317	0.238	0.466	1.707	0.91	0.415	1.614	0.88
		var(S)	4	3.955	-0.045	-0.011	0.377	0.408	0.31	3.218	4.814	0.97	3.181	4.765	0.97
cov(IS)		0	0.045	0.045	0.045	0.211	0.244	0.106	-0.442	0.517	0.98	-0.435	0.521	0.98	
var(e)	1	1.127	0.127	0.127	0.162	0.149	0.065	0.851	1.43	0.83	0.843	1.419	0.86		
Probit Parameters	Wave 1	φ_{10}	-1	-1.03	-0.03	0.03	0.152	0.149	0.047	-1.337	-0.751	0.94	-1.322	-0.745	0.94
		φ_{11}	0.5	0.511	0.011	0.022	0.051	0.054	0.006	0.41	0.621	0.98	0.408	0.617	0.98
	Wave 2	γ_{01}^*	-1	-1.058	-0.058	0.058	0.397	0.333	0.276	-1.769	-0.459	0.9	-1.722	-0.44	0.91
		γ_{11}^*	0.5	0.555	0.055	0.111	0.316	0.281	0.184	0.038	1.15	0.92	0.025	1.117	0.93
		γ_{x1}	-1.5	-1.578	-0.078	0.052	0.169	0.141	0.055	-1.875	-1.323	0.89	-1.857	-1.312	0.9
		γ_{S1}	0.5	0.524	0.024	0.048	0.088	0.072	0.014	0.394	0.675	0.9	0.39	0.666	0.9
	Wave 3	γ_{02}^*	-1	-1.067	-0.067	0.067	0.319	0.314	0.21	-1.727	-0.494	0.97	-1.69	-0.481	0.95
		γ_{12}^*	0.5	0.548	0.048	0.096	0.273	0.269	0.153	0.053	1.111	0.98	0.042	1.082	0.98
		γ_{x2}	-1.5	-1.554	-0.054	0.036	0.152	0.133	0.044	-1.835	-1.312	0.91	-1.819	-1.302	0.91
		γ_{S2}	0.5	0.52	0.02	0.041	0.069	0.068	0.01	0.397	0.664	0.93	0.393	0.655	0.95
	Wave 4	γ_{03}^*	-1	-1.034	-0.034	0.034	0.326	0.303	0.202	-1.664	-0.473	0.94	-1.635	-0.465	0.93
		γ_{13}^*	0.5	0.527	0.027	0.054	0.258	0.258	0.137	0.045	1.06	0.95	0.037	1.038	0.95
		γ_{x3}	-1.5	-1.58	-0.08	0.053	0.127	0.132	0.04	-1.855	-1.338	0.94	-1.838	-1.327	0.96
		γ_{S3}	0.5	0.517	0.017	0.035	0.07	0.066	0.01	0.397	0.655	0.94	0.394	0.648	0.92
	Wave 4	γ_{04}^*	-1	-1.101	-0.101	0.101	0.321	0.31	0.211	-1.749	-0.527	0.94	-1.714	-0.515	0.94
		γ_{14}^*	0.5	0.556	0.056	0.112	0.276	0.259	0.147	0.069	1.091	0.93	0.06	1.067	0.94
		γ_{x4}	-1.5	-1.579	-0.079	0.053	0.141	0.133	0.044	-1.858	-1.335	0.92	-1.841	-1.324	0.93
		γ_{S4}	0.5	0.535	0.035	0.069	0.076	0.068	0.012	0.411	0.679	0.88	0.406	0.67	0.91
	df	df_{y1}	5	6.329	1.329	0.266	2.211	1.767	10.833	3.899	10.744	0.91	3.658	9.965	0.94
		df_{y2}	5	7.83	2.83	0.566	3.08	2.611	25.744	4.197	13.822	0.76	4.033	13.081	0.78

Note:

1. Results are summarized based on 100 converged replications with a convergence rate of $100/104 \approx 96.15\%$.
2. Abbreviations are as given in Table 1.

Table 35: SUMMARY OF TN-CXS MODEL (N=1500, CLASS SEPARATION=1.7)

				BIAS		SE		MSE	CI ($\alpha=0.05$)			HPD ($\alpha=0.05$)			
para.	true	est.	smpl.	rel.	emp.	avg.	lower		upper	cover	lower	upper	cover		
Growth Curve Parameters	Class 1	I	3.5	3.506	0.006	0.002	0.154	0.139	0.043	3.23	3.774	0.93	3.234	3.775	0.91
		S	3	2.991	-0.009	-0.003	0.14	0.13	0.037	2.735	3.246	0.91	2.736	3.246	0.9
		var(I)	1	1.022	0.022	0.022	0.267	0.239	0.129	0.593	1.526	0.91	0.571	1.492	0.88
		var(S)	4	3.937	-0.063	-0.016	0.343	0.339	0.238	3.308	4.64	0.96	3.287	4.613	0.95
		cov(IS)	0	0.004	0.004	0.004	0.185	0.186	0.069	-0.367	0.363	0.94	-0.363	0.365	0.95
	var(e)	1	1.053	0.053	0.053	0.116	0.109	0.028	0.851	1.275	0.91	0.845	1.267	0.92	
	Class 2	I	1	1.102	0.102	0.102	0.279	0.188	0.124	0.737	1.466	0.75	0.74	1.464	0.75
		S	3	3	0	0	0.148	0.136	0.041	2.733	3.267	0.94	2.734	3.267	0.94
		var(I)	1	1.15	0.15	0.15	0.419	0.316	0.3	0.603	1.823	0.81	0.571	1.763	0.79
		var(S)	4	3.96	-0.04	-0.01	0.364	0.372	0.274	3.272	4.73	0.95	3.248	4.698	0.95
cov(IS)		0	0.049	0.049	0.049	0.234	0.224	0.108	-0.402	0.478	0.94	-0.393	0.484	0.95	
var(e)	1	1.083	0.083	0.083	0.157	0.132	0.049	0.843	1.355	0.83	0.833	1.342	0.84		
Probit Parameters	Wave 1	φ_{10}	-1	-1.18	-0.18	0.18	0.368	0.239	0.229	-1.682	-0.739	0.8	-1.643	-0.731	0.82
		φ_{11}	0.5	0.543	0.043	0.086	0.088	0.079	0.016	0.409	0.716	0.88	0.402	0.7	0.9
	Wave 2	γ_{01}^*	-1	-1.221	-0.221	0.221	0.491	0.368	0.439	-2.005	-0.572	0.88	-1.949	-0.554	0.87
		γ_{11}^*	0.5	0.688	0.188	0.375	0.474	0.341	0.389	0.081	1.412	0.85	0.072	1.37	0.87
		γ_{x1}	-1.5	-1.559	-0.059	0.04	0.112	0.114	0.029	-1.798	-1.349	0.94	-1.786	-1.342	0.95
		γ_{S1}	0.5	0.527	0.027	0.054	0.056	0.059	0.007	0.418	0.651	0.95	0.415	0.643	0.94
	Wave 3	γ_{02}^*	-1	-1.267	-0.267	0.267	0.541	0.372	0.525	-2.071	-0.622	0.83	-2.011	-0.608	0.86
		γ_{12}^*	0.5	0.75	0.25	0.5	0.502	0.345	0.457	0.143	1.489	0.85	0.14	1.451	0.85
		γ_{x2}	-1.5	-1.535	-0.035	0.023	0.11	0.11	0.026	-1.765	-1.332	0.95	-1.753	-1.325	0.95
		γ_{S2}	0.5	0.518	0.018	0.036	0.059	0.058	0.007	0.413	0.64	0.93	0.41	0.632	0.93
	Wave 4	γ_{03}^*	-1	-1.215	-0.215	0.215	0.431	0.34	0.356	-1.954	-0.627	0.89	-1.906	-0.611	0.89
		γ_{13}^*	0.5	0.678	0.178	0.356	0.408	0.315	0.306	0.126	1.359	0.89	0.111	1.315	0.9
		γ_{x3}	-1.5	-1.535	-0.035	0.023	0.086	0.106	0.02	-1.755	-1.34	0.98	-1.743	-1.333	0.98
		γ_{S3}	0.5	0.521	0.021	0.042	0.052	0.055	0.006	0.422	0.636	0.95	0.418	0.629	0.96
	Wave 4	γ_{04}^*	-1	-1.256	-0.256	0.256	0.561	0.375	0.544	-2.047	-0.61	0.85	-1.996	-0.593	0.82
		γ_{14}^*	0.5	0.723	0.223	0.446	0.536	0.345	0.478	0.123	1.451	0.78	0.111	1.408	0.79
γ_{x4}		-1.5	-1.568	-0.068	0.045	0.135	0.11	0.035	-1.796	-1.366	0.89	-1.784	-1.359	0.9	
γ_{S4}		0.5	0.526	0.026	0.052	0.067	0.056	0.008	0.424	0.645	0.9	0.421	0.637	0.91	
df	df_{y1}	5	6.596	1.596	0.319	2.302	1.736	11.94	4.119	10.746	0.9	3.934	10.074	0.91	
	df_{y2}	5	7.097	2.097	0.419	3.031	2.043	19.122	4.223	11.723	0.79	4.117	11.176	0.82	

Note:

1. Results are summarized based on 100 converged replications with a convergence rate of $100/132 \approx 75.76\%$.
2. Abbreviations are as given in Table 1.

Table 36: SUMMARY OF TN-CXS MODEL (N=1000, CLASS SEPARATION=1.7)

				BIAS		SE		MSE	CI ($\alpha=0.05$)			HPD ($\alpha=0.05$)			
	para.	true	est.	smpl.	rel.	emp.	avg.		lower	upper	cover	lower	upper	cover	
Growth Curve Parameters	Class 1	I	3.5	3.477	-0.023	-0.007	0.23	0.174	0.084	3.137	3.82	0.88	3.136	3.815	0.87
		S	3	2.974	-0.026	-0.009	0.173	0.166	0.059	2.646	3.298	0.91	2.648	3.298	0.93
		var(I)	1	1.089	0.089	0.089	0.352	0.307	0.229	0.544	1.739	0.92	0.512	1.687	0.89
		var(S)	4	3.964	-0.036	-0.009	0.452	0.444	0.409	3.159	4.901	0.98	3.123	4.851	0.97
		cov(IS)	0	-0.066	-0.066	-0.066	0.248	0.243	0.125	-0.558	0.396	0.93	-0.546	0.405	0.93
	var(e)	1	1.061	0.061	0.061	0.139	0.137	0.042	0.807	1.34	0.94	0.798	1.328	0.93	
	Class 2	I	1	1.219	0.219	0.219	0.356	0.229	0.232	0.776	1.657	0.66	0.783	1.657	0.62
		S	3	2.991	-0.009	-0.003	0.181	0.163	0.061	2.668	3.311	0.94	2.671	3.312	0.94
		var(I)	1	1.378	0.378	0.378	0.581	0.397	0.652	0.699	2.205	0.68	0.664	2.131	0.67
		var(S)	4	4.025	0.025	0.006	0.525	0.46	0.495	3.178	4.982	0.93	3.145	4.937	0.93
cov(IS)		0	0.025	0.025	0.025	0.308	0.277	0.174	-0.536	0.554	0.91	-0.521	0.565	0.91	
var(e)	1	1.099	0.099	0.099	0.188	0.162	0.072	0.803	1.435	0.85	0.791	1.417	0.87		
Probit Parameters	Wave 1	φ_{10}	-1	-1.464	-0.464	0.464	0.593	0.367	0.734	-2.237	-0.847	0.7	-2.176	-0.829	0.71
		φ_{11}	0.5	0.635	0.135	0.271	0.179	0.125	0.07	0.429	0.912	0.78	0.42	0.885	0.82
	Wave 2	γ_{01}^*	-1	-1.481	-0.481	0.481	0.929	0.606	1.546	-2.72	-0.479	0.84	-2.646	-0.465	0.84
		γ_{11}^*	0.5	0.911	0.411	0.821	0.954	0.577	1.496	-0.05	2.098	0.85	-0.06	2.027	0.86
	Wave 3	γ_{x1}	-1.5	-1.58	-0.08	0.053	0.151	0.145	0.05	-1.887	-1.32	0.92	-1.868	-1.309	0.91
		γ_{S1}	0.5	0.534	0.034	0.068	0.07	0.073	0.012	0.402	0.689	0.95	0.396	0.678	0.96
	Wave 4	γ_{02}^*	-1	-1.495	-0.495	0.495	0.9	0.561	1.413	-2.665	-0.542	0.84	-2.585	-0.518	0.85
		γ_{12}^*	0.5	0.92	0.42	0.841	0.851	0.532	1.231	0.015	2.027	0.88	0	1.96	0.87
	Wave 3	γ_{x2}	-1.5	-1.603	-0.103	0.069	0.183	0.148	0.067	-1.918	-1.338	0.91	-1.898	-1.327	0.91
		γ_{S2}	0.5	0.547	0.047	0.094	0.107	0.075	0.02	0.414	0.708	0.89	0.409	0.696	0.93
	Wave 4	γ_{03}^*	-1	-1.422	-0.422	0.422	0.948	0.521	1.39	-2.483	-0.519	0.85	-2.427	-0.513	0.84
		γ_{13}^*	0.5	0.897	0.397	0.794	0.937	0.494	1.322	0.029	1.906	0.88	0.024	1.855	0.85
	Wave 3	γ_{x3}	-1.5	-1.565	-0.065	0.044	0.165	0.135	0.051	-1.849	-1.319	0.96	-1.832	-1.309	0.97
		γ_{S3}	0.5	0.522	0.022	0.043	0.084	0.068	0.012	0.4	0.669	0.88	0.393	0.657	0.88
	Wave 4	γ_{04}^*	-1	-1.518	-0.518	0.518	0.982	0.544	1.59	-2.623	-0.591	0.82	-2.564	-0.577	0.82
		γ_{14}^*	0.5	0.947	0.447	0.893	0.945	0.516	1.422	0.052	1.985	0.87	0.047	1.941	0.87
	Wave 4	γ_{x4}	-1.5	-1.577	-0.077	0.051	0.154	0.136	0.049	-1.867	-1.331	0.92	-1.847	-1.319	0.94
		γ_{S4}	0.5	0.534	0.034	0.067	0.081	0.069	0.013	0.411	0.682	0.91	0.406	0.672	0.9
	df	df_{y1}	5	7.083	2.083	0.417	2.998	2.239	20.169	3.866	12.134	0.83	3.713	11.583	0.85
		df_{y2}	5	7.642	2.642	0.528	3.159	2.674	26.007	3.942	13.648	0.81	3.819	12.95	0.84

Note:

1. Results are summarized based on 100 converged replications with a convergence rate of $100/145 \approx 68.97\%$.
2. Abbreviations are as given in Table 1.

Table 37: SUMMARY OF TT-CXS MODEL (N=1500, CLASS SEPARATION=2.7)

	para.	true	est.	BIAS		SE		MSE	CI ($\alpha=0.05$)			HPD ($\alpha=0.05$)				
				smp.	rel.	emp.	avg.		lower	upper	cover	lower	upper	cover		
Growth Curve Parameters	Class 1	I	5	5.003	0.003	0.001	0.094	0.091	0.017	4.821	5.18	0.92	4.823	5.181	0.91	
		S	3	2.989	-0.011	-0.004	0.099	0.103	0.021	2.788	3.192	0.93	2.788	3.191	0.93	
		var(I)	1	0.931	-0.069	-0.069	0.203	0.186	0.081	0.594	1.322	0.89	0.576	1.297	0.88	
		var(S)	4	3.804	-0.196	-0.049	0.297	0.306	0.221	3.23	4.432	0.9	3.213	4.409	0.9	
		cov(IS)	0	0.03	0.03	0.03	0.158	0.157	0.05	-0.284	0.334	0.94	-0.28	0.336	0.94	
		var(e)	1	1.045	0.045	0.045	0.107	0.098	0.023	0.864	1.245	0.91	0.859	1.238	0.9	
	Class 2	I	1	1.023	0.023	0.023	0.13	0.123	0.033	0.791	1.273	0.93	0.786	1.266	0.92	
		S	3	3.011	0.011	0.004	0.119	0.113	0.027	2.791	3.236	0.93	2.789	3.233	0.92	
		var(I)	1	0.995	-0.005	-0.005	0.251	0.246	0.125	0.566	1.525	0.94	0.536	1.478	0.93	
		var(S)	4	3.814	-0.186	-0.046	0.319	0.342	0.254	3.179	4.521	0.93	3.157	4.492	0.92	
		cov(IS)	0	0.046	0.046	0.046	0.205	0.194	0.082	-0.341	0.42	0.93	-0.335	0.423	0.93	
		var(e)	1	1.08	0.08	0.08	0.137	0.123	0.04	0.851	1.33	0.88	0.845	1.321	0.87	
	Probit Parameters	Wave 1	φ_{10}	-1	-1.032	-0.032	0.032	0.139	0.115	0.034	-1.264	-0.812	0.9	-1.257	-0.81	0.89
			φ_{11}	0.5	0.511	0.011	0.021	0.047	0.043	0.004	0.427	0.598	0.9	0.426	0.595	0.91
γ_{01}^*			-1	-1.111	-0.111	0.111	0.254	0.264	0.147	-1.655	-0.618	0.92	-1.627	-0.609	0.93	
γ_{11}^*			0.5	0.577	0.077	0.154	0.236	0.222	0.111	0.156	1.03	0.95	0.151	1.012	0.92	
γ_{x1}			-1.5	-1.546	-0.046	0.031	0.111	0.112	0.027	-1.778	-1.341	0.94	-1.766	-1.334	0.95	
Wave 2		γ_{S1}	0.5	0.524	0.024	0.049	0.053	0.057	0.007	0.42	0.644	0.92	0.416	0.637	0.92	
		γ_{02}^*	-1	-1.074	-0.074	0.074	0.273	0.243	0.139	-1.578	-0.624	0.89	-1.552	-0.616	0.88	
		γ_{12}^*	0.5	0.559	0.059	0.117	0.223	0.204	0.095	0.176	0.977	0.92	0.17	0.96	0.92	
		γ_{x2}	-1.5	-1.517	-0.017	0.011	0.109	0.105	0.023	-1.733	-1.323	0.94	-1.723	-1.317	0.94	
		γ_{S2}	0.5	0.511	0.011	0.021	0.056	0.054	0.006	0.411	0.621	0.94	0.409	0.616	0.92	
Wave 3		γ_{03}^*	-1	-1.087	-0.087	0.087	0.251	0.239	0.128	-1.58	-0.64	0.93	-1.55	-0.628	0.94	
		γ_{13}^*	0.5	0.556	0.056	0.112	0.201	0.201	0.084	0.173	0.963	0.96	0.168	0.949	0.96	
		γ_{x3}	-1.5	-1.53	-0.03	0.02	0.08	0.103	0.018	-1.743	-1.339	1	-1.734	-1.333	1	
		γ_{S3}	0.5	0.518	0.018	0.035	0.05	0.053	0.006	0.42	0.629	0.92	0.417	0.623	0.95	
		γ_{04}^*	-1	-1.071	-0.071	0.071	0.289	0.248	0.15	-1.581	-0.608	0.9	-1.564	-0.606	0.89	
Wave 4		γ_{14}^*	0.5	0.551	0.051	0.103	0.245	0.206	0.105	0.161	0.97	0.88	0.159	0.958	0.89	
		γ_{x4}	-1.5	-1.565	-0.065	0.044	0.133	0.107	0.034	-1.787	-1.367	0.88	-1.776	-1.361	0.88	
		γ_{S4}	0.5	0.522	0.022	0.044	0.061	0.054	0.007	0.421	0.634	0.92	0.418	0.628	0.93	
		df	df_{η_1}	$+\infty$	57.076	NA	NA	10.89	23.125	NA	18.942	96.757	NA	20.727	96.525	NA
			df_{η_2}	$+\infty$	58.662	NA	NA	10.195	22.727	NA	20.74	97.177	NA	22.557	96.895	NA
df_{y_1}	5		5.929	0.929	0.186	1.462	1.334	5.346	4.035	9.191	0.95	3.844	8.65	0.95		
df_{y_2}	5		6.961	1.961	0.392	2.649	2.034	16.315	4.144	11.719	0.82	3.959	10.995	0.86		

Note:

1. Results are summarized based on 100 converged replications with a convergence rate of $100/104 \approx 96.15\%$.
2. Abbreviations are as given in Table 1.

