A   Appendix - Supplementary material

In this document the full results from all simulations on all nine models are presented. The results are sorted on sample size: first N then T. For all models with at least one between-level regression, the effect size and R^2 are given.

A.1   Results Model 1

Parameter	Rel. Bias	SE/SD	MSE	95% cover	Power
N = 10, T = 10					
phi	1.09	1	0.01	0.98	0.11
residual_Y	0.94	7467	0	0.94	1
Mean Y	0.99	4	0.08	0.97	0.24
Var Y	0.74	7665	0.31	0.96	1
N = 10, T = 100					
phi	0.99	1	0	0.96	0.99
residual_Y	1	1	0	0.96	1
Mean Y	1.01	1	0.09	0.97	0.27
Var Y	0.69	2	0.4	0.93	1
N = 15, T = 100					
phi	0.99	1	0	0.96	1
residual_Y	1	1	0	0.94	1
Mean Y	1	1	0.06	0.96	0.46
Var Y	0.8	1	0.18	0.93	1
N = 20, T = 100					
phi	0.98	1	0	0.94	1
residual_Y	1	1	0	0.96	1
Mean Y	1	1	0.04	0.95	0.6
Var Y	0.85	1	0.12	0.94	1
N = 25, T = 25					
phi	1.01	1	0	0.93	0.87
residual_Y	1	1	0	0.96	1
Mean Y	1	1	0.03	0.96	0.74
Var Y	0.89	1	0.08	0.95	1
N = 25, T = 50					
phi	1.01	1	0	0.94	0.99
residual_Y	1	1	0	0.95	1
Mean Y	1	1	0.03	0.96	0.77
Var Y	0.89	1	0.07	0.94	1
N = 25, T = 100					
phi	0.99	1	0	0.94	1
residual_Y	1	1	0	0.95	1
Mean Y	1.02	1	0.03	0.95	0.72
Var Y	0.88	1	0.07	0.95	1
N = 25, T = 200					
phi	1	1	0	0.93	1
residual_Y	1	1	0	0.95	1
Mean Y	1	1	0.03	0.96	0.75
Var Y	0.89	1	0.06	0.96	1
N = 50, T = 25					
phi	1.01	1	0	0.94	0.99
residual_Y	0.99	1	0	0.95	1
Mean Y	1	1	0.02	0.96	0.98
Var Y	0.94	1	0.03	0.93	1
N = 50, T = 50					
phi	1	1	0	0.95	1
residual_Y	1	1	0	0.94	1
Mean Y	1.01	1	0.02	0.94	0.96
Var Y	0.94	1	0.03	0.93	1
N = 50, T = 100					
phi	0.99	1	0	0.95	1
residual_Y	1	1	0	0.95	1
Mean Y	1.02	1	0.02	0.97	0.96
Var Y	0.94	1	0.03	0.95	1
N = 50, T = 200					
phi	1.01	1	0	0.95	1
residual_Y	1	1	0	0.95	1
Mean Y	0.99	1	0.02	0.96	0.97
Var Y	0.95	1	0.03	0.95	1
N = 75, T = 75					
phi	0.99	1	0	0.95	1
residual_Y	1	1	0	0.95	1
Mean Y	0.98	1	0.01	0.96	0.99
Var Y	0.96	1	0.02	0.95	1
N = 100, T = 25					
phi	1	1	0	0.95	1
residual_Y	1	1	0	0.95	1
Mean Y	1	1	0.01	0.96	1
Var Y	0.97	1	0.01	0.95	1
N = 100, T = 50					
phi	1	1	0	0.94	1
residual_Y	1	1	0	0.97	1
Mean Y	0.99	1	0.01	0.95	1
Var Y	0.98	1	0.01	0.95	1
N = 100, T = 100					
phi	1	1	0	0.95	1
residual_Y	1	1	0	0.96	1
Mean Y	1.01	1	0.01	0.96	1
Var Y	0.96	1	0.01	0.95	1
N = 100, T = 200					
phi	1.01	1	0	0.95	1
residual_Y	1	1	0	0.96	1
Mean Y	1	1	0.01	0.95	1
Var Y	0.98	1	0.01	0.94	1
N = 150, T = 150					
phi	1	1	0	0.95	1
residual_Y	1	1	0	0.95	1
Mean Y	1	1	0.01	0.95	1
Var Y	0.98	1	0.01	0.94	1
N = 200, T = 6					
phi	0.81	0	0.01	0.9	0.91
residual_Y	0.96	1	0	0.91	1
Mean Y	1	1	0	0.94	1
Var Y	1.01	1	0.02	0.93	1
N = 200, T = 8					
phi	0.93	1	0	0.93	0.99
residual_Y	0.99	1	0	0.96	1
Mean Y	1	1	0	0.96	1
Var Y	0.99	1	0.01	0.95	1
N = 200, T = 10					
phi	0.98	1	0	0.94	1
residual_Y	0.99	1	0	0.95	1
Mean Y	1	1	0	0.95	1
Var Y	0.99	1	0.01	0.95	1
N = 200, T = 15					
phi	0.99	1	0	0.95	1
residual_Y	1	1	0	0.94	1
Mean Y	1	1	0	0.96	1
Var Y	0.98	1	0.01	0.95	1
N = 200, T = 20					
phi	0.99	1	0	0.95	1
residual_Y	1	1	0	0.95	1
Mean Y	1	1	0	0.95	1
Var Y	0.98	1	0.01	0.94	1
N = 200, T = 25					
phi	0.99	1	0	0.95	1
residual_Y	1	1	0	0.96	1
Mean Y	1	1	0	0.95	1
Var Y	0.98	1	0.01	0.96	1
N = 200, T = 50					
phi	1	1	0	0.94	1
residual_Y	1	1	0	0.95	1
Mean Y	0.99	1	0	0.93	1
Var Y	0.99	1	0.01	0.96	1
N = 200, T = 100					
phi	1	1	0	0.93	1
residual_Y	1	1	0	0.95	1
Mean Y	1	1	0	0.96	1
Var Y	0.98	1	0.01	0.94	1
N = 200, T = 200					
phi	1	1	0	0.95	1
residual_Y	1	1	0	0.96	1
Mean Y	1	1	0	0.96	1
Var Y	0.99	1	0.01	0.95	1
N = 300, T = 300					
phi	1	1	0	0.95	1
residual_Y	1	1	0	0.95	1
Mean Y	1	1	0	0.95	1
Var Y	0.99	1	0	0.94	1