Table 38: SUMMARY OF TT-CXS MODEL (N=1000, CLASS SEPARATION=2.7)

				BIAS		SE		CI ($\alpha=0.05$)			HPD ($\alpha=0.05$)					
	para.	true	est.	smp.	rel.	emp.	avg.	MSE	lower	upper	cover	lower	upper	cover		
Growth Curve Parameters	Class 1	I	5	5.002	0.002	0	0.109	0.113	0.025	4.775	5.219	0.97	4.779	5.221	0.98	
		S	3	2.979	-0.021	-0.007	0.132	0.127	0.034	2.731	3.227	0.94	2.731	3.226	0.93	
		var(I)	1	0.926	-0.074	-0.074	0.226	0.228	0.11	0.522	1.416	0.91	0.497	1.379	0.91	
		var(S)	4	3.837	-0.163	-0.041	0.366	0.373	0.299	3.148	4.61	0.91	3.122	4.576	0.9	
		cov(IS)	0	0.004	0.004	0.004	0.23	0.194	0.09	-0.385	0.377	0.92	-0.379	0.381	0.93	
		var(e)	1	1.059	0.059	0.059	0.118	0.119	0.031	0.84	1.303	0.92	0.833	1.293	0.94	
	Class 2	I	1	1.038	0.038	0.038	0.153	0.15	0.048	0.756	1.346	0.9	0.749	1.336	0.92	
		S	3	2.979	-0.021	-0.007	0.147	0.139	0.041	2.71	3.254	0.9	2.709	3.252	0.9	
		var(I)	1	0.94	-0.06	-0.06	0.315	0.299	0.196	0.443	1.606	0.89	0.395	1.524	0.88	
		var(S)	4	3.773	-0.227	-0.057	0.37	0.416	0.362	3.01	4.642	0.95	2.978	4.599	0.93	
		cov(IS)	0	0.04	0.04	0.04	0.191	0.236	0.094	-0.435	0.495	1	-0.427	0.501	1	
		var(e)	1	1.129	0.129	0.129	0.165	0.153	0.068	0.848	1.44	0.81	0.839	1.428	0.81	
	Probit Parameters		φ_{10}	-1	-1.028	-0.028	0.028	0.142	0.144	0.042	-1.322	-0.754	0.94	-1.307	-0.747	0.96
			φ_{11}	0.5	0.511	0.011	0.023	0.051	0.054	0.006	0.41	0.621	0.98	0.409	0.617	0.98
Wave 1		γ_{01}^*	-1	-1.057	-0.057	0.057	0.396	0.33	0.271	-1.753	-0.458	0.92	-1.702	-0.434	0.91	
		γ_{11}^*	0.5	0.559	0.059	0.118	0.324	0.28	0.188	0.045	1.143	0.91	0.028	1.106	0.92	
		γ_{x1}	-1.5	-1.575	-0.075	0.05	0.168	0.139	0.054	-1.867	-1.323	0.86	-1.851	-1.313	0.87	
		γ_{S1}	0.5	0.523	0.023	0.045	0.087	0.071	0.013	0.394	0.671	0.92	0.389	0.662	0.91	
Wave 2		γ_{02}^*	-1	-1.06	-0.06	0.06	0.305	0.305	0.192	-1.699	-0.504	0.96	-1.661	-0.487	0.95	
		γ_{12}^*	0.5	0.541	0.041	0.082	0.258	0.259	0.137	0.064	1.08	0.94	0.055	1.056	0.94	
		γ_{x2}	-1.5	-1.553	-0.053	0.035	0.148	0.133	0.043	-1.832	-1.309	0.92	-1.816	-1.3	0.92	
		γ_{S2}	0.5	0.521	0.021	0.042	0.068	0.068	0.01	0.397	0.664	0.94	0.392	0.654	0.95	
Wave 3		γ_{03}^*	-1	-1.058	-0.058	0.058	0.323	0.303	0.202	-1.693	-0.502	0.93	-1.658	-0.488	0.93	
		γ_{13}^*	0.5	0.542	0.042	0.084	0.26	0.256	0.137	0.064	1.07	0.93	0.061	1.052	0.94	
		γ_{x3}	-1.5	-1.586	-0.086	0.057	0.128	0.133	0.041	-1.864	-1.342	0.94	-1.849	-1.333	0.95	
		γ_{S3}	0.5	0.523	0.023	0.046	0.068	0.067	0.01	0.402	0.664	0.94	0.398	0.657	0.94	
Wave 4		γ_{04}^*	-1	-1.109	-0.109	0.109	0.319	0.31	0.211	-1.757	-0.538	0.95	-1.719	-0.521	0.95	
		γ_{14}^*	0.5	0.56	0.06	0.12	0.273	0.257	0.145	0.076	1.089	0.92	0.069	1.069	0.93	
		γ_{x4}	-1.5	-1.584	-0.084	0.056	0.141	0.134	0.045	-1.866	-1.34	0.92	-1.85	-1.33	0.92	
		γ_{S4}	0.5	0.538	0.038	0.076	0.076	0.069	0.012	0.414	0.684	0.9	0.41	0.676	0.89	
df		df_{η_1}	$+\infty$	57.399	NA	NA	7.321	24.108	NA	16.397	97.621	NA	18.791	97.946	NA	
		df_{η_2}	$+\infty$	57.676	NA	NA	9.316	23.51	NA	17.929	97.439	NA	20.047	97.526	NA	
	df_{y_1}	5	6.288	1.288	0.258	2.131	1.804	10.557	3.857	10.839	0.91	3.612	10.057	0.92		
	df_{y_2}	5	7.782	2.782	0.556	2.954	2.723	25.392	4.062	14.058	0.79	3.882	13.214	0.8		

Note:

1. Results are summarized based on 100 converged replications with a convergence rate of $100/103 \approx 97.09\%$.
2. Abbreviations are as given in Table 1.

Table 39: SUMMARY OF TT-CXS MODEL (N=1500, CLASS SEPARATION=1.7)

	para.	true	est.	BIAS		SE		MSE	CI ($\alpha=0.05$)			HPD ($\alpha=0.05$)				
				smp.	rel.	emp.	avg.		lower	upper	cover	lower	upper	cover		
Growth Curve Parameters	Class 1	I	3.5	3.492	-0.008	-0.002	0.15	0.136	0.041	3.223	3.757	0.93	3.226	3.758	0.94	
		S	3	2.998	-0.002	-0.001	0.135	0.127	0.034	2.748	3.248	0.93	2.75	3.249	0.93	
		var(I)	1	0.982	-0.018	-0.018	0.253	0.233	0.119	0.562	1.472	0.89	0.542	1.442	0.87	
		var(S)	4	3.766	-0.234	-0.059	0.298	0.345	0.264	3.117	4.471	0.92	3.099	4.448	0.91	
		cov(IS)	0	0.007	0.007	0.007	0.172	0.179	0.061	-0.353	0.352	0.94	-0.346	0.356	0.94	
		var(e)	1	1.051	0.051	0.051	0.113	0.107	0.027	0.852	1.27	0.92	0.846	1.262	0.93	
	Class 2	I	1	1.094	0.094	0.094	0.271	0.179	0.115	0.749	1.448	0.74	0.753	1.445	0.74	
		S	3	2.996	-0.004	-0.001	0.142	0.135	0.039	2.73	3.262	0.96	2.73	3.26	0.96	
		var(I)	1	1.102	0.102	0.102	0.418	0.3	0.277	0.587	1.753	0.83	0.551	1.687	0.82	
		var(S)	4	3.804	-0.196	-0.049	0.368	0.376	0.317	3.103	4.578	0.93	3.08	4.547	0.92	
		cov(IS)	0	0.042	0.042	0.042	0.223	0.215	0.098	-0.39	0.455	0.93	-0.38	0.461	0.93	
		var(e)	1	1.099	0.099	0.099	0.153	0.135	0.052	0.848	1.374	0.86	0.84	1.363	0.88	
	Probit Parameters	Wave 1	φ_{10}	-1	-1.2	-0.2	0.2	0.372	0.228	0.231	-1.678	-0.789	0.7	-1.65	-0.782	0.71
			φ_{11}	0.5	0.556	0.056	0.113	0.09	0.079	0.018	0.419	0.727	0.86	0.411	0.711	0.9
γ_{01}^*			-1	-1.211	-0.211	0.211	0.434	0.361	0.376	-1.977	-0.567	0.86	-1.934	-0.558	0.89	
γ_{11}^*			0.5	0.675	0.175	0.35	0.424	0.331	0.332	0.079	1.375	0.85	0.07	1.332	0.85	
Wave 2		γ_{x1}	-1.5	-1.555	-0.055	0.037	0.117	0.113	0.03	-1.79	-1.347	0.94	-1.778	-1.34	0.94	
		γ_{S1}	0.5	0.521	0.021	0.043	0.053	0.059	0.007	0.414	0.644	0.94	0.41	0.636	0.95	
		γ_{02}^*	-1	-1.343	-0.343	0.343	0.735	0.355	0.793	-2.094	-0.701	0.82	-2.041	-0.688	0.83	
		γ_{12}^*	0.5	0.814	0.314	0.628	0.703	0.328	0.709	0.214	1.498	0.83	0.209	1.458	0.86	
Wave 3		γ_{x2}	-1.5	-1.528	-0.028	0.019	0.097	0.109	0.022	-1.757	-1.327	0.97	-1.745	-1.32	0.97	
		γ_{S2}	0.5	0.519	0.019	0.038	0.062	0.057	0.008	0.415	0.64	0.93	0.411	0.632	0.93	
		γ_{03}^*	-1	-1.255	-0.255	0.255	0.571	0.34	0.512	-1.984	-0.664	0.9	-1.926	-0.639	0.91	
		γ_{13}^*	0.5	0.721	0.221	0.442	0.551	0.311	0.454	0.173	1.389	0.89	0.159	1.344	0.91	
Wave 4		γ_{x3}	-1.5	-1.536	-0.036	0.024	0.085	0.108	0.02	-1.759	-1.337	0.98	-1.749	-1.331	0.98	
		γ_{S3}	0.5	0.521	0.021	0.042	0.058	0.056	0.007	0.42	0.638	0.93	0.417	0.631	0.94	
		γ_{04}^*	-1	-1.337	-0.337	0.337	0.713	0.35	0.752	-2.073	-0.709	0.82	-2.031	-0.702	0.81	
		γ_{14}^*	0.5	0.789	0.289	0.579	0.688	0.32	0.667	0.209	1.466	0.81	0.2	1.425	0.82	
df		γ_{x4}	-1.5	-1.572	-0.072	0.048	0.147	0.112	0.04	-1.803	-1.367	0.88	-1.791	-1.36	0.88	
		γ_{S4}	0.5	0.532	0.032	0.065	0.071	0.057	0.009	0.428	0.652	0.89	0.425	0.645	0.88	
		df_{η_1}	$+\infty$	57.477	NA	NA	10.215	23.453	NA	17.943	97.25	NA	20.109	97.05	NA	
		df_{η_2}	$+\infty$	60.771	NA	NA	8.122	22.555	NA	22.105	97.865	NA	24.335	98.132	NA	
	df_{y_1}	5	6.401	1.401	0.28	2.17	1.622	10.155	4.098	10.346	0.89	3.926	9.725	0.9		
	df_{y_2}	5	7.395	2.395	0.479	3.178	2.202	22.249	4.202	12.257	0.8	4.085	11.592	0.84		

Note:

1. Results are summarized based on 100 converged replications with a convergence rate of $100/141 \approx 70.92\%$.

2. Abbreviations are as given in Table 1.

Table 40: SUMMARY OF TT-CXS MODEL (N=1000, CLASS SEPARATION=1.7)

				BIAS		SE		CI ($\alpha=0.05$)			HPD ($\alpha=0.05$)					
	para.	true	est.	smp.	rel.	emp.	avg.	MSE	lower	upper	cover	lower	upper	cover		
Growth Curve Parameters	Class 1	I	3.5	3.429	-0.071	-0.02	0.213	0.171	0.081	3.096	3.766	0.88	3.094	3.761	0.87	
		S	3	2.979	-0.021	-0.007	0.18	0.161	0.059	2.664	3.295	0.94	2.665	3.294	0.95	
		var(I)	1	1.056	0.056	0.056	0.335	0.295	0.205	0.531	1.68	0.93	0.504	1.635	0.88	
		var(S)	4	3.784	-0.216	-0.054	0.431	0.434	0.428	2.983	4.686	0.94	2.953	4.646	0.91	
		cov(IS)	0	-0.052	-0.052	-0.052	0.224	0.227	0.105	-0.513	0.381	0.94	-0.503	0.389	0.94	
		var(e)	1	1.068	0.068	0.068	0.136	0.136	0.042	0.816	1.347	0.93	0.809	1.337	0.94	
	Class 2	I	1	1.151	0.151	0.151	0.379	0.222	0.219	0.717	1.582	0.74	0.721	1.578	0.72	
		S	3	2.974	-0.026	-0.009	0.197	0.17	0.07	2.636	3.306	0.89	2.641	3.305	0.89	
		var(I)	1	1.259	0.259	0.259	0.597	0.37	0.567	0.625	2.046	0.75	0.589	1.969	0.73	
		var(S)	4	3.839	-0.161	-0.04	0.464	0.469	0.469	2.97	4.813	0.91	2.939	4.77	0.91	
		cov(IS)	0	-0.016	-0.016	-0.016	0.28	0.27	0.152	-0.565	0.496	0.91	-0.552	0.504	0.92	
		var(e)	1	1.081	0.081	0.081	0.189	0.161	0.069	0.787	1.412	0.88	0.775	1.395	0.87	
	Probit Parameters	Wave 1	φ_{10}	-1	-1.387	-0.387	0.387	0.64	0.338	0.693	-2.116	-0.798	0.68	-2.056	-0.786	0.65
			φ_{11}	0.5	0.634	0.134	0.269	0.199	0.123	0.077	0.431	0.91	0.79	0.418	0.88	0.79
Wave 1		γ_{01}^*	-1	-1.432	-0.432	0.432	1.125	0.539	1.792	-2.562	-0.507	0.85	-2.499	-0.508	0.83	
		γ_{11}^*	0.5	0.874	0.374	0.749	1.091	0.512	1.646	-0.01	1.945	0.81	-0.002	1.89	0.81	
		γ_{x1}	-1.5	-1.61	-0.11	0.073	0.171	0.151	0.065	-1.935	-1.341	0.89	-1.912	-1.329	0.9	
		γ_{S1}	0.5	0.544	0.044	0.088	0.08	0.075	0.014	0.411	0.706	0.93	0.406	0.695	0.94	
Wave 2		γ_{02}^*	-1	-1.497	-0.497	0.497	1.046	0.526	1.662	-2.594	-0.571	0.78	-2.528	-0.564	0.77	
		γ_{12}^*	0.5	0.926	0.426	0.851	0.987	0.493	1.443	0.05	1.948	0.78	0.047	1.9	0.77	
		γ_{x2}	-1.5	-1.601	-0.101	0.067	0.189	0.15	0.07	-1.92	-1.332	0.9	-1.898	-1.32	0.91	
		γ_{S2}	0.5	0.552	0.052	0.104	0.109	0.077	0.021	0.415	0.715	0.87	0.409	0.702	0.92	
Wave 3		γ_{03}^*	-1	-1.426	-0.426	0.426	1.065	0.485	1.582	-2.462	-0.586	0.82	-2.396	-0.579	0.82	
		γ_{13}^*	0.5	0.896	0.396	0.792	1.053	0.459	1.509	0.087	1.868	0.82	0.088	1.814	0.83	
		γ_{x3}	-1.5	-1.553	-0.053	0.035	0.16	0.134	0.047	-1.834	-1.308	0.95	-1.819	-1.299	0.95	
		γ_{S3}	0.5	0.517	0.017	0.034	0.076	0.068	0.011	0.395	0.663	0.93	0.39	0.652	0.93	
Wave 4		γ_{04}^*	-1	-1.474	-0.474	0.474	1.109	0.5	1.748	-2.504	-0.569	0.83	-2.455	-0.579	0.83	
		γ_{14}^*	0.5	0.926	0.426	0.853	1.037	0.472	1.524	0.064	1.897	0.83	0.073	1.851	0.85	
		γ_{x4}	-1.5	-1.571	-0.071	0.047	0.149	0.136	0.046	-1.857	-1.325	0.91	-1.839	-1.315	0.93	
		γ_{S4}	0.5	0.529	0.029	0.058	0.081	0.069	0.012	0.406	0.676	0.9	0.4	0.664	0.92	
df		df_{η_1}	$+\infty$	56.756	NA	NA	8.736	24.363	NA	15.592	97.353	NA	17.73	97.449	NA	
		df_{η_2}	$+\infty$	58.803	NA	NA	8.405	23.598	NA	18.156	97.721	NA	20.545	97.981	NA	
	df_{y_1}	5	7.055	2.055	0.411	2.654	2.339	18.606	3.894	12.534	0.81	3.692	11.79	0.81		
	df_{y_2}	5	7.371	2.371	0.474	3.289	2.443	24.11	3.93	12.799	0.84	3.816	12.18	0.86		

Note:

1. Results are summarized based on 100 converged replications with a convergence rate of $100/145 \approx 68.97\%$.
2. Abbreviations are as given in Table 1.

Table 41: SUMMARY OF NN-CXS MODEL (N=1500, CLASS SEPARATION=2.7)

				BIAS		SE		CI ($\alpha=0.05$)			HPD ($\alpha=0.05$)					
para.		true	est.	smp.	rel.	emp.	avg.	MSE	lower	upper	cover	lower	upper	cover		
Growth Curve Parameters	Class 1	I	5	5.014	0.014	0.003	0.103	0.098	0.02	4.818	5.201	0.89	4.821	5.203	0.9	
		S	3	2.982	-0.018	-0.006	0.098	0.104	0.021	2.778	3.187	0.95	2.778	3.187	0.94	
		var(I)	1	0.953	-0.047	-0.047	0.269	0.205	0.117	0.584	1.387	0.84	0.566	1.36	0.84	
		var(S)	4	3.974	-0.026	-0.006	0.308	0.297	0.184	3.428	4.592	0.94	3.405	4.564	0.94	
		cov(IS)	0	0.032	0.032	0.032	0.181	0.169	0.062	-0.304	0.357	0.92	-0.299	0.36	0.91	
		var(e)	1	1.651	0.651	0.651	0.162	0.089	0.457	1.487	1.833	0	1.482	1.827	0	
	Class 2	I	1	1.02	0.02	0.02	0.139	0.133	0.038	0.768	1.29	0.94	0.763	1.281	0.94	
		S	3	3.018	0.018	0.006	0.117	0.115	0.027	2.795	3.246	0.95	2.794	3.244	0.95	
		var(I)	1	0.961	-0.039	-0.039	0.34	0.268	0.192	0.506	1.55	0.82	0.469	1.487	0.82	
		var(S)	4	4.007	0.007	0.002	0.334	0.339	0.226	3.387	4.714	0.95	3.36	4.678	0.94	
		cov(IS)	0	0.063	0.063	0.063	0.227	0.208	0.099	-0.354	0.463	0.93	-0.345	0.469	0.92	
		var(e)	1	1.717	0.717	0.717	0.223	0.116	0.577	1.498	1.953	0	1.491	1.944	0	
	Probit Parameters		φ_{10}	-1	-1.033	-0.033	0.033	0.148	0.12	0.038	-1.275	-0.805	0.89	-1.265	-0.802	0.9
			φ_{11}	0.5	0.507	0.007	0.015	0.051	0.044	0.005	0.424	0.595	0.9	0.424	0.594	0.89
Wave 1		γ_{01}^*	-1	-1.116	-0.116	0.116	0.249	0.269	0.149	-1.676	-0.622	0.96	-1.64	-0.608	0.96	
		γ_{11}^*	0.5	0.582	0.082	0.165	0.235	0.227	0.114	0.16	1.05	0.92	0.153	1.027	0.93	
		γ_{x1}	-1.5	-1.552	-0.052	0.035	0.109	0.112	0.027	-1.785	-1.345	0.95	-1.773	-1.338	0.96	
		γ_{S1}	0.5	0.526	0.026	0.052	0.053	0.057	0.007	0.42	0.645	0.92	0.417	0.638	0.93	
Wave 2		γ_{02}^*	-1	-1.061	-0.061	0.061	0.277	0.246	0.141	-1.574	-0.608	0.87	-1.549	-0.599	0.85	
		γ_{12}^*	0.5	0.549	0.049	0.098	0.229	0.209	0.099	0.161	0.979	0.89	0.157	0.964	0.89	
		γ_{x2}	-1.5	-1.514	-0.014	0.01	0.102	0.104	0.022	-1.729	-1.322	0.95	-1.72	-1.316	0.94	
		γ_{S2}	0.5	0.508	0.008	0.017	0.057	0.053	0.006	0.409	0.619	0.92	0.406	0.613	0.91	
Wave 3		γ_{03}^*	-1	-1.076	-0.076	0.076	0.262	0.239	0.132	-1.561	-0.628	0.92	-1.54	-0.62	0.93	
		γ_{13}^*	0.5	0.551	0.051	0.102	0.212	0.201	0.088	0.167	0.957	0.93	0.165	0.945	0.94	
		γ_{x3}	-1.5	-1.526	-0.026	0.017	0.082	0.103	0.018	-1.739	-1.334	0.98	-1.729	-1.328	0.99	
		γ_{S3}	0.5	0.514	0.014	0.029	0.053	0.053	0.006	0.417	0.624	0.93	0.414	0.618	0.92	
Wave 4		γ_{04}^*	-1	-1.052	-0.052	0.052	0.28	0.249	0.143	-1.569	-0.589	0.92	-1.54	-0.578	0.92	
		γ_{14}^*	0.5	0.536	0.036	0.072	0.24	0.207	0.102	0.143	0.958	0.91	0.14	0.944	0.91	
	γ_{x4}	-1.5	-1.557	-0.057	0.038	0.135	0.106	0.033	-1.776	-1.36	0.88	-1.766	-1.354	0.88		
	γ_{S4}	0.5	0.518	0.018	0.035	0.061	0.054	0.007	0.418	0.629	0.88	0.415	0.623	0.89		

Note:

1. Results are summarized based on 100 converged replications with a convergence rate of $100/100 = 100\%$.
2. Abbreviations are as given in Table 1.

Table 42: SUMMARY OF NN-CXS MODEL (N=1000, CLASS SEPARATION=2.7)

				BIAS		SE		CI ($\alpha=0.05$)			HPD ($\alpha=0.05$)				
		para.	true	est.	smp.	rel.	emp.	avg.	MSE	lower	upper	cover	lower	upper	cover
Growth Curve Parameters	Class 1	I	5	5.016	0.016	0.003	0.124	0.12	0.03	4.773	5.246	0.96	4.779	5.25	0.95
		S	3	2.977	-0.023	-0.008	0.138	0.129	0.036	2.725	3.23	0.93	2.725	3.229	0.93
		var(I)	1	0.951	-0.049	-0.049	0.31	0.257	0.167	0.498	1.508	0.9	0.466	1.46	0.85
		var(S)	4	4.017	0.017	0.004	0.381	0.368	0.281	3.349	4.793	0.98	3.317	4.751	0.96
		cov(IS)	0	0.013	0.013	0.013	0.264	0.208	0.113	-0.405	0.412	0.9	-0.399	0.416	0.9
		var(e)	1	1.657	0.657	0.657	0.178	0.108	0.475	1.456	1.879	0.01	1.45	1.871	0.01
	Class 2	I	1	1.055	0.055	0.055	0.197	0.16	0.068	0.755	1.387	0.93	0.744	1.372	0.93
		S	3	2.993	-0.007	-0.002	0.148	0.141	0.042	2.719	3.272	0.94	2.717	3.269	0.94
		var(I)	1	0.948	-0.052	-0.052	0.528	0.331	0.398	0.414	1.699	0.83	0.361	1.592	0.81
		var(S)	4	3.962	-0.038	-0.009	0.393	0.409	0.323	3.222	4.825	0.95	3.184	4.775	0.96
		cov(IS)	0	0.087	0.087	0.087	0.236	0.25	0.126	-0.417	0.568	0.95	-0.407	0.575	0.96
		var(e)	1	1.744	0.744	0.744	0.249	0.142	0.635	1.481	2.039	0	1.471	2.025	0
Probit Parameters	Wave 1	φ_{10}	-1	-1.043	-0.043	0.043	0.183	0.149	0.058	-1.348	-0.762	0.94	-1.331	-0.756	0.94
		φ_{11}	0.5	0.513	0.013	0.026	0.056	0.054	0.006	0.41	0.624	0.96	0.409	0.621	0.95
		γ_{01}^*	-1	-1.076	-0.076	0.076	0.415	0.339	0.299	-1.79	-0.46	0.89	-1.745	-0.448	0.9
		γ_{11}^*	0.5	0.576	0.076	0.151	0.335	0.29	0.207	0.041	1.179	0.91	0.03	1.147	0.92
	Wave 2	γ_{x1}	-1.5	-1.574	-0.074	0.049	0.168	0.14	0.054	-1.869	-1.321	0.87	-1.848	-1.307	0.89
		γ_{S1}	0.5	0.521	0.021	0.042	0.089	0.071	0.013	0.393	0.67	0.91	0.388	0.659	0.9
		γ_{02}^*	-1	-1.056	-0.056	0.056	0.306	0.314	0.201	-1.719	-0.491	0.97	-1.678	-0.473	0.93
		γ_{12}^*	0.5	0.535	0.035	0.07	0.258	0.268	0.145	0.047	1.094	0.95	0.038	1.069	0.95
	Wave 3	γ_{x2}	-1.5	-1.552	-0.052	0.035	0.152	0.134	0.044	-1.834	-1.309	0.93	-1.816	-1.298	0.92
		γ_{S2}	0.5	0.519	0.019	0.038	0.067	0.068	0.01	0.395	0.664	0.96	0.391	0.653	0.96
		γ_{03}^*	-1	-1.07	-0.07	0.07	0.381	0.312	0.257	-1.725	-0.501	0.93	-1.692	-0.49	0.93
		γ_{13}^*	0.5	0.547	0.047	0.095	0.317	0.268	0.184	0.055	1.105	0.94	0.045	1.08	0.94
	Wave 4	γ_{x3}	-1.5	-1.585	-0.085	0.057	0.127	0.132	0.041	-1.862	-1.342	0.94	-1.845	-1.331	0.95
		γ_{S3}	0.5	0.523	0.023	0.046	0.066	0.066	0.009	0.402	0.661	0.95	0.398	0.652	0.95
		γ_{04}^*	-1	-1.145	-0.145	0.145	0.469	0.328	0.358	-1.843	-0.549	0.92	-1.801	-0.535	0.93
		γ_{14}^*	0.5	0.586	0.086	0.171	0.433	0.275	0.28	0.077	1.16	0.91	0.066	1.131	0.92
	γ_{x4}	-1.5	-1.582	-0.082	0.055	0.147	0.135	0.047	-1.863	-1.336	0.92	-1.849	-1.328	0.92	
	γ_{S4}	0.5	0.539	0.039	0.077	0.077	0.07	0.012	0.413	0.686	0.88	0.408	0.677	0.91	

Note:

1. Results are summarized based on 100 converged replications with a convergence rate of $100/105 \approx 95.24\%$.
2. Abbreviations are as given in Table 1.

Table 43: SUMMARY OF NN-CXS MODEL (N=1500, CLASS SEPARATION=1.7)

				BIAS		SE		CI ($\alpha=0.05$)			HPD ($\alpha=0.05$)					
		para.	true	est.	smp.	rel.	emp.	avg.	MSE	lower	upper	cover	lower	upper	cover	
Growth Curve Parameters	Class 1	I	3.5	3.385	-0.115	-0.033	0.242	0.152	0.096	3.093	3.683	0.78	3.093	3.679	0.76	
		S	3	2.985	-0.015	-0.005	0.139	0.13	0.037	2.732	3.242	0.94	2.731	3.241	0.95	
		var(I)	1	1.252	0.252	0.252	0.441	0.28	0.341	0.74	1.823	0.79	0.724	1.795	0.77	
		var(S)	4	3.948	-0.052	-0.013	0.331	0.348	0.24	3.303	4.671	0.95	3.278	4.637	0.95	
		cov(IS)	0	-0.004	-0.004	-0.004	0.227	0.202	0.094	-0.407	0.387	0.93	-0.401	0.391	0.92	
		var(e)	1	1.59	0.59	0.59	0.377	0.137	0.527	1.351	1.884	0.05	1.342	1.863	0.05	
	Class 2	I	1	1.196	0.196	0.196	0.348	0.199	0.202	0.814	1.592	0.72	0.814	1.583	0.71	
		S	3	2.995	-0.005	-0.002	0.142	0.151	0.046	2.699	3.295	0.96	2.699	3.289	0.96	
		var(I)	1	1.241	0.241	0.241	0.587	0.362	0.552	0.636	2.02	0.74	0.607	1.932	0.7	
		var(S)	4	3.984	-0.016	-0.004	0.42	0.418	0.372	3.224	4.867	0.96	3.187	4.809	0.96	
		cov(IS)	0	0.08	0.08	0.08	0.263	0.256	0.147	-0.44	0.563	0.91	-0.422	0.574	0.9	
		var(e)	1	1.927	0.927	0.927	0.838	0.247	1.725	1.546	2.493	0.09	1.522	2.434	0.1	
	Probit Parameters		φ_{10}	-1	-1.17	-0.17	0.17	0.576	0.259	0.434	-1.696	-0.7	0.69	-1.665	-0.694	0.71
			φ_{11}	0.5	0.562	0.062	0.125	0.14	0.085	0.031	0.41	0.742	0.79	0.405	0.731	0.83
Wave 1		γ_{01}^*	-1	-1.249	-0.249	0.249	0.674	0.393	0.692	-2.062	-0.553	0.83	-2.02	-0.548	0.83	
		γ_{11}^*	0.5	0.737	0.237	0.474	0.671	0.377	0.668	0.067	1.519	0.83	0.059	1.477	0.85	
Wave 2		γ_{x1}	-1.5	-1.554	-0.054	0.036	0.127	0.116	0.033	-1.8	-1.342	0.93	-1.786	-1.335	0.95	
		γ_{S1}	0.5	0.52	0.02	0.039	0.065	0.059	0.008	0.412	0.646	0.91	0.408	0.638	0.92	
		γ_{02}^*	-1	-1.258	-0.258	0.258	0.78	0.365	0.824	-2.038	-0.613	0.84	-1.995	-0.603	0.82	
		γ_{12}^*	0.5	0.734	0.234	0.467	0.789	0.378	0.897	0.065	1.497	0.81	0.083	1.47	0.82	
Wave 3		γ_{x2}	-1.5	-1.534	-0.034	0.023	0.108	0.11	0.025	-1.764	-1.332	0.92	-1.752	-1.324	0.93	
		γ_{S2}	0.5	0.513	0.013	0.026	0.064	0.056	0.007	0.412	0.632	0.93	0.409	0.625	0.94	
		γ_{03}^*	-1	-1.247	-0.247	0.247	0.633	0.365	0.609	-2.017	-0.601	0.82	-1.964	-0.585	0.84	
		γ_{13}^*	0.5	0.741	0.241	0.481	0.622	0.353	0.584	0.1	1.478	0.84	0.092	1.435	0.84	
Wave 4		γ_{x3}	-1.5	-1.546	-0.046	0.031	0.125	0.113	0.032	-1.78	-1.34	0.95	-1.767	-1.333	0.97	
		γ_{S3}	0.5	0.523	0.023	0.046	0.075	0.058	0.01	0.419	0.644	0.97	0.416	0.637	0.96	
		γ_{04}^*	-1	-1.348	-0.348	0.348	0.752	0.394	0.865	-2.175	-0.652	0.77	-2.115	-0.643	0.77	
		γ_{14}^*	0.5	0.835	0.335	0.671	0.73	0.377	0.809	0.159	1.625	0.76	0.144	1.573	0.79	
	γ_{x4}	-1.5	-1.584	-0.084	0.056	0.14	0.117	0.041	-1.83	-1.372	0.89	-1.816	-1.364	0.89		
	γ_{S4}	0.5	0.537	0.037	0.075	0.073	0.06	0.011	0.43	0.664	0.83	0.426	0.655	0.85		

Note:

1. Results are summarized based on 100 converged replications with a convergence rate of $100/143 \approx 69.93\%$.
2. Abbreviations are as given in Table 1.

Table 44: SUMMARY OF NN-CXS MODEL (N=1000, CLASS SEPARATION=1.7)

				BIAS		SE		CI ($\alpha=0.05$)			HPD ($\alpha=0.05$)				
para.		true	est.	smp.	rel.	emp.	avg.	MSE	lower	upper	cover	lower	upper	cover	
Growth Curve Parameters	Class 1	I	3.5	3.409	-0.091	-0.026	0.292	0.182	0.129	3.06	3.77	0.81	3.059	3.76	0.78
		S	3	2.984	-0.016	-0.005	0.17	0.169	0.059	2.653	3.319	0.93	2.654	3.317	0.93
		var(I)	1	1.23	0.23	0.23	0.532	0.338	0.465	0.65	1.955	0.77	0.619	1.883	0.73
		var(S)	4	3.948	-0.052	-0.013	0.47	0.46	0.444	3.11	4.918	0.94	3.073	4.866	0.94
		cov(IS)	0	-0.063	-0.063	-0.063	0.256	0.255	0.135	-0.58	0.423	0.94	-0.565	0.432	0.95
		var(e)	1	1.57	0.57	0.57	0.337	0.16	0.466	1.266	1.9	0.22	1.262	1.889	0.21
	Class 2	I	1	1.393	0.393	0.393	0.388	0.232	0.375	0.917	1.825	0.48	0.936	1.834	0.46
		S	3	2.971	-0.029	-0.01	0.206	0.175	0.085	2.624	3.313	0.9	2.626	3.312	0.9
		var(I)	1	1.642	0.642	0.642	0.632	0.438	1.091	0.915	2.549	0.5	0.882	2.451	0.47
		var(S)	4	3.987	-0.013	-0.003	0.557	0.499	0.665	3.1	5.04	0.93	3.06	4.96	0.92
		cov(IS)	0	0.049	0.049	0.049	0.354	0.325	0.28	-0.616	0.654	0.92	-0.596	0.666	0.91
		var(e)	1	2.016	1.016	1.016	1.624	0.324	4.514	1.528	2.775	0.12	1.487	2.655	0.12
Probit Parameters	Wave 1	φ_{10}	-1	-1.52	-0.52	0.52	0.854	0.336	1.122	-2.214	-0.904	0.43	-2.163	-0.893	0.42
		φ_{11}	0.5	0.646	0.146	0.293	0.204	0.122	0.079	0.437	0.913	0.68	0.423	0.884	0.7
	Wave 2	γ_{01}^*	-1	-1.518	-0.518	0.518	1.16	0.585	2.019	-2.684	-0.484	0.84	-2.619	-0.49	0.8
		γ_{11}^*	0.5	0.711	0.211	0.421	2.002	1.013	11.611	-1.647	2.086	0.81	-1.298	2.054	0.81
		γ_{x1}	-1.5	-1.611	-0.111	0.074	0.175	0.151	0.066	-1.932	-1.34	0.87	-1.909	-1.326	0.86
		γ_{S1}	0.5	0.542	0.042	0.084	0.077	0.075	0.013	0.408	0.7	0.93	0.402	0.688	0.92
	Wave 3	γ_{02}^*	-1	-1.816	-0.816	0.816	1.288	0.604	2.748	-3.035	-0.746	0.62	-2.973	-0.744	0.65
		γ_{12}^*	0.5	1.177	0.677	1.355	1.526	0.806	5.856	-0.522	2.467	0.69	-0.257	2.431	0.67
		γ_{x2}	-1.5	-1.616	-0.116	0.077	0.208	0.154	0.084	-1.946	-1.343	0.85	-1.923	-1.331	0.91
		γ_{S2}	0.5	0.549	0.049	0.097	0.098	0.076	0.018	0.414	0.714	0.9	0.406	0.699	0.9
	Wave 4	γ_{03}^*	-1	-1.617	-0.617	0.617	1.19	0.544	2.137	-2.725	-0.66	0.75	-2.651	-0.643	0.76
		γ_{13}^*	0.5	0.927	0.427	0.855	1.662	0.809	7.449	-0.866	2.173	0.77	-0.631	2.124	0.75
		γ_{x3}	-1.5	-1.581	-0.081	0.054	0.143	0.14	0.047	-1.877	-1.328	0.93	-1.858	-1.319	0.95
		γ_{S3}	0.5	0.534	0.034	0.069	0.088	0.071	0.014	0.409	0.687	0.89	0.404	0.675	0.9
	Wave 4	γ_{04}^*	-1	-1.641	-0.641	0.641	1.228	0.582	2.344	-2.794	-0.592	0.79	-2.745	-0.608	0.75
		γ_{14}^*	0.5	0.854	0.354	0.707	2.7	0.759	11.423	-0.622	2.185	0.81	-0.525	2.173	0.81
γ_{x4}		-1.5	-1.579	-0.079	0.053	0.16	0.14	0.052	-1.876	-1.327	0.86	-1.857	-1.316	0.87	
γ_{S4}		0.5	0.537	0.037	0.073	0.084	0.071	0.014	0.41	0.688	0.92	0.405	0.678	0.93	

Note:

1. Results are summarized based on 100 converged replications with a convergence rate of $100/150 \approx 66.67\%$.
2. Abbreviations are as given in Table 1.