Parameter	Rel. Bias	SE/SD	MSE	95% cover	Power
N = 500, T = 25					
phi	0.99	1	0	0.94	1
residual_Y	1	1	0	0.95	1
Mean Y	1	1	0	0.95	1
Var Y	0.99	1	0	0.95	1
N = 500, T = 50					
phi	1.01	1	0	0.97	1
residual_Y	1	1	0	0.93	1
Mean Y	0.99	1	0	0.97	1
Var Y	0.99	1	0	0.95	1
N = 500, T = 100					
phi	1	1	0	0.94	1
residual_Y	1	1	0	0.94	1
Mean Y	1.01	1	0	0.94	1
Var Y	0.99	1	0	0.94	1
N = 500, T = 500					
phi	1	1	0	0.96	1
residual_Y	1	1	0	0.96	1
Mean Y	1	1	0	0.95	1
Var Y	0.99	1	0	0.95	1
N = 1000, T = 25					
phi	1	1	0	0.95	1
residual_Y	1	1	0	0.95	1
Mean Y	1	1	0	0.94	1
Var Y	1	1	0	0.95	1
N = 1000, T = 50					
phi	1	1	0	0.97	1
residual_Y	1	1	0	0.94	1
Mean Y	1	1	0	0.96	1
Var Y	1	1	0	0.96	1