Table 45: SUMMARY OF TN-CX MODEL (N=1500, CLASS SEPARATION=2.7)

				BIAS		SE		MSE	CI ($\alpha=0.05$)			HPD ($\alpha=0.05$)			
para.	true	est.	smp.	rel.	emp.	avg.	lower		upper	cover	lower	upper	cover		
Growth Curve Parameters	Class 1	I	5	3.668	-1.332	-0.266	0.412	0.13	1.96	3.422	3.93	0.06	3.418	3.923	0.06
		S	3	2.057	-0.943	-0.314	0.874	0.128	1.663	1.813	2.31	0.02	1.812	2.308	0.02
		var(I)	1	4.587	3.587	3.587	1.036	0.439	14.13	3.776	5.491	0.04	3.747	5.45	0.04
		var(S)	4	2.707	-1.293	-0.323	0.689	0.249	2.21	2.249	3.217	0.2	2.235	3.198	0.18
		cov(IS)	0	0.239	0.239	0.239	0.581	0.229	0.445	-0.217	0.684	0.5	-0.211	0.688	0.5
		var(e)	1	1.061	0.061	0.061	0.124	0.108	0.031	0.86	1.28	0.91	0.855	1.273	0.91
	Class 2	I	1	2.59	1.59	1.59	0.872	0.201	3.333	2.188	2.969	0.16	2.198	2.972	0.15
		S	3	3.419	0.419	0.14	1.206	0.158	1.641	3.117	3.734	0	3.114	3.729	0
		var(I)	1	4.001	3.001	3.001	0.97	0.543	10.264	2.996	5.12	0.07	2.967	5.065	0.08
		var(S)	4	2.096	-1.904	-0.476	0.455	0.277	3.913	1.595	2.682	0.03	1.571	2.647	0.03
		cov(IS)	0	0.34	0.34	0.34	0.581	0.276	0.529	-0.206	0.883	0.65	-0.201	0.882	0.66
		var(e)	1	1.136	0.136	0.136	0.222	0.164	0.101	0.839	1.477	0.84	0.825	1.456	0.84
Probit Parameters		φ_{10}	-1	-0.159	0.841	-0.841	0.315	0.109	0.818	-0.373	0.055	0	-0.369	0.05	0.01
		φ_{11}	0.5	0.163	-0.337	-0.673	0.248	0.057	0.178	0.057	0.277	0.18	0.058	0.273	0.18
	Wave 1	γ_{01}^*	NA	0.328	NA	NA	0.93	0.139	NA	0.052	0.591	NA	0.058	0.59	NA
		γ_{11}^*	NA	0.878	NA	NA	1.531	0.198	NA	0.501	1.273	NA	0.5	1.262	NA
	Wave 2	γ_{x1}	NA	-1.39	NA	NA	0.196	0.093	NA	-1.58	-1.215	NA	-1.574	-1.213	NA
		γ_{02}^*	NA	0.297	NA	NA	0.902	0.134	NA	0.031	0.557	NA	0.041	0.558	NA
		γ_{12}^*	NA	0.954	NA	NA	1.527	0.197	NA	0.578	1.348	NA	0.574	1.333	NA
		γ_{x2}	NA	-1.405	NA	NA	0.192	0.096	NA	-1.6	-1.227	NA	-1.592	-1.223	NA
	Wave 3	γ_{03}^*	NA	0.285	NA	NA	0.809	0.133	NA	0.02	0.541	NA	0.024	0.538	NA
		γ_{13}^*	NA	0.978	NA	NA	1.459	0.197	NA	0.604	1.374	NA	0.604	1.363	NA
		γ_{x3}	NA	-1.397	NA	NA	0.163	0.094	NA	-1.588	-1.22	NA	-1.583	-1.218	NA
	Wave 4	γ_{04}^*	NA	0.299	NA	NA	0.762	0.136	NA	0.028	0.558	NA	0.036	0.56	NA
		γ_{14}^*	NA	0.974	NA	NA	1.416	0.195	NA	0.603	1.363	NA	0.603	1.353	NA
		γ_{x4}	NA	-1.405	NA	NA	0.177	0.094	NA	-1.597	-1.228	NA	-1.588	-1.224	NA
	df	df_{y1}	5	6.433	1.433	0.287	2.318	1.621	11.11	4.087	10.179	0.86	3.922	9.665	0.89
		df_{y2}	5	8.171	3.171	0.634	3.343	2.672	30.131	4.377	14.027	0.67	4.229	13.301	0.69

Note:

1. Results are summarized based on 100 converged replications with a convergence rate of $100/118 \approx 84.75\%$.
2. Abbreviations are as given in Table 1.

Table 46: SUMMARY OF TN-CX MODEL (N=1000, CLASS SEPARATION=2.7)

				BIAS		SE		CI ($\alpha=0.05$)			HPD ($\alpha=0.05$)					
	para.	true	est.	smp.	rel.	emp.	avg.	MSE	lower	upper	cover	lower	upper	cover		
Growth Curve Parameters	Class 1	I	5	3.702	-1.298	-0.26	0.421	0.157	1.885	3.404	4.019	0.05	3.4	4.01	0.05	
		S	3	2.009	-0.991	-0.33	0.898	0.157	1.807	1.703	2.32	0.04	1.704	2.316	0.05	
		var(I)	1	4.518	3.518	3.518	1.126	0.541	13.943	3.529	5.658	0.04	3.491	5.593	0.04	
		var(S)	4	2.731	-1.269	-0.317	0.802	0.311	2.352	2.157	3.378	0.24	2.134	3.344	0.24	
		cov(IS)	0	0.294	0.294	0.294	0.553	0.282	0.471	-0.273	0.839	0.59	-0.263	0.845	0.58	
		var(e)	1	1.067	0.067	0.067	0.148	0.131	0.044	0.823	1.335	0.88	0.816	1.323	0.89	
	Class 2	I	1	2.542	1.542	1.542	0.931	0.245	3.311	2.056	3.011	0.21	2.07	3.013	0.21	
		S	3	3.501	0.501	0.167	1.119	0.196	1.533	3.117	3.89	0.02	3.116	3.884	0.02	
		var(I)	1	3.97	2.97	2.97	1.122	0.663	10.562	2.785	5.368	0.13	2.734	5.281	0.16	
		var(S)	4	2.198	-1.802	-0.45	0.49	0.356	3.621	1.57	2.966	0.05	1.535	2.913	0.05	
		cov(IS)	0	0.379	0.379	0.379	0.598	0.336	0.616	-0.288	1.039	0.69	-0.286	1.034	0.7	
		var(e)	1	1.141	0.141	0.141	0.233	0.198	0.12	0.787	1.557	0.87	0.769	1.524	0.85	
	Probit Parameters		φ_{10}	-1	-0.228	0.772	-0.772	0.344	0.137	0.734	-0.507	0.032	0.09	-0.498	0.031	0.08
			φ_{11}	0.5	0.186	-0.314	-0.627	0.278	0.072	0.181	0.05	0.332	0.29	0.052	0.326	0.28
Wave 1		γ_{01}^*	NA	0.322	NA	NA	0.854	0.18	NA	-0.05	0.657	NA	-0.035	0.657	NA	
		γ_{11}^*	NA	0.914	NA	NA	1.427	0.244	NA	0.452	1.41	NA	0.448	1.391	NA	
		γ_{x1}	NA	-1.383	NA	NA	0.224	0.115	NA	-1.62	-1.168	NA	-1.609	-1.162	NA	
		γ_{02}^*	NA	0.237	NA	NA	0.874	0.178	NA	-0.126	0.57	NA	-0.117	0.569	NA	
Wave 2		γ_{12}^*	NA	1.053	NA	NA	1.456	0.251	NA	0.581	1.565	NA	0.578	1.549	NA	
		γ_{x2}	NA	-1.395	NA	NA	0.226	0.119	NA	-1.639	-1.173	NA	-1.628	-1.167	NA	
Wave 3		γ_{03}^*	NA	0.197	NA	NA	0.802	0.177	NA	-0.17	0.524	NA	-0.151	0.53	NA	
		γ_{13}^*	NA	1.126	NA	NA	1.403	0.249	NA	0.662	1.64	NA	0.655	1.616	NA	
		γ_{x3}	NA	-1.424	NA	NA	0.21	0.119	NA	-1.67	-1.203	NA	-1.659	-1.198	NA	
Wave 4		γ_{04}^*	NA	0.21	NA	NA	0.849	0.179	NA	-0.161	0.538	NA	-0.143	0.543	NA	
		γ_{14}^*	NA	1.09	NA	NA	1.432	0.248	NA	0.631	1.6	NA	0.623	1.578	NA	
		γ_{x4}	NA	-1.398	NA	NA	0.205	0.117	NA	-1.639	-1.181	NA	-1.628	-1.175	NA	
df		df_{y1}	5	6.891	1.891	0.378	2.729	2.088	16.972	3.992	11.74	0.8	3.79	11.08	0.81	
		df_{y2}	5	8.58	3.58	0.716	3.345	3.153	35.825	3.966	15.204	0.79	3.935	14.601	0.73	

Note:

1. Results are summarized based on 100 converged replications with a convergence rate of $100/119 \approx 84.03\%$.
2. Abbreviations are as given in Table 1.

Table 47: SUMMARY OF TN-CX MODEL (N=1500, CLASS SEPARATION=1.7)

	para.	true	BIAS				SE		MSE	CI ($\alpha=0.05$)			HPD ($\alpha=0.05$)		
			est.	smp.	rel.	emp.	avg.	lower		upper	cover	lower	upper	cover	
Growth Curve Parameters	Class 1	I	3.5	2.559	-0.941	-0.269	0.105	0.092	0.904	2.388	2.747	0	2.383	2.74	0
		S	3	1.466	-1.534	-0.511	0.433	0.13	2.555	1.209	1.72	0	1.211	1.722	0
		var(I)	1	2.674	1.674	1.674	0.269	0.29	2.959	2.142	3.281	0	2.118	3.249	0
		var(S)	4	2.182	-1.818	-0.455	0.285	0.213	3.432	1.791	2.624	0.01	1.775	2.604	0.01
		cov(IS)	0	0.225	0.225	0.225	0.242	0.182	0.142	-0.141	0.576	0.73	-0.135	0.581	0.73
		var(e)	1	1.066	0.066	0.066	0.141	0.114	0.038	0.854	1.298	0.85	0.848	1.289	0.85
	Class 2	I	1	2.435	1.435	1.435	0.205	0.125	2.118	2.175	2.668	0.01	2.186	2.675	0.01
		S	3	4.012	1.012	0.337	0.519	0.148	1.312	3.729	4.308	0	3.726	4.303	0
		var(I)	1	2.331	1.331	1.331	0.31	0.314	1.967	1.748	2.981	0.01	1.729	2.955	0.03
		var(S)	4	1.986	-2.014	-0.503	0.253	0.239	4.176	1.548	2.484	0	1.53	2.46	0
		cov(IS)	0	0.225	0.225	0.225	0.206	0.202	0.135	-0.172	0.622	0.8	-0.169	0.622	0.79
		var(e)	1	1.066	0.066	0.066	0.155	0.135	0.047	0.818	1.343	0.92	0.809	1.331	0.92
	Probit Parameters	φ_{10}	-1	-0.037	0.963	-0.963	0.137	0.099	0.955	-0.232	0.159	0	-0.232	0.153	0
			0.5	-0.015	-0.515	-1.03	0.08	0.043	0.273	-0.099	0.072	0.01	-0.098	0.069	0.01
Wave 1		γ_{01}^*	NA	0.023	NA	NA	0.344	0.112	NA	-0.205	0.236	NA	-0.198	0.239	NA
		γ_{11}^*	NA	1.595	NA	NA	0.64	0.194	NA	1.232	1.992	NA	1.225	1.976	NA
Wave 2		γ_{x1}	NA	-1.436	NA	NA	0.109	0.094	NA	-1.629	-1.261	NA	-1.62	-1.256	NA
		γ_{02}^*	NA	-0.008	NA	NA	0.336	0.113	NA	-0.236	0.207	NA	-0.229	0.21	NA
		γ_{12}^*	NA	1.669	NA	NA	0.633	0.191	NA	1.31	2.061	NA	1.302	2.045	NA
		γ_{x2}	NA	-1.45	NA	NA	0.111	0.094	NA	-1.643	-1.276	NA	-1.634	-1.271	NA
Wave 3		γ_{03}^*	NA	-0.02	NA	NA	0.333	0.116	NA	-0.254	0.199	NA	-0.247	0.202	NA
		γ_{13}^*	NA	1.693	NA	NA	0.638	0.193	NA	1.331	2.087	NA	1.322	2.071	NA
		γ_{x3}	NA	-1.458	NA	NA	0.102	0.094	NA	-1.65	-1.283	NA	-1.642	-1.278	NA
Wave 4		γ_{04}^*	NA	0.006	NA	NA	0.307	0.114	NA	-0.226	0.222	NA	-0.219	0.225	NA
		γ_{14}^*	NA	1.648	NA	NA	0.582	0.188	NA	1.294	2.031	NA	1.287	2.017	NA
		γ_{x4}	NA	-1.458	NA	NA	0.12	0.092	NA	-1.648	-1.286	NA	-1.64	-1.282	NA
df		df_{y1}	5	6.808	1.808	0.362	2.59	1.876	14.722	4.172	11.246	0.81	3.973	10.496	0.85
		df_{y2}	5	6.73	1.73	0.346	2.606	2.021	15.269	3.92	11.449	0.89	3.759	10.778	0.9

Note:

1. Results are summarized based on 100 converged replications with a convergence rate of $100/106 \approx 94.34\%$.
2. Abbreviations are as given in Table 1.

Table 48: SUMMARY OF TN-CX MODEL (N=1000, CLASS SEPARATION=1.7)

	para.	true	BIAS				SE		MSE	CI ($\alpha=0.05$)			HPD ($\alpha=0.05$)		
			est.	smp.	rel.	emp.	avg.	lower		upper	cover	lower	upper	cover	
Growth Curve Parameters	Class 1	I	3.5	2.579	-0.921	-0.263	0.109	0.112	0.872	2.371	2.808	0	2.365	2.8	0
		S	3	1.448	-1.552	-0.517	0.531	0.162	2.716	1.127	1.764	0	1.13	1.765	0
		var(I)	1	2.688	1.688	1.688	0.351	0.365	3.109	2.03	3.46	0	1.997	3.415	0
		var(S)	4	2.2	-1.8	-0.45	0.313	0.269	3.412	1.713	2.763	0	1.689	2.732	0
		cov(IS)	0	0.182	0.182	0.182	0.266	0.23	0.157	-0.284	0.622	0.84	-0.273	0.632	0.83
		var(e)	1	1.079	0.079	0.079	0.165	0.142	0.054	0.817	1.369	0.85	0.809	1.358	0.87
	Class 2	I	1	2.42	1.42	1.42	0.219	0.158	2.092	2.092	2.713	0.01	2.11	2.725	0.01
		S	3	3.983	0.983	0.328	0.615	0.181	1.375	3.637	4.346	0	3.632	4.338	0
		var(I)	1	2.288	1.288	1.288	0.393	0.389	1.969	1.573	3.101	0.11	1.543	3.061	0.12
		var(S)	4	1.986	-2.014	-0.504	0.309	0.295	4.24	1.455	2.611	0	1.427	2.574	0
		cov(IS)	0	0.214	0.214	0.214	0.265	0.249	0.179	-0.282	0.699	0.83	-0.279	0.699	0.82
		var(e)	1	1.109	0.109	0.109	0.168	0.168	0.07	0.803	1.457	0.88	0.79	1.437	0.9
	Probit Parameters	φ_{10}	-1	-0.019	0.981	-0.981	0.219	0.121	1.025	-0.255	0.219	0.01	-0.251	0.217	0.01
			0.5	-0.025	-0.525	-1.049	0.08	0.056	0.285	-0.134	0.086	0.01	-0.133	0.081	0.01
Wave 1		γ_{01}^*	NA	0.032	NA	NA	0.381	0.136	NA	-0.242	0.29	NA	-0.235	0.292	NA
		γ_{11}^*	NA	1.604	NA	NA	0.734	0.242	NA	1.154	2.103	NA	1.145	2.083	NA
		γ_{x1}	NA	-1.463	NA	NA	0.133	0.118	NA	-1.71	-1.247	NA	-1.696	-1.238	NA
		γ_{02}^*	NA	-0.014	NA	NA	0.39	0.143	NA	-0.305	0.256	NA	-0.297	0.259	NA
Wave 2		γ_{12}^*	NA	1.743	NA	NA	0.761	0.251	NA	1.274	2.261	NA	1.262	2.237	NA
		γ_{x2}	NA	-1.511	NA	NA	0.127	0.122	NA	-1.766	-1.287	NA	-1.753	-1.279	NA
Wave 3		γ_{03}^*	NA	0.006	NA	NA	0.391	0.14	NA	-0.278	0.272	NA	-0.269	0.275	NA
		γ_{13}^*	NA	1.684	NA	NA	0.754	0.243	NA	1.232	2.183	NA	1.22	2.16	NA
		γ_{x3}	NA	-1.486	NA	NA	0.147	0.118	NA	-1.733	-1.269	NA	-1.721	-1.262	NA
Wave 4		γ_{04}^*	NA	0.007	NA	NA	0.378	0.14	NA	-0.279	0.271	NA	-0.268	0.275	NA
		γ_{14}^*	NA	1.636	NA	NA	0.689	0.234	NA	1.198	2.115	NA	1.19	2.097	NA
df		df_{y1}	5	7.099	2.099	0.42	2.754	2.339	19.228	3.882	12.449	0.81	3.711	11.809	0.83
		df_{y2}	5	7.696	2.696	0.539	3.151	2.709	26.442	3.916	13.657	0.81	3.757	12.997	0.83

Note:

1. Results are summarized based on 100 converged replications with a convergence rate of $100/106 \approx 94.34\%$.
2. Abbreviations are as given in Table 1.

Table 49: SUMMARY OF NN-CX MODEL (N=1500, CLASS SEPARATION=2.7)

				BIAS		SE		CI ($\alpha=0.05$)			HPD ($\alpha=0.05$)					
		para.	true	est.	smp.	rel.	emp.	avg.	MSE	lower	upper	cover	lower	upper	cover	
Growth Curve Parameters	Class 1	I	5	3.606	-1.394	-0.279	0.356	0.13	2.086	3.354	3.864	0.03	3.358	3.858	0.03	
		S	3	1.972	-1.028	-0.343	0.758	0.142	1.65	1.69	2.235	0.01	1.695	2.235	0.01	
		var(I)	1	4.722	3.722	3.722	0.845	0.45	14.77	3.908	5.669	0.03	3.872	5.592	0.03	
		var(S)	4	2.78	-1.22	-0.305	0.685	0.269	2.035	2.269	3.308	0.21	2.261	3.293	0.21	
		cov(IS)	0	0.346	0.346	0.346	0.543	0.239	0.47	-0.134	0.806	0.47	-0.125	0.805	0.48	
		var(e)	1	1.576	0.576	0.576	0.231	0.114	0.4	1.366	1.816	0.01	1.361	1.804	0.02	
	Class 2	I	1	2.634	1.634	1.634	0.838	0.239	3.45	2.187	3.086	0.15	2.196	3.086	0.15	
		S	3	3.608	0.608	0.203	1.009	0.172	1.41	3.282	3.953	0.03	3.279	3.943	0.03	
		var(I)	1	3.733	2.733	2.733	1.124	0.598	9.116	2.666	4.972	0.12	2.631	4.903	0.12	
		var(S)	4	2.115	-1.885	-0.471	0.454	0.316	3.868	1.545	2.785	0.04	1.521	2.742	0.04	
		cov(IS)	0	0.481	0.481	0.481	0.597	0.312	0.693	-0.146	1.073	0.6	-0.136	1.076	0.59	
		var(e)	1	2.177	1.177	1.177	1.072	0.29	2.66	1.671	2.802	0.07	1.642	2.75	0.1	
	Probit Parameters	Wave 1	φ_{10}	-1	-0.173	0.827	-0.827	0.291	0.114	0.781	-0.393	0.051	0.02	-0.388	0.045	0.01
			φ_{11}	0.5	0.181	-0.319	-0.639	0.267	0.068	0.179	0.049	0.307	0.23	0.052	0.306	0.23
Wave 2		γ_{01}^*	NA	0.183	NA	NA	0.711	0.138	NA	-0.099	0.441	NA	-0.091	0.441	NA	
		γ_{11}^*	NA	1.14	NA	NA	1.254	0.198	NA	0.77	1.544	NA	0.767	1.532	NA	
Wave 3		γ_{x1}	NA	-1.352	NA	NA	0.207	0.097	NA	-1.55	-1.174	NA	-1.543	-1.171	NA	
		γ_{02}^*	NA	0.168	NA	NA	0.727	0.133	NA	-0.098	0.421	NA	-0.091	0.422	NA	
Wave 4		γ_{12}^*	NA	1.188	NA	NA	1.294	0.196	NA	0.817	1.584	NA	0.814	1.572	NA	
		γ_{x2}	NA	-1.374	NA	NA	0.213	0.099	NA	-1.576	-1.192	NA	-1.568	-1.187	NA	
Wave 3		γ_{03}^*	NA	0.148	NA	NA	0.712	0.133	NA	-0.121	0.4	NA	-0.111	0.403	NA	
		γ_{13}^*	NA	1.236	NA	NA	1.265	0.195	NA	0.865	1.629	NA	0.863	1.616	NA	
Wave 4		γ_{x3}	NA	-1.377	NA	NA	0.188	0.099	NA	-1.579	-1.194	NA	-1.57	-1.19	NA	
		γ_{04}^*	NA	0.166	NA	NA	0.666	0.133	NA	-0.106	0.416	NA	-0.094	0.419	NA	
Wave 4		γ_{14}^*	NA	1.225	NA	NA	1.228	0.193	NA	0.86	1.62	NA	0.853	1.6	NA	
		γ_{x4}	NA	-1.386	NA	NA	0.196	0.097	NA	-1.586	-1.207	NA	-1.578	-1.203	NA	

Note:

1. Results are summarized based on 100 converged replications with a convergence rate of $100/105 \approx 95.24\%$.
2. Abbreviations are as given in Table 1.

Table 50: SUMMARY OF NN-CX MODEL (N=1000, CLASS SEPARATION=2.7)

				BIAS		SE		CI ($\alpha=0.05$)			HPD ($\alpha=0.05$)					
para.		true	est.	smp.	rel.	emp.	avg.	MSE	lower	upper	cover	lower	upper	cover		
Growth Curve Parameters	Class 1	I	5	3.664	-1.336	-0.267	0.403	0.159	1.975	3.366	3.976	0.05	3.361	3.968	0.04	
		S	3	1.972	-1.028	-0.343	0.851	0.16	1.802	1.661	2.285	0.02	1.662	2.284	0.02	
		var(I)	1	4.618	3.618	3.618	1.078	0.566	14.599	3.604	5.799	0.03	3.558	5.732	0.04	
		var(S)	4	2.782	-1.218	-0.305	0.807	0.316	2.236	2.206	3.442	0.28	2.181	3.407	0.25	
		cov(IS)	0	0.326	0.326	0.326	0.492	0.291	0.434	-0.258	0.887	0.57	-0.249	0.892	0.58	
		var(e)	1	1.676	0.676	0.676	0.325	0.145	0.586	1.413	1.973	0.01	1.403	1.958	0.01	
	Class 2	I	1	2.64	1.64	1.64	0.857	0.26	3.5	2.121	3.136	0.18	2.14	3.141	0.18	
		S	3	3.571	0.571	0.19	1.015	0.217	1.4	3.16	4.004	0.06	3.155	3.996	0.06	
		var(I)	1	3.764	2.764	2.764	1.278	0.688	9.784	2.551	5.231	0.21	2.492	5.117	0.22	
		var(S)	4	2.303	-1.697	-0.424	0.584	0.409	3.426	1.58	3.179	0.1	1.538	3.112	0.07	
		cov(IS)	0	0.401	0.401	0.401	0.63	0.375	0.715	-0.35	1.122	0.72	-0.335	1.13	0.71	
		var(e)	1	2.229	1.229	1.229	1.558	0.368	4.213	1.641	3.051	0.12	1.595	2.961	0.12	
	Probit Parameters	Wave 1	φ_{10}	-1	-0.191	0.809	-0.809	0.363	0.142	0.808	-0.467	0.084	0.08	-0.459	0.081	0.08
			φ_{11}	0.5	0.178	-0.322	-0.643	0.288	0.076	0.193	0.036	0.333	0.25	0.036	0.326	0.24
Wave 2		γ_{01}^*	NA	0.222	NA	NA	0.807	0.172	NA	-0.131	0.546	NA	-0.116	0.546	NA	
		γ_{11}^*	NA	1.084	NA	NA	1.321	0.242	NA	0.627	1.58	NA	0.618	1.559	NA	
Wave 3		γ_{x1}	NA	-1.367	NA	NA	0.211	0.114	NA	-1.602	-1.154	NA	-1.591	-1.148	NA	
		γ_{02}^*	NA	0.158	NA	NA	0.798	0.173	NA	-0.198	0.482	NA	-0.182	0.487	NA	
		γ_{12}^*	NA	1.211	NA	NA	1.326	0.255	NA	0.738	1.735	NA	0.732	1.717	NA	
		γ_{x2}	NA	-1.386	NA	NA	0.224	0.119	NA	-1.632	-1.163	NA	-1.621	-1.158	NA	
Wave 4		γ_{03}^*	NA	0.177	NA	NA	0.766	0.172	NA	-0.182	0.498	NA	-0.164	0.501	NA	
		γ_{13}^*	NA	1.225	NA	NA	1.328	0.253	NA	0.756	1.751	NA	0.746	1.721	NA	
		γ_{x3}	NA	-1.42	NA	NA	0.217	0.121	NA	-1.671	-1.197	NA	-1.66	-1.192	NA	
		γ_{04}^*	NA	0.158	NA	NA	0.745	0.171	NA	-0.196	0.478	NA	-0.181	0.483	NA	
Wave 4		γ_{14}^*	NA	1.209	NA	NA	1.288	0.247	NA	0.747	1.713	NA	0.74	1.693	NA	
		γ_{x4}	NA	-1.38	NA	NA	0.196	0.117	NA	-1.622	-1.165	NA	-1.612	-1.16	NA	

Note:

1. Results are summarized based on 100 converged replications with a convergence rate of $100/110 \approx 90.91\%$.
2. Abbreviations are as given in Table 1.

Table 51: SUMMARY OF NN-CX MODEL (N=1500, CLASS SEPARATION=1.7)

				BIAS		SE		CI ($\alpha=0.05$)			HPD ($\alpha=0.05$)					
para.		true	est.	smp.	rel.	emp.	avg.	MSE	lower	upper	cover	lower	upper	cover		
Growth Curve Parameters	Class 1	I	3.5	2.558	-0.942	-0.269	0.101	0.093	0.907	2.384	2.747	0	2.38	2.741	0	
		S	3	1.492	-1.508	-0.503	0.433	0.138	2.48	1.223	1.761	0	1.224	1.761	0	
		var(I)	1	2.663	1.663	1.663	0.409	0.303	3.031	2.105	3.294	0.01	2.084	3.266	0.01	
		var(S)	4	2.273	-1.727	-0.432	0.374	0.233	3.179	1.847	2.758	0.01	1.829	2.734	0.01	
		cov(IS)	0	0.248	0.248	0.248	0.249	0.187	0.159	-0.127	0.608	0.68	-0.12	0.613	0.67	
		var(e)	1	1.65	0.65	0.65	0.362	0.13	0.573	1.415	1.926	0.01	1.407	1.908	0.02	
	Class 2	I	1	2.414	1.414	1.414	0.239	0.135	2.075	2.134	2.666	0.02	2.146	2.674	0.02	
		S	3	4.024	1.024	0.341	0.424	0.155	1.251	3.729	4.335	0	3.726	4.329	0	
		var(I)	1	2.22	1.22	1.22	0.472	0.344	1.833	1.579	2.925	0.13	1.56	2.896	0.13	
		var(S)	4	2.041	-1.959	-0.49	0.346	0.266	4.033	1.557	2.598	0.01	1.534	2.567	0.01	
		cov(IS)	0	0.234	0.234	0.234	0.252	0.221	0.17	-0.204	0.662	0.81	-0.198	0.665	0.79	
		var(e)	1	1.858	0.858	0.858	0.731	0.205	1.331	1.496	2.297	0.06	1.478	2.262	0.07	
	Probit Parameters	Wave 1	φ_{10}	-1	-0.051	0.949	-0.949	0.149	0.1	0.932	-0.244	0.147	0	-0.243	0.143	0
			φ_{11}	0.5	0.003	-0.497	-0.993	0.135	0.048	0.267	-0.089	0.099	0.03	-0.088	0.095	0.03
Wave 2		γ_{01}^*	NA	0.005	NA	NA	0.35	0.113	NA	-0.224	0.221	NA	-0.216	0.225	NA	
		γ_{11}^*	NA	1.622	NA	NA	0.565	0.193	NA	1.258	2.016	NA	1.253	2.005	NA	
		γ_{x1}	NA	-1.423	NA	NA	0.126	0.094	NA	-1.616	-1.246	NA	-1.61	-1.243	NA	
		γ_{02}^*	NA	-0.03	NA	NA	0.325	0.114	NA	-0.26	0.187	NA	-0.255	0.189	NA	
Wave 3		γ_{12}^*	NA	1.704	NA	NA	0.538	0.193	NA	1.34	2.096	NA	1.331	2.08	NA	
		γ_{x2}	NA	-1.442	NA	NA	0.124	0.095	NA	-1.637	-1.265	NA	-1.629	-1.261	NA	
		γ_{03}^*	NA	-0.031	NA	NA	0.317	0.116	NA	-0.264	0.188	NA	-0.257	0.192	NA	
		γ_{13}^*	NA	1.707	NA	NA	0.528	0.193	NA	1.345	2.102	NA	1.337	2.085	NA	
Wave 4		γ_{x3}	NA	-1.439	NA	NA	0.118	0.094	NA	-1.633	-1.264	NA	-1.625	-1.259	NA	
		γ_{04}^*	NA	-0.002	NA	NA	0.315	0.115	NA	-0.235	0.215	NA	-0.226	0.22	NA	
		γ_{14}^*	NA	1.667	NA	NA	0.51	0.189	NA	1.314	2.052	NA	1.307	2.037	NA	
		γ_{x4}	NA	-1.447	NA	NA	0.133	0.093	NA	-1.638	-1.273	NA	-1.631	-1.269	NA	

Note:

1. Results are summarized based on 100 converged replications with a convergence rate of $100/104 \approx 96.15\%$.
2. Abbreviations are as given in Table 1.

Table 52: SUMMARY OF NN-CX MODEL (N=1000, CLASS SEPARATION=1.7)

				BIAS		SE		CI ($\alpha=0.05$)			HPD ($\alpha=0.05$)					
para.		true	est.	smp.	rel.	emp.	avg.	MSE	lower	upper	cover	lower	upper	cover		
Growth Curve Parameters	Class 1	I	3.5	2.569	-0.931	-0.266	0.112	0.115	0.892	2.358	2.807	0.01	2.352	2.798	0	
		S	3	1.5	-1.5	-0.5	0.483	0.163	2.509	1.182	1.822	0	1.183	1.82	0	
		var(I)	1	2.676	1.676	1.676	0.387	0.375	3.106	1.997	3.466	0	1.965	3.421	0	
		var(S)	4	2.356	-1.644	-0.411	0.499	0.283	3.031	1.849	2.96	0.07	1.821	2.921	0.07	
		cov(IS)	0	0.207	0.207	0.207	0.276	0.232	0.174	-0.264	0.65	0.76	-0.252	0.659	0.76	
		var(e)	1	1.654	0.654	0.654	0.324	0.155	0.56	1.378	1.974	0.03	1.367	1.958	0.03	
	Class 2	I	1	2.371	1.371	1.371	0.269	0.184	1.994	1.987	2.711	0.07	2.002	2.721	0.07	
		S	3	4.03	1.03	0.343	0.485	0.195	1.335	3.659	4.423	0.01	3.652	4.413	0.01	
		var(I)	1	2.173	1.173	1.173	0.511	0.472	1.909	1.352	3.184	0.24	1.314	3.099	0.24	
		var(S)	4	2.023	-1.977	-0.494	0.389	0.346	4.192	1.411	2.765	0.02	1.374	2.708	0.01	
		cov(IS)	0	0.254	0.254	0.254	0.32	0.292	0.264	-0.337	0.81	0.81	-0.319	0.819	0.82	
		var(e)	1	2.203	1.203	1.203	1.625	0.363	4.458	1.612	3.009	0.07	1.564	2.919	0.11	
	Probit Parameters	Wave 1	φ_{10}	-1	-0.032	0.968	-0.968	0.217	0.122	0.998	-0.27	0.209	0	-0.268	0.205	0.01
			φ_{11}	0.5	0.017	-0.483	-0.965	0.167	0.062	0.265	-0.102	0.143	0.06	-0.101	0.139	0.05
Wave 2		γ_{01}^*	NA	-0.006	NA	NA	0.273	0.136	NA	-0.28	0.251	NA	-0.272	0.255	NA	
		γ_{11}^*	NA	1.671	NA	NA	0.511	0.241	NA	1.227	2.17	NA	1.214	2.146	NA	
Wave 3		γ_{x1}	NA	-1.43	NA	NA	0.156	0.118	NA	-1.676	-1.213	NA	-1.665	-1.206	NA	
		γ_{02}^*	NA	-0.047	NA	NA	0.345	0.143	NA	-0.339	0.224	NA	-0.331	0.227	NA	
		γ_{12}^*	NA	1.797	NA	NA	0.599	0.249	NA	1.335	2.31	NA	1.323	2.287	NA	
		γ_{x2}	NA	-1.475	NA	NA	0.157	0.122	NA	-1.727	-1.25	NA	-1.716	-1.244	NA	
Wave 4		γ_{03}^*	NA	-0.04	NA	NA	0.287	0.139	NA	-0.323	0.222	NA	-0.312	0.228	NA	
		γ_{13}^*	NA	1.757	NA	NA	0.516	0.241	NA	1.311	2.258	NA	1.297	2.234	NA	
		γ_{x3}	NA	-1.455	NA	NA	0.171	0.118	NA	-1.7	-1.237	NA	-1.689	-1.231	NA	
		γ_{04}^*	NA	-0.032	NA	NA	0.309	0.141	NA	-0.319	0.233	NA	-0.307	0.24	NA	
		γ_{14}^*	NA	1.704	NA	NA	0.505	0.234	NA	1.271	2.189	NA	1.258	2.166	NA	
		γ_{x4}	NA	-1.432	NA	NA	0.129	0.113	NA	-1.665	-1.222	NA	-1.655	-1.216	NA	

Note:

1. Results are summarized based on 100 converged replications with a convergence rate of $100/102 \approx 98.04\%$.
2. Abbreviations are as given in Table 1.