A.2 Results Model 2

Parameter	Rel. Bias	SE/SD	MSE	95% cover	Power	Parameter	Rel. Bias	SE/SD	MSE	95% cover	Power
N = 10, T = 10						N = 75, T = 75					
residual_Y	0.95	2	0	0.95	1	residual_Y	1	1	0	0.93	1
Mean Y	0.97	1	0.09	0.97	0.22	Mean Y	1	1	0.01	0.96	0.99
Mean phi	0.81	1	0.02	0.99	0.05	Mean phi	0.99	1	0	0.95	0.97
Var Y	0.75	4	0.29	0.98	1	Var Y	0.96	1	0.02	0.95	1
Var phi	0.35	4	0.02	0.94	1	Var phi	0.96	1	0	0.93	1
N = 10, T = 100						N = 100, T = 25					
residual_Y	1	1	0	0.93	1	residual_Y	1	1	0	0.96	1
Mean Y	0.97	1	0.08	0.97	0.27	Mean Y	1	1	0.01	0.94	1
Mean phi	1.04	1	0.01	0.96	0.19	Mean phi	0.99	1	0	0.94	0.98
Var Y	0.71	2	0.34	0.93	1	Var Y	0.99	1	0.01	0.96	1
Var phi	0.66	2	0	0.91	1	Var phi	0.94	1	0	0.95	1
N = 15, T = 100						N = 100, T = 50					
residual_Y	1	1	0	0.94	1	residual_Y	1	1	0	0.95	1
Mean Y	0.96	1	0.06	0.96	0.53	Mean Y	1	1	0.01	0.96	1
Mean phi	1.02	1	0	0.98	0.37	Mean phi	1	1	0	0.95	1
Var Y	0.83	2	0.15	0.94	1	Var Y	0.96	1	0.01	0.95	1
Var phi	0.78	1	0	0.92	1	Var phi	0.97	1	0	0.95	1
N = 20, T = 100						N = 100, T = 100					
residual_Y	1	1	0	0.94	1	residual_Y	1	1	0	0.95	1
Mean Y	0.96	1	0.04	0.96	0.66	Mean Y	1	1	0.01	0.95	1
Mean phi	1.02	1	0	0.98	0.49	Mean phi	1	1	0	0.96	1
Var Y	0.88	1	0.09	0.94	1	Var Y	0.98	1	0.01	0.96	1
Var phi	0.83	1	0	0.92	1	Var phi	0.95	1	0	0.94	1
N = 25, T = 25						N = 100, T = 200					
residual_Y	0.99	1	0	0.95	1	residual_Y	1	1	0	0.94	1
Mean Y	1.03	1	0.03	0.96	0.71	Mean Y	0.99	1	0.01	0.96	1
Mean phi	0.97	1	0	0.96	0.49	Mean phi	1	1	0	0.97	1
Var Y	0.91	1	0.08	0.94	1	Var Y	0.96	1	0.01	0.94	1
Var phi	0.84	1	0	0.95	1	Var phi	0.97	1	0	0.94	1
N = 25, T = 50						N = 150, T = 150					
residual_Y	1	1	0	0.95	1	residual_Y	1	1	0	0.95	1
Mean Y	1	1	0.03	0.98	0.74	Mean Y	1.01	1	0	0.95	1
Mean phi	0.99	1	0	0.96	0.59	Mean phi	1	1	0	0.94	1
Var Y	0.88	1	0.08	0.93	1	Var Y	0.99	1	0.01	0.95	1
Var phi	0.85	1	0	0.93	1	Var phi	0.98	1	0	0.96	1
N = 25, T = 100						N = 200, T = 10					
residual_Y	1	1	0	0.94	1	residual_Y	0.99	1	0	0.95	1
Mean Y	0.98	1	0.03	0.96	0.76	Mean Y	1	1	0	0.96	1
Mean phi	1.02	1	0	0.96	0.63	Mean phi	0.81	1	0	0.86	0.99
Var Y	0.91	1	0.06	0.95	1	Var Y	1.02	1	0.01	0.95	1
Var phi	0.87	1	0	0.93	1	Var phi	0.7	1	0	0.75	1
N = 25, T = 200						N = 200, T = 15					
residual_Y	1	1	0	0.94	1	residual_Y	0.99	1	0	0.95	1
Mean Y	1.01	1	0.03	0.97	0.72	Mean Y	1	1	0	0.94	1
Mean phi	1.02	1	0	0.97	0.64	Mean phi	0.93	1	0	0.95	1
Var Y	0.88	1	0.08	0.94	1	Var Y	0.99	1	0.01	0.96	1
Var phi	0.87	1	0	0.95	1	Var phi	0.86	1	0	0.9	1
N = 50, T = 25						N = 200, T = 20					
residual_Y	0.99	1	0	0.96	1	residual_Y	1	1	0	0.95	1
Mean Y	1.01	1	0.02	0.96	0.97	Mean Y	1	1	0	0.97	1
Mean phi	0.98	1	0	0.95	0.8	Mean phi	0.97	1	0	0.95	1
Var Y	0.96	1	0.03	0.96	1	Var Y	0.99	1	0.01	0.95	1
Var phi	0.91	1	0	0.94	1	Var phi	0.93	1	0	0.9	1
N = 50, T = 50						N = 200, T = 25					
residual_Y	1	1	0	0.95	1	residual_Y	1	1	0	0.97	1
Mean Y	1.01	1	0.01	0.96	0.97	Mean Y	1	1	0	0.94	1
Mean phi	1	1	0	0.96	0.9	Mean phi	0.99	1	0	0.95	1
Var Y	0.94	1	0.03	0.94	1	Var Y	0.99	1	0.01	0.95	1
Var phi	0.92	1	0	0.93	1	Var phi	0.95	1	0	0.93	1
N = 50, T = 100						N = 200, T = 50					
residual_Y	1	1	0	0.95	1	residual_Y	1	1	0	0.95	1
Mean Y	0.99	1	0.02	0.95	0.98	Mean Y	1.01	1	0	0.94	1
Mean phi	1.01	1	0	0.97	0.93	Mean phi	0.99	1	0	0.94	1
Var Y	0.95	1	0.03	0.95	1	Var Y	0.98	1	0.01	0.95	1
Var phi	0.93	1	0	0.94	1	Var phi	0.98	1	0	0.93	1
N = 50, T = 200						N = 200, T = 100					
residual_Y	1	1	0	0.94	1	residual_Y	1	1	0	0.96	1
Mean Y	0.99	1	0.02	0.96	0.97	Mean Y	1	1	0	0.93	1
Mean phi	1	1	0	0.95	0.95	Mean phi	1.01	1	0	0.94	1
Var Y	0.93	1	0.03	0.95	1	Var Y	0.99	1	0.01	0.96	1
Var phi	0.94	1	0	0.94	1	Var phi	0.98	1	0	0.95	1