3 Results Summary Tables in Study 3

Table 53: SUMMARY OF 1 CLASS TN-XS MODEL (N=1000)

	para.	true	BIAS		SE		MSE	CI ($\alpha=0.05$)			HPD ($\alpha=0.05$)				
			est.	smp.	rel.	emp.		avg.	lower	upper	cover	lower	upper	cover	
Growth Curve	I	NA	3.007	NA	NA	0.092	0.098	NA	2.814	3.199	NA	2.815	3.199	NA	
	S	NA	2.988	NA	NA	0.091	0.079	NA	2.834	3.145	NA	2.833	3.144	NA	
	var(I)	NA	5.057	NA	NA	0.282	0.343	NA	4.421	5.763	NA	4.398	5.734	NA	
	var(S)	NA	4.014	NA	NA	0.255	0.244	NA	3.561	4.516	NA	3.546	4.497	NA	
	cov(IS)	NA	0.002	NA	NA	0.197	0.21	NA	-0.415	0.408	NA	-0.409	0.412	NA	
	var(e)	NA	1.059	NA	NA	0.113	0.092	NA	0.888	1.247	NA	0.883	1.24	NA	
Probit Parameters	Wave 1	γ_{01}	NA	-1.026	NA	NA	0.172	0.184	NA	-1.406	-0.682	NA	-1.389	-0.673	NA
		γ_{x1}	NA	-1.556	NA	NA	0.117	0.13	NA	-1.83	-1.321	NA	-1.814	-1.311	NA
		γ_{S1}	NA	0.518	NA	NA	0.054	0.066	NA	0.397	0.655	NA	0.394	0.648	NA
	Wave 2	γ_{02}	NA	-1.068	NA	NA	0.19	0.181	NA	-1.44	-0.729	NA	-1.426	-0.722	NA
		γ_{x2}	NA	-1.546	NA	NA	0.135	0.126	NA	-1.81	-1.315	NA	-1.794	-1.304	NA
		γ_{S2}	NA	0.526	NA	NA	0.067	0.065	NA	0.407	0.661	NA	0.403	0.653	NA
	Wave 3	γ_{03}	NA	-1.027	NA	NA	0.175	0.177	NA	-1.389	-0.693	NA	-1.376	-0.688	NA
		γ_{x3}	NA	-1.536	NA	NA	0.128	0.121	NA	-1.786	-1.314	NA	-1.774	-1.306	NA
		γ_{S3}	NA	0.517	NA	NA	0.064	0.061	NA	0.403	0.644	NA	0.401	0.638	NA
	Wave 4	γ_{04}	NA	-1.056	NA	NA	0.18	0.185	NA	-1.436	-0.711	NA	-1.421	-0.704	NA
		γ_{x4}	NA	-1.568	NA	NA	0.137	0.124	NA	-1.826	-1.341	NA	-1.814	-1.332	NA
		γ_{S4}	NA	0.526	NA	NA	0.066	0.063	NA	0.41	0.656	NA	0.407	0.649	NA
	df_y	NA	6.186	NA	NA	1.846	1.341	NA	4.234	9.417	NA	4.017	8.903	NA	

Note:

1. Results are summarized based on 100 converged replications with a convergence rate of $100/100 = 100\%$.
2. Abbreviations are as given in Table 1.

Table 54: SUMMARY OF 1 CLASS TT-XS MODEL (N=1000)

	para.	true	est.	BIAS		SE		MSE	CI ($\alpha=0.05$)			HPD ($\alpha=0.05$)			
				smp.	rel.	emp.	avg.		lower	upper	cover	lower	upper	cover	
Growth Curve	I	NA	3.007	NA	NA	0.094	0.098	NA	2.813	3.199	NA	2.813	3.199	NA	
	S	NA	2.989	NA	NA	0.091	0.079	NA	2.834	3.145	NA	2.834	3.144	NA	
	var(I)	NA	4.957	NA	NA	0.277	0.343	NA	4.32	5.663	NA	4.298	5.635	NA	
	var(S)	NA	3.901	NA	NA	0.249	0.244	NA	3.448	4.404	NA	3.432	4.384	NA	
	cov(IS)	NA	0.008	NA	NA	0.192	0.207	NA	-0.403	0.407	NA	-0.398	0.41	NA	
	var(e)	NA	1.062	NA	NA	0.115	0.092	NA	0.889	1.25	NA	0.885	1.244	NA	
	Probit Parameters	Wave 1	γ_{01}	NA	-1.031	NA	NA	0.178	0.185	NA	-1.412	-0.686	NA	-1.397	-0.679
γ_{x1}			NA	-1.559	NA	NA	0.119	0.13	NA	-1.832	-1.322	NA	-1.817	-1.313	NA
γ_{S1}			NA	0.519	NA	NA	0.057	0.066	NA	0.398	0.659	NA	0.393	0.649	NA
Wave 2		γ_{02}	NA	-1.07	NA	NA	0.19	0.181	NA	-1.443	-0.73	NA	-1.426	-0.721	NA
		γ_{x2}	NA	-1.546	NA	NA	0.134	0.126	NA	-1.811	-1.316	NA	-1.797	-1.308	NA
		γ_{S2}	NA	0.527	NA	NA	0.067	0.064	NA	0.409	0.661	NA	0.405	0.654	NA
Wave 3		γ_{03}	NA	-1.028	NA	NA	0.178	0.178	NA	-1.393	-0.693	NA	-1.381	-0.687	NA
		γ_{x3}	NA	-1.537	NA	NA	0.129	0.121	NA	-1.787	-1.315	NA	-1.774	-1.306	NA
		γ_{S3}	NA	0.517	NA	NA	0.065	0.062	NA	0.404	0.645	NA	0.4	0.639	NA
Wave 4		γ_{04}	NA	-1.058	NA	NA	0.178	0.186	NA	-1.442	-0.709	NA	-1.424	-0.7	NA
		γ_{x4}	NA	-1.568	NA	NA	0.136	0.125	NA	-1.828	-1.339	NA	-1.815	-1.33	NA
		γ_{S4}	NA	0.527	NA	NA	0.066	0.063	NA	0.41	0.657	NA	0.406	0.651	NA
		df_{η}	NA	6.203	NA	NA	1.837	1.359	NA	4.229	9.545	NA	3.996	8.955	NA
		df_y	NA	74.675	NA	NA	3.009	17.721	NA	36.277	99.005	NA	41.673	99.996	NA

Note:

1. Results are summarized based on 100 converged replications with a convergence rate of $100/100 = 100\%$.
2. Abbreviations are as given in Table 1.

Table 55: SUMMARY OF 1 CLASS NN-XS MODEL (N=1000)

			BIAS				SE		CI ($\alpha=0.05$)			HPD ($\alpha=0.05$)			
	para.	true	est.	smp.	rel.	emp.	avg.	MSE	lower	upper	cover	lower	upper	cover	
Growth Curve	I	NA	3.003	NA	NA	0.094	0.098	NA	2.809	3.195	NA	2.81	3.195	NA	
	S	NA	2.991	NA	NA	0.092	0.08	NA	2.836	3.147	NA	2.835	3.146	NA	
	var(I)	NA	5.027	NA	NA	0.29	0.348	NA	4.38	5.744	NA	4.358	5.716	NA	
	var(S)	NA	4.015	NA	NA	0.258	0.245	NA	3.56	4.521	NA	3.543	4.5	NA	
	cov(IS)	NA	0.007	NA	NA	0.207	0.211	NA	-0.412	0.416	NA	-0.406	0.42	NA	
	var(e)	NA	1.663	NA	NA	0.114	0.071	NA	1.53	1.807	NA	1.527	1.803	NA	
Probit Parameters	Wave 1	γ_{01}	NA	-1.031	NA	NA	0.175	0.187	NA	-1.415	-0.683	NA	-1.397	-0.674	NA
		γ_{x1}	NA	-1.559	NA	NA	0.123	0.132	NA	-1.837	-1.321	NA	-1.819	-1.31	NA
		γ_{S1}	NA	0.519	NA	NA	0.057	0.067	NA	0.397	0.66	NA	0.394	0.652	NA
	Wave 2	γ_{02}	NA	-1.071	NA	NA	0.191	0.182	NA	-1.444	-0.728	NA	-1.427	-0.72	NA
		γ_{x2}	NA	-1.546	NA	NA	0.136	0.127	NA	-1.811	-1.314	NA	-1.797	-1.305	NA
		γ_{S2}	NA	0.527	NA	NA	0.068	0.065	NA	0.407	0.662	NA	0.404	0.655	NA
	Wave 3	γ_{03}	NA	-1.025	NA	NA	0.175	0.178	NA	-1.388	-0.692	NA	-1.373	-0.684	NA
		γ_{x3}	NA	-1.534	NA	NA	0.126	0.12	NA	-1.784	-1.313	NA	-1.773	-1.307	NA
		γ_{S3}	NA	0.516	NA	NA	0.064	0.061	NA	0.403	0.643	NA	0.4	0.636	NA
	Wave 4	γ_{04}	NA	-1.055	NA	NA	0.184	0.186	NA	-1.438	-0.709	NA	-1.422	-0.701	NA
		γ_{x4}	NA	-1.566	NA	NA	0.137	0.124	NA	-1.825	-1.338	NA	-1.811	-1.329	NA
		γ_{S4}	NA	0.525	NA	NA	0.068	0.063	NA	0.41	0.656	NA	0.406	0.649	NA

Note:

1. Results are summarized based on 100 converged replications with a convergence rate of $100/100 = 100\%$.
2. Abbreviations are as given in Table 1.

Table 56: SUMMARY OF 3 CLASSES TN-XS MODEL (N=1000)

				BIAS		SE		CI ($\alpha=0.05$)			HPD ($\alpha=0.05$)				
	para.	true	est.	smp.	rel.	emp.	avg.	MSE	lower	upper	cover	lower	upper	cover	
Growth Curve Parameters	Class 1	I	NA	5.397	NA	NA	0.165	0.208	NA	4.992	5.823	NA	4.974	5.798	NA
		S	NA	2.534	NA	NA	0.634	0.31	NA	1.904	3.084	NA	1.922	3.09	NA
		var(I)	NA	0.52	NA	NA	0.236	0.351	NA	0.161	1.251	NA	0.129	1.06	NA
		var(S)	NA	2.771	NA	NA	0.574	0.611	NA	1.649	4.016	NA	1.567	3.892	NA
		cov(IS)	NA	0.159	NA	NA	0.512	0.372	NA	-0.608	0.735	NA	-0.456	0.766	NA
		var(e)	NA	1.193	NA	NA	0.175	0.234	NA	0.829	1.73	NA	0.791	1.656	NA
	Class 2	I	NA	3.944	NA	NA	0.871	0.574	NA	2.941	4.933	NA	2.957	4.925	NA
		S	NA	3.737	NA	NA	1.295	0.494	NA	2.779	4.654	NA	2.812	4.661	NA
		var(I)	NA	2.025	NA	NA	1.619	0.725	NA	1.001	3.737	NA	0.884	3.406	NA
		var(S)	NA	3.713	NA	NA	1.652	1.072	NA	1.939	5.962	NA	1.808	5.679	NA
		cov(IS)	NA	0.321	NA	NA	1.703	0.635	NA	-0.921	1.622	NA	-0.924	1.568	NA
		var(e)	NA	1.133	NA	NA	0.174	0.244	NA	0.679	1.655	NA	0.656	1.619	NA
	Class 3	I	NA	0.932	NA	NA	0.345	0.24	NA	0.428	1.352	NA	0.45	1.369	NA
		S	NA	3.037	NA	NA	0.325	0.264	NA	2.601	3.609	NA	2.592	3.59	NA
		var(I)	NA	0.93	NA	NA	0.536	0.333	NA	0.368	1.652	NA	0.327	1.571	NA
		var(S)	NA	3.842	NA	NA	0.751	0.595	NA	2.628	5.065	NA	2.612	5.022	NA
		cov(IS)	NA	0.099	NA	NA	0.277	0.291	NA	-0.559	0.606	NA	-0.504	0.642	NA
		var(e)	NA	1.083	NA	NA	0.177	0.157	NA	0.795	1.398	NA	0.78	1.373	NA
Probit Parameters	Wave 1	CP_1	NA	0.295	NA	NA	0.079	0.057	NA	0.195	0.404	NA	0.194	0.401	NA
		CP_2	NA	0.268	NA	NA	0.098	0.079	NA	0.126	0.431	NA	0.125	0.422	NA
		CP_3	NA	0.437	NA	NA	0.116	0.073	NA	0.297	0.56	NA	0.299	0.56	NA
	Wave 2	γ_{01}	NA	-1.002	NA	NA	0.201	0.175	NA	-1.362	-0.673	NA	-1.343	-0.663	NA
		γ_{x1}	NA	-1.488	NA	NA	0.105	0.123	NA	-1.746	-1.265	NA	-1.727	-1.251	NA
		γ_{S1}	NA	0.499	NA	NA	0.061	0.063	NA	0.383	0.629	NA	0.379	0.622	NA
		γ_{02}	NA	-0.909	NA	NA	0.062	0.168	NA	-1.249	-0.588	NA	-1.231	-0.58	NA
	Wave 3	γ_{x2}	NA	-1.525	NA	NA	0.135	0.12	NA	-1.776	-1.304	NA	-1.762	-1.296	NA
		γ_{S2}	NA	0.488	NA	NA	0.044	0.06	NA	0.377	0.612	NA	0.376	0.609	NA
		γ_{03}	NA	-0.936	NA	NA	0.137	0.168	NA	-1.276	-0.622	NA	-1.259	-0.612	NA
	Wave 4	γ_{x3}	NA	-1.514	NA	NA	0.101	0.118	NA	-1.756	-1.294	NA	-1.747	-1.288	NA
		γ_{S3}	NA	0.504	NA	NA	0.035	0.059	NA	0.396	0.623	NA	0.394	0.618	NA
		γ_{04}	NA	-1.055	NA	NA	0.102	0.179	NA	-1.422	-0.726	NA	-1.403	-0.716	NA
		γ_{x4}	NA	-1.489	NA	NA	0.087	0.115	NA	-1.726	-1.277	NA	-1.713	-1.268	NA
	df	γ_{S4}	NA	0.513	NA	NA	0.047	0.06	NA	0.404	0.637	NA	0.404	0.633	NA
df_{y1}		NA	11.907	NA	NA	14.81	7.028	NA	3.525	27.343	NA	3.029	25.889	NA	
df_{y2}		NA	39.131	NA	NA	25.515	19.636	NA	11.69	77.457	NA	13.021	75.691	NA	
	df_{y3}	NA	7.03	NA	NA	3.054	2.271	NA	3.929	12.807	NA	3.485	11.553	NA	

Note:

1. Results are summarized based on 5 converged replications with a convergence rate of $5/140 \approx 3.57\%$.
2. Abbreviations are as given in Table 1.

Table 57: SUMMARY OF 3 CLASSES TT-XS MODEL (N=1000)

				BIAS		SE		CI ($\alpha=0.05$)			HPD ($\alpha=0.05$)				
	para.	true	est.	smp.	rel.	emp.	avg.	MSE	lower	upper	cover	lower	upper	cover	
Growth Curve Parameters	Class 1	I	NA	5.479	NA	NA	0.371	0.265	NA	4.987	6.024	NA	4.967	5.991	NA
		S	NA	2.947	NA	NA	0.858	0.389	NA	2.261	3.735	NA	2.253	3.713	NA
		var(I)	NA	0.634	NA	NA	0.248	0.357	NA	0.195	1.555	NA	0.13	1.322	NA
		var(S)	NA	3.371	NA	NA	0.931	0.784	NA	1.924	4.924	NA	1.836	4.811	NA
		cov(IS)	NA	-0.029	NA	NA	0.506	0.386	NA	-0.833	0.705	NA	-0.81	0.706	NA
		var(e)	NA	1.265	NA	NA	0.43	0.346	NA	0.767	2.07	NA	0.718	1.932	NA
	Class 2	I	NA	3.731	NA	NA	0.702	0.54	NA	2.681	4.765	NA	2.697	4.75	NA
		S	NA	2.953	NA	NA	0.901	0.557	NA	1.969	4.113	NA	1.981	4.115	NA
		var(I)	NA	3.612	NA	NA	4.719	1.877	NA	1.274	8.252	NA	0.951	7.244	NA
		var(S)	NA	4.94	NA	NA	3.954	1.73	NA	2.394	8.965	NA	2.15	8.37	NA
		cov(IS)	NA	-1.778	NA	NA	4.89	1.541	NA	-5.493	0.365	NA	-4.893	0.559	NA
		var(e)	NA	1.641	NA	NA	1.046	0.674	NA	0.895	3.195	NA	0.822	2.783	NA
	Class 3	I	NA	0.801	NA	NA	0.189	0.151	NA	0.514	1.103	NA	0.504	1.092	NA
		S	NA	3.008	NA	NA	0.405	0.23	NA	2.553	3.455	NA	2.559	3.444	NA
		var(I)	NA	0.613	NA	NA	0.143	0.242	NA	0.226	1.159	NA	0.182	1.063	NA
		var(S)	NA	3.697	NA	NA	0.679	0.531	NA	2.647	4.776	NA	2.633	4.754	NA
		cov(IS)	NA	0.144	NA	NA	0.412	0.232	NA	-0.324	0.583	NA	-0.319	0.587	NA
		var(e)	NA	1.042	NA	NA	0.155	0.142	NA	0.767	1.32	NA	0.764	1.316	NA
Probit Parameters	CP_1	NA	0.285	NA	NA	0.087	0.074	NA	0.152	0.43	NA	0.146	0.421	NA	
		NA	0.289	NA	NA	0.107	0.089	NA	0.132	0.456	NA	0.134	0.453	NA	
		NA	0.426	NA	NA	0.05	0.052	NA	0.315	0.517	NA	0.323	0.522	NA	
	Wave 1	γ_{01}	NA	-1.074	NA	NA	0.132	0.184	NA	-1.447	-0.727	NA	-1.427	-0.72	NA
		γ_{x1}	NA	-1.632	NA	NA	0.119	0.141	NA	-1.928	-1.374	NA	-1.909	-1.361	NA
		γ_{S1}	NA	0.531	NA	NA	0.053	0.068	NA	0.405	0.669	NA	0.4	0.662	NA
	Wave 2	γ_{02}	NA	-1.042	NA	NA	0.197	0.179	NA	-1.413	-0.713	NA	-1.412	-0.717	NA
		γ_{x2}	NA	-1.612	NA	NA	0.078	0.134	NA	-1.895	-1.369	NA	-1.883	-1.361	NA
		γ_{S2}	NA	0.532	NA	NA	0.049	0.065	NA	0.411	0.67	NA	0.405	0.659	NA
	Wave 3	γ_{03}	NA	-0.987	NA	NA	0.162	0.167	NA	-1.326	-0.676	NA	-1.312	-0.667	NA
		γ_{x3}	NA	-1.561	NA	NA	0.102	0.122	NA	-1.815	-1.335	NA	-1.803	-1.328	NA
		γ_{S3}	NA	0.524	NA	NA	0.049	0.06	NA	0.412	0.647	NA	0.408	0.639	NA
	Wave 4	γ_{04}	NA	-1.148	NA	NA	0.097	0.181	NA	-1.516	-0.799	NA	-1.495	-0.787	NA
		γ_{x4}	NA	-1.534	NA	NA	0.069	0.119	NA	-1.779	-1.313	NA	-1.769	-1.308	NA
		γ_{S4}	NA	0.535	NA	NA	0.037	0.061	NA	0.421	0.659	NA	0.42	0.657	NA
	df	df_{y1}	NA	7.032	NA	NA	4.17	2.496	NA	3.68	13.402	NA	3.504	12.444	NA
		df_{y2}	NA	11.365	NA	NA	1.786	4.137	NA	4.828	19.218	NA	4.919	19.007	NA
		df_{y3}	NA	7.303	NA	NA	3.1	2.799	NA	3.575	13.012	NA	3.373	12.597	NA
$df_{\eta1}$		NA	55.801	NA	NA	5.277	26.387	NA	11.022	97.716	NA	13.829	98.462	NA	
$df_{\eta2}$		NA	51.932	NA	NA	12.875	25.213	NA	10.761	95.563	NA	13.402	95.33	NA	
$df_{\eta3}$		NA	54.803	NA	NA	7.974	24.384	NA	12.59	96.583	NA	14.566	96.68	NA	

Note:

1. Results are summarized based on 5 converged replications with a convergence rate of $5/140 \approx 3.57\%$.
2. Abbreviations are as given in Table 1.