Parameter	Rel. Bias	SE/SD	MSE	95% cover	Power
N = 200, T = 200					
residual_Y	1	1	0	0.93	1
Mean Y	0.99	1	0	0.96	1
Mean phi	1	1	0	0.96	1
Var Y	0.98	1	0.01	0.94	1
Var phi	0.98	1	0	0.95	1
N = 300, T = 300					
residual_Y	1	1	0	0.96	1
Mean Y	1	1	0	0.94	1
Mean phi	1	1	0	0.96	1
Var Y	0.99	1	0	0.97	1
Var phi	0.99	1	0	0.92	1
N = 500, T = 25					
residual_Y	1	1	0	0.95	1
Mean Y	1	1	0	0.95	1
Mean phi	0.98	1	0	0.94	1
Var Y	0.99	1	0	0.96	1
Var phi	0.97	1	0	0.96	1
N = 500, T = 50					
residual_Y	1	1	0	0.94	1
Mean Y	1.01	1	0	0.96	1
Mean phi	1	1	0	0.94	1
Var Y	0.99	1	0	0.94	1
Var phi	0.99	1	0	0.94	1
N = 500, T = 100					
residual_Y	1	1	0	0.95	1
Mean Y	1	1	0	0.94	1
Mean phi	1.01	1	0	0.94	1
Var Y	1	1	0	0.95	1
Var phi	0.99	1	0	0.96	1
N = 500, T = 500					
residual_Y	1	1	0	0.95	1
Mean Y	1	1	0	0.95	1
Mean phi	1	1	0	0.95	1
Var Y	1	1	0	0.94	1
Var phi	1	1	0	0.96	1
N = 1000, T = 25					
residual_Y	1	1	0	0.96	1
Mean Y	1	1	0	0.94	1
Mean phi	0.98	1	0	0.96	1
Var Y	1	1	0	0.96	1
Var phi	0.97	1	0	0.92	1
N = 1000, T = 50					
residual_Y	1	1	0	0.95	1
Mean Y	1	1	0	0.95	1
Mean phi	1	1	0	0.92	1
Var Y	1	1	0	0.93	1
Var phi	1	1	0	0.9	1