Table 58: SUMMARY OF 3 CLASSES NN-XS MODEL (N=1000)

				BIAS		SE		CI ($\alpha=0.05$)			HPD ($\alpha=0.05$)				
para.	true	est.	smp.	rel.	emp.	avg.	MSE	lower	upper	cover	lower	upper	cover		
Growth Curve Parameters	Class 1	I	NA	5.285	NA	NA	0.339	0.348	NA	4.75	6.093	NA	4.71	5.969	NA
		S	NA	2.818	NA	NA	0.612	0.445	NA	1.962	3.707	NA	1.963	3.692	NA
		var(I)	NA	1.903	NA	NA	2.09	2.093	NA	0.368	6.129	NA	0.244	4.72	NA
		var(S)	NA	3.643	NA	NA	1.18	1.4	NA	2.021	6.584	NA	1.872	5.872	NA
		cov(IS)	NA	0.437	NA	NA	0.828	1.047	NA	-1.283	2.248	NA	-1.265	2.195	NA
		var(e)	NA	4.795	NA	NA	5.149	2.888	NA	2.49	10.027	NA	2.189	8.493	NA
	Class 2	I	NA	3.822	NA	NA	1.195	0.462	NA	2.923	4.712	NA	2.934	4.695	NA
		S	NA	3.024	NA	NA	0.383	0.373	NA	2.32	3.791	NA	2.304	3.762	NA
		var(I)	NA	2.144	NA	NA	1.542	1.236	NA	0.53	5.015	NA	0.397	4.397	NA
		var(S)	NA	3.792	NA	NA	0.905	1.077	NA	2.092	6.2	NA	1.935	5.802	NA
		cov(IS)	NA	0.094	NA	NA	0.934	0.82	NA	-1.597	1.579	NA	-1.507	1.609	NA
		var(e)	NA	3.616	NA	NA	2.964	1.291	NA	2.146	6.33	NA	1.964	5.74	NA
	Class 3	I	NA	1.046	NA	NA	0.277	0.226	NA	0.633	1.516	NA	0.619	1.489	NA
		S	NA	3.035	NA	NA	0.223	0.184	NA	2.682	3.41	NA	2.679	3.4	NA
		var(I)	NA	1.127	NA	NA	0.675	0.448	NA	0.443	2.155	NA	0.373	1.989	NA
		var(S)	NA	3.974	NA	NA	0.469	0.495	NA	3.058	5.012	NA	3.012	4.944	NA
		cov(IS)	NA	0.016	NA	NA	0.323	0.297	NA	-0.583	0.591	NA	-0.569	0.599	NA
		var(e)	NA	1.561	NA	NA	0.74	0.221	NA	1.221	2.064	NA	1.202	1.991	NA
Probit Parameters	Wave 1	CP_1	NA	0.263	NA	NA	0.184	0.048	NA	0.172	0.359	NA	0.174	0.356	NA
		CP_2	NA	0.285	NA	NA	0.175	0.064	NA	0.176	0.425	NA	0.172	0.411	NA
		CP_3	NA	0.452	NA	NA	0.097	0.058	NA	0.337	0.567	NA	0.338	0.564	NA
	Wave 2	γ_{01}	NA	-1.042	NA	NA	0.169	0.184	NA	-1.421	-0.698	NA	-1.405	-0.691	NA
		γ_{x1}	NA	-1.548	NA	NA	0.117	0.129	NA	-1.819	-1.314	NA	-1.805	-1.306	NA
		γ_{S1}	NA	0.521	NA	NA	0.057	0.066	NA	0.401	0.659	NA	0.397	0.653	NA
		γ_{02}	NA	-1.074	NA	NA	0.195	0.183	NA	-1.45	-0.73	NA	-1.435	-0.721	NA
	Wave 3	γ_{x2}	NA	-1.555	NA	NA	0.141	0.127	NA	-1.82	-1.323	NA	-1.808	-1.316	NA
		γ_{S2}	NA	0.532	NA	NA	0.07	0.065	NA	0.412	0.669	NA	0.41	0.663	NA
		γ_{03}	NA	-1.023	NA	NA	0.186	0.177	NA	-1.385	-0.691	NA	-1.373	-0.686	NA
		γ_{x3}	NA	-1.526	NA	NA	0.118	0.119	NA	-1.772	-1.307	NA	-1.76	-1.3	NA
	Wave 4	γ_{S3}	NA	0.516	NA	NA	0.063	0.061	NA	0.403	0.642	NA	0.4	0.636	NA
		γ_{04}	NA	-1.054	NA	NA	0.173	0.184	NA	-1.43	-0.709	NA	-1.418	-0.705	NA
		γ_{x4}	NA	-1.55	NA	NA	0.125	0.121	NA	-1.802	-1.327	NA	-1.79	-1.319	NA
		γ_{S4}	NA	0.523	NA	NA	0.063	0.062	NA	0.408	0.652	NA	0.405	0.645	NA

Note:

1. Results are summarized based on 93 converged replications with a convergence rate of $93/140 \approx 66.43\%$.
2. Abbreviations are as given in Table 1.

4 Results Tables for Real Data Analysis

Table 59: ESTIMATES OF TN-CXY GMM MODEL IN REAL DATA ANALYSIS

	Parameter	Mean	S.D.	$\frac{MCs.e.}{S.D.}$ ¹	Lower ²	Upper ³	Geweke t^4	
Growth Curve Parameters	Class 1	Intercept	8.647	0.037	0.026	8.572	8.717	0.007
		Slope	0.229	0.009	0.023	0.211	0.247	0.014
		Var(I)	0.234	0.028	0.024	0.183	0.293	-0.009
		Var(S)	0.014	0.002	0.018	0.011	0.017	0.004
		Cov(I, S)	-0.036	0.006	0.022	-0.049	-0.026	-0.005
		Var(e)	0.044	0.004	0.031	0.037	0.053	0.024
		df_y	2.386	0.205	0.043	2.118	2.9	0.05
	Class 2	Intercept	6.196	0.047	0.02	6.103	6.287	0.054
		Slope	0.315	0.011	0.022	0.295	0.336	0.036
		Var(I)	1.326	0.084	0.017	1.167	1.497	0.02
		Var(S)	0.034	0.004	0.022	0.027	0.042	0.01
		Cov(I, S)	0.01	0.014	0.021	-0.018	0.037	-0.023
		Var(e)	0.372	0.02	0.033	0.336	0.412	-0.061
		df_y	3.2	0.195	0.04	2.85	3.6	-0.042
Probit Parameters	Class	φ_{10}	-0.214	0.119	0.051	-0.438	0.018	-0.039
		φ_{11}	-0.223	0.077	0.051	-0.372	-0.076	0.026
	Grade 7	γ_{01}^*	-0.711	0.532	0.066	-1.843	0.204	-0.255
		γ_{11}^*	-0.132	0.216	0.058	-0.527	0.31	0.231
		γ_{x1}	-0.154	0.108	0.046	-0.368	0.058	0.008
		γ_{Y1}	-0.087	0.059	0.065	-0.19	0.038	0.251
		γ_{02}^*	-1.157	0.446	0.064	-2.097	-0.447	-0.373
	Grade 8	γ_{12}^*	0.046	0.217	0.055	-0.345	0.489	0.347
		γ_{x2}	0.113	0.114	0.046	-0.109	0.334	0.032
		γ_{Y2}	-0.108	0.045	0.062	-0.188	-0.021	0.33
		γ_{03}^*	-0.613	0.454	0.065	-1.519	0.163	-0.462
	Grade 9	γ_{13}^*	-0.057	0.181	0.056	-0.403	0.292	0.381
		γ_{x3}	-0.147	0.094	0.046	-0.332	0.038	0.045
		γ_{Y3}	-0.074	0.045	0.064	-0.155	0.022	0.459
	Grade 10	γ_{04}^*	-0.032	0.512	0.066	-0.861	0.985	-0.426
		γ_{14}^*	-0.324	0.204	0.059	-0.732	0.029	0.362
		γ_{x4}	0.059	0.101	0.047	-0.142	0.251	0.128
		γ_{Y4}	-0.166	0.05	0.065	-0.266	-0.084	0.378
	Grade 11	γ_{05}^*	-1.298	0.421	0.065	-2.13	-0.442	-0.192
		γ_{15}^*	0.341	0.176	0.055	0.015	0.708	0.159
		γ_{x5}	-0.087	0.091	0.045	-0.263	0.083	0.001
γ_{Y5}		-0.019	0.04	0.064	-0.092	0.062	0.189	

Note:

1 Ratio of MC error to standard deviation. A value around or less than 0.05 indicates that the corresponding estimate is accurate.

2 2.5 Percentile

3 97.5 Percentile

4 Geweke test t value. An absolute value less than 1.96 indicates that the corresponding chain has passed the convergence test.

Table 60: ESTIMATES OF TN-CXS GMM MODEL IN REAL DATA ANALYSIS

		Parameter	Mean	S.D.	$\frac{MCs.e.}{S.D.}$	Lower	Upper	Geweke t
Growth Curve Parameters	Class 1	Intercept	8.66	0.036	0.029	8.592	8.73	0.039
		Slope	0.224	0.009	0.031	0.206	0.241	-0.047
		Var(I)	0.23	0.028	0.03	0.18	0.288	-0.045
		Var(S)	0.014	0.002	0.029	0.011	0.017	-0.038
		Cov(I, S)	-0.036	0.006	0.032	-0.048	-0.025	0.047
		Var(e)	0.045	0.004	0.034	0.038	0.053	-0.047
		df_y	2.406	0.201	0.046	2.12	2.873	-0.043
	Class2	Intercept	6.228	0.047	0.024	6.136	6.32	0.007
		Slope	0.306	0.01	0.029	0.286	0.326	-0.023
		Var(I)	1.303	0.081	0.023	1.15	1.468	0.021
		Var(S)	0.032	0.004	0.04	0.024	0.04	-0.015
		Cov(I, S)	0.018	0.012	0.031	-0.007	0.041	-0.002
		Var(e)	0.384	0.021	0.036	0.344	0.426	0.021
		df_y	3.306	0.212	0.041	2.911	3.75	0.006
Probit Parameters	Class	φ_{10}	-0.212	0.119	0.051	-0.443	0.012	0.049
		φ_{11}	-0.226	0.077	0.05	-0.372	-0.08	-0.052
	Grade 7	γ_{01}^*	-0.662	0.303	0.059	-1.163	0.02	-0.061
		γ_{11}^*	0.212	0.145	0.032	-0.07	0.508	0.026
		γ_{x1}	-0.21	0.13	0.049	-0.476	0.028	0.044
		γ_{S1}	-3.714	1.121	0.055	-6.358	-1.963	0.037
		γ_{02}^*	-1.949	0.286	0.056	-2.547	-1.41	0.022
	Grade 8	γ_{12}^*	0.478	0.188	0.042	0.128	0.876	-0.045
		γ_{x2}	0.117	0.119	0.046	-0.121	0.355	0.052
		γ_{S2}	-1.163	0.66	0.05	-2.448	0.155	-0.06
		γ_{03}^*	-1.075	0.213	0.055	-1.511	-0.69	-0.003
	Grade 9	γ_{13}^*	0.232	0.134	0.033	-0.025	0.497	-0.004
		γ_{x3}	-0.154	0.096	0.045	-0.348	0.028	0.01
		γ_{S3}	-1.068	0.558	0.051	-2.183	0.032	-0.008
		γ_{04}^*	-1.129	0.221	0.055	-1.541	-0.692	0.003
	Grade 10	γ_{14}^*	0.275	0.13	0.032	0.029	0.53	0.023
		γ_{x4}	0.048	0.108	0.048	-0.159	0.258	0.057
		γ_{S4}	-2.419	0.701	0.051	-3.949	-1.178	-0.086
		γ_{05}^*	-1.108	0.224	0.058	-1.568	-0.671	-0.062
	Grade 11	γ_{15}^*	0.497	0.136	0.039	0.242	0.774	0.082
		γ_{x5}	-0.112	0.096	0.048	-0.3	0.076	0.046
γ_{S5}		-1.624	0.583	0.053	-2.804	-0.531	-0.017	

Note: Abbreviations are as given in Table 59.

Table 61: ESTIMATES OF TN-CXI GMM MODEL IN REAL DATA ANALYSIS

		Parameter	Mean	S.D.	MCs.e. S.D.	Lower	Upper	Geweke t
Growth Curve Parameters	Class 1	Intercept	8.65	0.036	0.03	8.578	8.719	-0.019
		Slope	0.228	0.009	0.029	0.211	0.246	0.045
		Var(I)	0.231	0.028	0.031	0.181	0.29	0.011
		Var(S)	0.014	0.001	0.027	0.011	0.017	-0.012
		Cov(I, S)	-0.036	0.006	0.031	-0.048	-0.025	-0.01
		Var(e)	0.044	0.004	0.033	0.037	0.052	0.001
		df_y	2.363	0.189	0.042	2.112	2.828	0.063
	Class 2	Intercept	6.204	0.047	0.025	6.111	6.297	0.053
		Slope	0.316	0.01	0.028	0.296	0.336	-0.033
		Var(I)	1.317	0.084	0.024	1.159	1.488	-0.027
		Var(S)	0.033	0.004	0.038	0.026	0.042	-0.044
		Cov(I, S)	0.012	0.014	0.036	-0.017	0.038	0.083
		Var(e)	0.375	0.019	0.033	0.338	0.414	-0.033
	Probit Parameters	Class	φ_{10}	-0.197	0.115	0.049	-0.429	0.02
φ_{11}			-0.233	0.074	0.049	-0.37	-0.085	-0.045
Grade 7		γ_{01}^*	0.538	0.622	0.066	-0.751	1.592	-0.231
		γ_{11}	-0.543	0.25	0.06	-0.993	-0.035	0.181
		γ_{x1}	-0.173	0.103	0.046	-0.374	0.028	0.062
		γ_{I1}	-0.224	0.066	0.065	-0.338	-0.091	0.234
Grade 8		γ_{02}^*	-1.641	0.59	0.066	-2.804	-0.581	0.005
		γ_{12}^*	0.22	0.261	0.059	-0.252	0.769	-0.028
		γ_{x2}	0.12	0.122	0.049	-0.121	0.355	0.101
		γ_{I2}	-0.061	0.061	0.064	-0.169	0.059	-0.042
Grade 9		γ_{03}^*	-0.993	0.412	0.065	-1.829	-0.23	0.298
		γ_{13}^*	0.058	0.182	0.056	-0.279	0.438	-0.23
		γ_{x3}	-0.148	0.095	0.043	-0.337	0.037	-0.034
		γ_{I3}	-0.036	0.043	0.064	-0.117	0.052	-0.285
Grade 10		γ_{04}^*	-0.641	0.505	0.066	-1.527	0.392	0.31
		γ_{14}^*	-0.16	0.209	0.058	-0.597	0.215	-0.288
		γ_{x4}	0.048	0.093	0.046	-0.13	0.232	0.023
		γ_{I4}	-0.11	0.053	0.065	-0.217	-0.021	-0.331
Grade 11		γ_{05}^*	-0.903	0.49	0.065	-1.951	-0.019	-0.107
		γ_{15}^*	0.199	0.213	0.059	-0.198	0.642	0.102
	γ_{x5}	-0.073	0.092	0.045	-0.249	0.108	0.053	
	γ_{I5}	-0.068	0.052	0.065	-0.163	0.041	0.079	

Note: Abbreviations are as given in Table 59.

Table 62: ESTIMATES OF TN-CX GMM MODEL IN REAL DATA ANALYSIS

	Parameter	Mean	S.D.	MCs.e. S.D.	Lower	Upper	Geweke t	
Growth Curve Parameters	Class 1	Intercept	8.643	0.036	0.025	8.572	8.712	0.003
		Slope	0.23	0.009	0.022	0.212	0.247	0.001
		Var(I)	0.238	0.028	0.022	0.187	0.298	0.013
		Var(S)	0.014	0.002	0.016	0.011	0.017	0.012
		Cov(I, S)	-0.037	0.006	0.021	-0.05	-0.026	-0.015
		Var(e)	0.044	0.004	0.03	0.037	0.053	-0.065
		df_y	2.369	0.181	0.039	2.118	2.805	-0.086
	Class 2	Intercept	6.209	0.046	0.019	6.119	6.3	0.021
		Slope	0.316	0.01	0.016	0.296	0.336	-0.014
		Var(I)	1.327	0.084	0.016	1.168	1.497	0.009
		Var(S)	0.034	0.004	0.022	0.027	0.042	-0.013
		Cov(I, S)	0.009	0.014	0.02	-0.019	0.036	0.022
		Var(e)	0.377	0.02	0.032	0.339	0.418	0.031
		df_y	3.284	0.211	0.041	2.906	3.728	0.061
Probit Parameters	Class	φ_{10}	-0.215	0.124	0.051	-0.459	0.03	-0.064
		φ_{11}	-0.221	0.08	0.052	-0.379	-0.062	0.056
	Grade 7	γ_{01}^*	-1.479	0.186	0.046	-1.83	-1.101	-0.019
		γ_{11}^*	0.155	0.135	0.031	-0.104	0.428	-0.002
		γ_{x1}	-0.161	0.109	0.045	-0.368	0.055	0.025
	Grade 8	γ_{02}^*	-2.276	0.246	0.054	-2.78	-1.83	-0.112
		γ_{12}^*	0.513	0.197	0.047	0.174	0.938	0.097
		γ_{x2}	0.115	0.116	0.047	-0.107	0.339	0.056
	Grade 9	γ_{03}^*	-1.338	0.168	0.049	-1.677	-1.016	-0.102
		γ_{13}^*	0.203	0.132	0.037	-0.046	0.474	0.122
		γ_{x3}	-0.151	0.096	0.046	-0.341	0.037	0.029
	Grade 10	γ_{04}^*	-1.658	0.172	0.049	-1.996	-1.336	-0.046
		γ_{14}^*	0.207	0.131	0.033	-0.041	0.476	0.061
		γ_{x4}	0.046	0.095	0.048	-0.141	0.234	0.01
	Grade 11	γ_{05}^*	-1.496	0.171	0.049	-1.85	-1.174	-0.097
γ_{15}^*		0.42	0.137	0.039	0.173	0.7	0.033	
γ_{x5}		-0.094	0.093	0.046	-0.28	0.082	0.092	

Note: Abbreviations are as given in Table 59.