A.3   Result Model 3

Parameter	Rel. Bias	SE/SD	MSE	95% cover	Power
N = 10, T = 10					
Mean Y	1.05	1	0.08	0.98	0.2
Mean phi	0.95	2	0.02	1	0.08
Mean logv	1	1	0.03	0.99	1
Var Y	0.77	3	0.33	0.98	1
Var phi	0.34	4	0.02	0.94	1
Var logv	0.13	3	0.07	0.87	1
N = 10, T = 100					
Mean Y	0.96	1	0.08	0.98	0.26
Mean phi	0.99	1	0.01	0.97	0.47
Mean logv	1	1	0	0.98	1
Var Y	0.69	2	0.38	0.91	1
Var phi	0.7	2	0	0.95	1
Var logv	0.58	2	0	0.93	1
N = 15, T = 100					
Mean Y	0.97	1	0.06	0.96	0.47
Mean phi	1.01	1	0	0.96	0.75
Mean logv	1	1	0	0.96	1
Var Y	0.81	2	0.15	0.96	1
Var phi	0.81	2	0	0.94	1
Var logv	0.72	2	0	0.96	1
N = 20, T = 100					
Mean Y	0.97	1	0.04	0.95	0.65
Mean phi	1.01	1	0	0.97	0.86
Mean logv	1	1	0	0.96	1
Var Y	0.86	1	0.1	0.95	1
Var phi	0.86	1	0	0.95	1
Var logv	0.8	1	0	0.97	1
N = 25, T = 25					
Mean Y	0.99	1	0.03	0.96	0.73
Mean phi	0.97	1	0	0.97	0.82
Mean logv	1	1	0.01	0.95	1
Var Y	0.88	1	0.09	0.94	1
Var phi	0.8	1	0	0.93	1
Var logv	0.58	1	0	0.95	1
N = 25, T = 50					
Mean Y	0.97	1	0.03	0.95	0.76
Mean phi	0.99	1	0	0.94	0.92
Mean logv	1	1	0	0.94	1
Var Y	0.9	1	0.07	0.96	1
Var phi	0.85	1	0	0.95	1
Var logv	0.78	1	0	0.97	1
N = 25, T = 100					
Mean Y	0.98	1	0.03	0.96	0.77
Mean phi	1	1	0	0.95	0.97
Mean logv	1	1	0	0.96	1
Var Y	0.89	1	0.07	0.94	1
Var phi	0.9	1	0	0.94	1
Var logv	0.84	1	0	0.96	1
N = 25, T = 200					
Mean Y	1.01	1	0.03	0.96	0.72
Mean phi	1.01	1	0	0.96	0.96
Mean logv	1	1	0	0.93	1
Var Y	0.87	1	0.08	0.94	1
Var phi	0.89	1	0	0.94	1
Var logv	0.86	1	0	0.96	1
N = 50, T = 25					
Mean Y	0.99	1	0.02	0.97	0.98
Mean phi	0.99	1	0	0.96	0.99
Mean logv	1	1	0	0.94	1
Var Y	0.95	1	0.03	0.95	1
Var phi	0.9	1	0	0.93	1
Var logv	0.75	1	0	0.95	1
N = 50, T = 50					
Mean Y	0.99	1	0.02	0.95	0.98
Mean phi	0.98	1	0	0.96	1
Mean logv	1	1	0	0.93	1
Var Y	0.96	1	0.03	0.96	1
Var phi	0.93	1	0	0.94	1
Var logv	0.9	1	0	0.96	1
N = 50, T = 100					
Mean Y	0.97	1	0.02	0.96	0.98
Mean phi	1	1	0	0.95	1
Mean logv	1	1	0	0.96	1
Var Y	0.94	1	0.03	0.96	1
Var phi	0.95	1	0	0.94	1
Var logv	0.92	1	0	0.95	1
N = 50, T = 200					
Mean Y	1.01	1	0.01	0.97	0.97
Mean phi	1.01	1	0	0.95	1
Mean logv	1	1	0	0.95	1
Var Y	0.93	1	0.03	0.94	1
Var phi	0.94	1	0	0.94	1
Var logv	0.9	1	0	0.92	1
N = 75, T = 75					
Mean Y	1.01	1	0.01	0.96	1
Mean phi	1.01	1	0	0.95	1
Mean logv	1	1	0	0.95	1
Var Y	0.95	1	0.02	0.95	1
Var phi	0.96	1	0	0.94	1
Var logv	0.92	1	0	0.94	1
N = 100, T = 25					
Mean Y	1	1	0.01	0.95	1
Mean phi	0.99	1	0	0.95	1
Mean logv	1	1	0	0.96	1
Var Y	0.98	1	0.01	0.96	1
Var phi	0.92	1	0	0.93	1
Var logv	0.87	1	0	0.94	1
N = 100, T = 50					
Mean Y	1	1	0.01	0.95	1
Mean phi	0.99	1	0	0.96	1
Mean logv	1	1	0	0.94	1
Var Y	0.99	1	0.01	0.97	1
Var phi	0.96	1	0	0.94	1
Var logv	0.95	1	0	0.94	1
N = 100, T = 100					
Mean Y	1	1	0.01	0.97	1
Mean phi	1	1	0	0.94	1
Mean logv	1	1	0	0.97	1
Var Y	0.97	1	0.01	0.94	1
Var phi	0.98	1	0	0.93	1
Var logv	0.96	1	0	0.95	1
N = 100, T = 200					
Mean Y	1	1	0.01	0.95	1
Mean phi	1.01	1	0	0.96	1
Mean logv	1	1	0	0.95	1
Var Y	0.97	1	0.01	0.96	1
Var phi	0.97	1	0	0.93	1
Var logv	0.95	1	0	0.93	1
N = 150, T = 150					
Mean Y	1.01	1	0.01	0.96	1
Mean phi	1	1	0	0.95	1
Mean logv	1	1	0	0.95	1
Var Y	0.98	1	0.01	0.95	1
Var phi	0.98	1	0	0.98	1
Var logv	0.97	1	0	0.96	1
N = 200, T = 10					
Mean Y	1	1	0	0.94	1
Mean phi	0.84	1	0	0.8	1
Mean logv	1.01	1	0	0.93	1
Var Y	1.05	1	0.01	0.93	1
Var phi	0.65	1	0	0.65	1
Var logv	0.76	1	0	0.95	1
N = 200, T = 15					
Mean Y	1	1	0	0.95	1
Mean phi	0.94	1	0	0.91	1
Mean logv	1.01	1	0	0.97	1
Var Y	1	1	0.01	0.96	1
Var phi	0.85	1	0	0.88	1
Var logv	0.88	1	0	0.95	1

Parameter	Rel. Bias	SE/SD	MSE	95% cover	Power
N = 200, T = 20					
Mean Y	1.01	1	0	0.97	1
Mean phi	0.97	1	0	0.94	1
Mean logv	1	1	0	0.95	1
Var Y	0.99	1	0.01	0.96	1
Var phi	0.91	1	0	0.93	1
Var logv	0.9	1	0	0.94	1
N = 200, T = 25					
Mean Y	0.99	1	0	0.94	1
Mean phi	0.99	1	0	0.95	1
Mean logv	1	1	0	0.93	1
Var Y	0.99	1	0.01	0.94	1
Var phi	0.93	1	0	0.94	1
Var logv	0.96	1	0	0.94	1
N = 200, T = 50					
Mean Y	0.99	1	0	0.94	1
Mean phi	0.99	1	0	0.93	1
Mean logv	1	1	0	0.93	1
Var Y	1	1	0.01	0.96	1
Var phi	0.98	1	0	0.95	1
Var logv	0.98	1	0	0.95	1
N = 200, T = 100					
Mean Y	1	1	0	0.95	1
Mean phi	0.99	1	0	0.96	1
Mean logv	1	1	0	0.96	1
Var Y	0.99	1	0.01	0.96	1
Var phi	0.99	1	0	0.95	1
Var logv	0.98	1	0	0.96	1
N = 200, T = 200					
Mean Y	1	1	0	0.96	1
Mean phi	1.01	1	0	0.95	1
Mean logv	1	1	0	0.95	1
Var Y	0.98	1	0.01	0.95	1
Var phi	0.99	1	0	0.95	1
Var logv	0.97	1	0	0.93	1
N = 300, T = 300					
Mean Y	0.99	1	0	0.96	1
Mean phi	1	1	0	0.95	1
Mean logv	1	1	0	0.95	1
Var Y	0.99	1	0	0.94	1
Var phi	1	1	0	0.95	1
Var logv	0.99	1	0	0.96	1