Table 63: ESTIMATES OF TN-XS GMM MODEL IN REAL DATA ANALYSIS

		Parameter	Mean	S.D.	$\frac{MCs.e.}{S.D.}$	Lower	Upper	Geweke t
Growth Curve Parameters	Class 1	Intercept	8.64	0.035	0.028	8.571	8.706	0.029
		Slope	0.23	0.009	0.03	0.213	0.247	-0.027
		Var(I)	0.231	0.028	0.031	0.181	0.29	-0.004
		Var(S)	0.014	0.002	0.028	0.011	0.017	0.008
		Cov(I, S)	-0.036	0.006	0.032	-0.048	-0.025	-0.009
		Var(e)	0.046	0.004	0.034	0.038	0.054	-0.062
		df_y	2.395	0.201	0.044	2.119	2.857	-0.086
	Class 2	Intercept	6.226	0.045	0.022	6.138	6.315	0.027
		Slope	0.296	0.011	0.031	0.276	0.317	-0.091
		Var(I)	1.266	0.078	0.023	1.117	1.424	0.001
		Var(S)	0.035	0.004	0.037	0.027	0.043	-0.069
		Cov(I, S)	0.018	0.013	0.033	-0.008	0.043	0.004
		Var(e)	0.381	0.02	0.034	0.343	0.421	0.046
		df_y	3.27	0.205	0.04	2.884	3.693	0.03
Prop.	CP_1	0.3	0.015	0.025	0.271	0.33	0.022	
	CP_2	0.7	0.015	0.025	0.67	0.729	-0.022	
Probit Parameters	Grade 7	γ_{01}	-0.585	0.25	0.056	-1.066	-0.097	0.142
		γ_{x1}	-0.19	0.118	0.048	-0.42	0.043	-0.048
		γ_{S1}	-3.676	0.976	0.051	-5.917	-1.979	-0.199
	Grade 8	γ_{02}	-1.621	0.236	0.055	-2.052	-1.149	0.18
		γ_{x2}	0.131	0.112	0.048	-0.09	0.346	-0.124
		γ_{S2}	-1.106	0.646	0.05	-2.397	0.132	-0.125
	Grade 9	γ_{03}	-0.959	0.198	0.052	-1.362	-0.594	0.123
		γ_{x3}	-0.14	0.095	0.044	-0.324	0.043	-0.068
		γ_{S3}	-0.966	0.538	0.049	-2.043	0.145	-0.107
	Grade 10	γ_{04}	-0.989	0.218	0.055	-1.417	-0.543	0.066
		γ_{x4}	0.051	0.103	0.048	-0.15	0.238	-0.053
		γ_{S4}	-2.256	0.674	0.051	-3.714	-1.062	-0.055
	Grade 11	γ_{05}	-0.871	0.22	0.057	-1.315	-0.432	0.092
		γ_{x5}	-0.069	0.098	0.05	-0.254	0.132	-0.027
		γ_{S5}	-1.384	0.62	0.054	-2.647	-0.266	-0.122

Note: Abbreviations are as given in Table 59.

Table 64: ESTIMATES OF TN-XI GMM MODEL IN REAL DATA ANALYSIS

		Parameter	Mean	S.D.	$\frac{MCs.e.}{S.D.}$	Lower	Upper	Geweke t
Growth Curve Parameters	Class 1	Intercept	8.642	0.035	0.03	8.572	8.711	-0.035
		Slope	0.23	0.009	0.031	0.213	0.247	0.035
		Var(I)	0.235	0.028	0.031	0.185	0.294	0.032
		Var(S)	0.014	0.002	0.028	0.011	0.017	0.041
		Cov(I, S)	-0.037	0.006	0.032	-0.049	-0.026	-0.05
		Var(e)	0.045	0.004	0.034	0.038	0.053	0.014
		df_y	2.371	0.186	0.043	2.115	2.816	0.023
	Class 2	Intercept	6.197	0.046	0.022	6.108	6.287	0.035
		Slope	0.316	0.01	0.027	0.296	0.336	-0.084
		Var(I)	1.312	0.083	0.024	1.156	1.483	-0.006
		Var(S)	0.034	0.004	0.036	0.027	0.042	-0.022
		Cov(I, S)	0.01	0.014	0.033	-0.019	0.037	0.009
		Var(e)	0.377	0.02	0.034	0.339	0.417	-0.031
	Prop.	CP_1	0.297	0.015	0.025	0.268	0.326	0.008
CP_2		0.703	0.015	0.025	0.674	0.732	-0.008	
Probit Parameters	Grade 7	γ_{01}	-0.587	0.298	0.06	-1.154	0.026	-0.032
		γ_{x1}	-0.193	0.106	0.047	-0.404	0.016	-0.017
		γ_{I1}	-0.108	0.036	0.058	-0.182	-0.044	0.048
	Grade 8	γ_{02}	-1.136	0.312	0.059	-1.803	-0.533	0.092
		γ_{x2}	0.132	0.112	0.048	-0.09	0.342	-0.048
		γ_{I2}	-0.113	0.038	0.056	-0.185	-0.035	-0.076
	Grade 9	γ_{03}	-0.877	0.292	0.061	-1.523	-0.323	0.279
		γ_{x3}	-0.144	0.097	0.046	-0.326	0.053	-0.084
		γ_{I3}	-0.047	0.037	0.061	-0.118	0.033	-0.275
	Grade 10	γ_{04}	-1.001	0.248	0.059	-1.48	-0.524	0.043
		γ_{x4}	0.045	0.093	0.044	-0.137	0.224	-0.001
		γ_{I4}	-0.074	0.031	0.056	-0.131	-0.015	-0.054
	Grade 11	γ_{05}	-0.414	0.263	0.062	-0.952	0.045	0.057
		γ_{x5}	-0.082	0.094	0.048	-0.264	0.103	-0.014
		γ_{I5}	-0.115	0.032	0.06	-0.175	-0.051	-0.057

Note: Abbreviations are as given in Table 59.

Table 65: ESTIMATES OF TN-XY GMM MODEL IN REAL DATA ANALYSIS

		Parameter	Mean	S.D.	$\frac{MCs.e.}{S.D.}$	Lower	Upper	Geweke t
Growth Curve Parameters	Class 1	Intercept	8.642	0.036	0.025	8.571	8.711	0.04
		Slope	0.23	0.009	0.023	0.212	0.247	-0.031
		Var(I)	0.236	0.029	0.023	0.184	0.296	-0.032
		Var(S)	0.014	0.002	0.017	0.011	0.017	-0.022
		Cov(I, S)	-0.037	0.006	0.022	-0.05	-0.026	0.031
		Var(e)	0.044	0.004	0.029	0.038	0.053	-0.012
		df_y	2.356	0.178	0.041	2.114	2.788	0.042
	Class 2	Intercept	6.19	0.047	0.018	6.099	6.282	0.009
		Slope	0.313	0.01	0.02	0.292	0.333	0.073
		Var(I)	1.31	0.084	0.018	1.153	1.482	0.009
		Var(S)	0.034	0.004	0.024	0.027	0.043	0.004
		Cov(I, S)	0.011	0.014	0.024	-0.018	0.038	0.013
		Var(e)	0.374	0.02	0.033	0.337	0.416	-0.039
	Probit Parameters	Prop.	CP_1	0.298	0.015	0.023	0.269	0.328
CP_2			0.702	0.015	0.023	0.672	0.731	0.04
Grade 7		γ_{01}	-0.951	0.267	0.058	-1.526	-0.473	0.144
		γ_{x1}	-0.156	0.099	0.042	-0.344	0.038	-0.003
		γ_{Y1}	-0.064	0.034	0.056	-0.128	0.009	-0.166
Grade 8		γ_{02}^*	-1.179	0.303	0.059	-1.741	-0.54	0.018
		γ_{x2}	0.122	0.114	0.049	-0.104	0.347	-0.019
		γ_{Y2}	-0.101	0.035	0.056	-0.168	-0.035	-0.009
Grade 9		γ_{03}	-0.812	0.292	0.061	-1.454	-0.301	-0.054
		γ_{x3}	-0.14	0.091	0.044	-0.323	0.039	0.029
		γ_{Y3}	-0.053	0.034	0.059	-0.116	0.019	0.048
Grade 10		γ_{04}	-0.696	0.295	0.063	-1.284	-0.105	-0.042
		γ_{x4}	0.041	0.097	0.048	-0.147	0.223	0.006
		γ_{Y4}	-0.105	0.032	0.061	-0.169	-0.041	0.044
Grade 11	γ_{05}	-0.557	0.275	0.062	-1.128	-0.04	-0.192	
	γ_{x5}	-0.08	0.09	0.046	-0.26	0.092	0.049	
	γ_{Y5}	-0.082	0.029	0.06	-0.139	-0.02	0.198	

Note: Abbreviations are as given in Table 59.

Table 66: ESTIMATES OF TN-X GMM MODEL IN REAL DATA ANALYSIS

	Parameter	Mean	S.D.	$\frac{MCs.e.}{S.D.}$	Lower	Upper	Geweke t	
Growth Curve Parameters	Class 1	Intercept	8.646	0.035	0.022	8.575	8.713	-0.021
		Slope	0.229	0.009	0.021	0.212	0.247	0.022
		Var(I)	0.234	0.028	0.02	0.185	0.294	0.013
		Var(S)	0.014	0.002	0.017	0.011	0.017	0.006
		Cov(I, S)	-0.037	0.006	0.02	-0.049	-0.026	-0.01
		Var(e)	0.044	0.004	0.03	0.037	0.053	0.041
		df_y	2.383	0.205	0.043	2.115	2.887	0.051
	Class 2	Intercept	6.201	0.046	0.018	6.11	6.29	-0.003
		Slope	0.316	0.01	0.016	0.296	0.336	-0.01
		Var(I)	1.31	0.083	0.017	1.153	1.48	0.007
		Var(S)	0.034	0.004	0.022	0.027	0.043	0.003
		Cov(I, S)	0.01	0.015	0.022	-0.02	0.037	-0.006
		Var(e)	0.374	0.02	0.032	0.335	0.414	-0.026
	Probit Parameters	Prop.	CP_1	0.297	0.015	0.022	0.268	0.327
CP_2			0.703	0.015	0.022	0.673	0.732	-0.004
G 7		γ_{01}	-1.394	0.162	0.044	-1.718	-1.083	0.031
		γ_{x1}	-0.142	0.106	0.044	-0.344	0.073	-0.03
G 8		γ_{02}	-1.912	0.182	0.047	-2.272	-1.557	-0.029
		γ_{x2}	0.145	0.112	0.046	-0.082	0.361	0.029
G 9		γ_{03}	-1.222	0.149	0.048	-1.515	-0.936	0.064
		γ_{x3}	-0.128	0.097	0.048	-0.318	0.06	-0.063
G 10		γ_{04}	-1.523	0.16	0.049	-1.834	-1.219	-0.019
		γ_{x4}	0.059	0.101	0.048	-0.137	0.26	0.012
G 11	γ_{05}	-1.224	0.139	0.045	-1.497	-0.959	-0.008	
	γ_{x5}	-0.061	0.089	0.045	-0.231	0.114	0.011	

Note: Abbreviations are as given in Table 59.

Table 67: ESTIMATES OF 3 CLASSES NN-X GMM MODEL IN REAL DATA ANALYSIS

	Parameter	Mean	S.D.	$\frac{MCs.e.}{S.D.}$	Lower	Upper	Geweke t	
Growth Curve Parameters	Class 1	Intercept	8.674	0.036	0.02	8.602	8.742	-0.01
		Slope	0.231	0.009	0.017	0.213	0.25	0.012
		Var(I)	0.213	0.028	0.018	0.164	0.272	0.008
		Var(S)	0.015	0.002	0.012	0.012	0.018	0.006
		Cov(I, S)	-0.035	0.006	0.017	-0.048	-0.024	-0.012
		Var(e)	0.081	0.005	0.018	0.072	0.091	-0.004
	Class 2	Intercept	6.491	0.048	0.017	6.395	6.585	-0.02
		Slope	0.325	0.011	0.013	0.304	0.345	-0.003
		Var(I)	1.005	0.086	0.018	0.846	1.185	0.003
		Var(S)	0.031	0.004	0.018	0.024	0.039	-0.023
		Cov(I, S)	0.019	0.013	0.017	-0.007	0.043	0.027
		Var(e)	0.529	0.022	0.022	0.488	0.573	0.021
	Class 3	Intercept	5.108	0.189	0.018	4.728	5.471	0.005
		Slope	0.328	0.059	0.016	0.214	0.443	-0.005
		Var(I)	1.692	0.454	0.019	0.875	2.662	-0.009
		Var(S)	0.119	0.037	0.019	0.061	0.205	0.017
		Cov(I, S)	-0.14	0.109	0.021	-0.382	0.045	0.003
		Var(e)	3.166	0.302	0.022	2.644	3.82	0.008
Prop.	CP_1	0.249	0.013	0.016	0.223	0.275	0.007	
	CP_2	0.638	0.018	0.019	0.602	0.673	0.013	
	CP_3	0.113	0.015	0.024	0.085	0.144	-0.022	
Probit Parameters	G 7	γ_{01}	-1.385	0.164	0.044	-1.728	-1.072	0.062
		γ_{x1}	-0.148	0.107	0.044	-0.35	0.075	-0.06
	G 8	γ_{02}	-1.9	0.173	0.047	-2.253	-1.569	0.028
		γ_{x2}	0.137	0.107	0.047	-0.068	0.351	-0.028
	G 9	γ_{03}	-1.226	0.145	0.045	-1.526	-0.938	-0.017
		γ_{x3}	-0.126	0.094	0.045	-0.314	0.066	0.018
	G 10	γ_{04}	-1.491	0.153	0.045	-1.793	-1.183	-0.011
		γ_{x4}	0.039	0.097	0.045	-0.156	0.229	0.008
	G 11	γ_{05}	-1.231	0.138	0.045	-1.494	-0.961	-0.07
		γ_{x5}	-0.056	0.088	0.046	-0.229	0.113	0.071

Note: Abbreviations are as given in Table 59.

Table 68: ESTIMATES OF 4 CLASSES NN-X GMM MODEL IN REAL DATA ANALYSIS

	Parameter	Mean	S.D.	MCs.e. S.D.	Lower	Upper	Geweke t	
Growth Curve Parameters	Class 1	Intercept	8.708	0.034	0.021	8.64	8.775	0.032
		Slope	0.225	0.009	0.017	0.206	0.243	-0.028
		Var(I)	0.188	0.025	0.019	0.143	0.24	-0.031
		Var(S)	0.014	0.002	0.011	0.011	0.017	-0.017
		Cov(I, S)	-0.03	0.006	0.016	-0.042	-0.02	0.026
		Var(e)	0.079	0.005	0.02	0.07	0.089	-0.027
	Class 2	Intercept	6.679	0.067	0.029	6.555	6.815	0.037
		Slope	0.336	0.013	0.016	0.311	0.362	0.006
		Var(I)	0.759	0.089	0.026	0.585	0.937	0.007
		Var(S)	0.03	0.004	0.016	0.023	0.038	0.008
		Cov(I, S)	0.027	0.012	0.017	0.003	0.05	-0.016
		Var(e)	0.422	0.03	0.036	0.361	0.479	-0.037
	Class 3	Intercept	5.7	0.163	0.031	5.355	5.995	0.031
		Slope	0.295	0.031	0.017	0.234	0.357	-0.011
		Var(I)	1.94	0.28	0.025	1.463	2.558	-0.032
		Var(S)	0.063	0.015	0.027	0.039	0.097	-0.024
		Cov(I, S)	-0.097	0.054	0.026	-0.218	-0.005	0.027
		Var(e)	1.174	0.125	0.037	0.95	1.441	-0.043
	Class 4	Intercept	4.847	0.393	0.03	4.068	5.602	-0.011
		Slope	0.404	0.148	0.021	0.116	0.7	0.006
Var(I)		0.558	0.424	0.02	0.124	1.697	0.001	
Var(S)		0.224	0.108	0.018	0.088	0.494	-0.037	
Cov(I, S)		-0.121	0.167	0.019	-0.549	0.094	0.024	
Var(e)		6.101	0.879	0.019	4.632	8.049	-0.005	
Proportion	CP_1	0.24	0.013	0.017	0.214	0.267	-0.025	
	CP_2	0.49	0.041	0.04	0.404	0.563	-0.029	
	CP_3	0.236	0.04	0.04	0.165	0.32	0.033	
	CP_4	0.034	0.008	0.026	0.02	0.051	0.025	
Probit Parameters	G 7	γ_{01}	-1.393	0.16	0.047	-1.71	-1.083	-0.03
		γ_{x1}	-0.142	0.105	0.047	-0.345	0.062	0.028
	G 8	γ_{02}	-1.885	0.184	0.048	-2.243	-1.519	-0.146
		γ_{x2}	0.128	0.114	0.048	-0.107	0.346	0.146
	G 9	γ_{03}	-1.22	0.144	0.046	-1.503	-0.925	-0.018
		γ_{x3}	-0.13	0.093	0.046	-0.324	0.05	0.021
	G 10	γ_{04}	-1.507	0.147	0.044	-1.803	-1.22	-0.025
		γ_{x4}	0.049	0.092	0.044	-0.134	0.233	0.022
	G 11	γ_{05}	-1.236	0.144	0.048	-1.522	-0.965	-0.064
		γ_{x5}	-0.053	0.092	0.048	-0.227	0.126	0.062

Note: Abbreviations are as given in Table 59.