Parameter	Rel. Bias	SE/SD	MSE	95% cover	Power
N = 500, T = 25					
Mean Y	0.99	1	0	0.95	1
Mean phi	0.99	1	0	0.93	1
Mean logv	1	1	0	0.93	1
Var Y	1	1	0	0.96	1
Var phi	0.95	1	0	0.92	1
Var logv	0.98	1	0	0.95	1
N = 500, T = 50					
Mean Y	1	1	0	0.96	1
Mean phi	1	1	0	0.91	1
Mean logv	1	1	0	0.95	1
Var Y	1	1	0	0.95	1
Var phi	0.99	1	0	0.92	1
Var logv	1	1	0	0.93	1
N = 500, T = 100					
Mean Y	1	1	0	0.95	1
Mean phi	1	1	0	0.94	1
Mean logv	1	1	0	0.94	1
Var Y	0.99	1	0	0.95	1
Var phi	1.01	1	0	0.94	1
Var logv	0.99	1	0	0.94	1
N = 1000, T = 25					
Mean Y	1	1	0	0.94	1
Mean phi	1	1	0	0.93	1
Mean logv	1	1	0	0.95	1
Var Y	1	1	0	0.96	1
Var phi	0.97	1	0	0.87	1
Var logv	0.98	1	0	0.94	1
N = 1000, T = 50					
Mean Y	1	1	0	0.94	1
Mean phi	1.01	1	0	0.91	1
Mean logv	1	1	0	0.94	1
Var Y	1	1	0	0.96	1
Var phi	1	1	0	0.91	1
Var logv	1	1	0	0.94	1

A.4 Results Model 4

Parameter	Effect size	R^2
Y on		0.193
W	0.439	

Table 1: Effect size and R^2 of the between level regressions of Model 4.

Parameter	Rel. Bias	SE/SD	MSE	95% cover	Power	Parameter	Rel. Bias	SE/SD	MSE	95% cover	Power
N = 10, T = 10						N = 150, T = 150					
phi	1.15	1	0.01	0.97	0.65	phi	1	1	0	0.95	1
residual_Y	0.98	1	0	0.95	1	residual_Y	1	1	0	0.93	1
Y ON w	0.84	2	0.09	1	0.02	Y ON w	0.99	1	0	0.95	1
Intercept Y	1.01	2	0.01	0.99	0.96	Intercept Y	1	1	0	0.96	1
Res. var. Y	0.24	4	0.01	0.93	1	Res. var. Y	0.98	1	0	0.94	1
N = 10, T = 100						N = 200, T = 10					
phi	1	1	0	0.96	1	phi	0.99	1	0	0.95	1
residual_Y	1	1	0	0.97	1	residual_Y	1	1	0	0.95	1
Y ON w	1.04	1	0.03	0.98	0.12	Y ON w	0.98	1	0	0.97	0.94
Intercept Y	1	1	0	0.99	1	Intercept Y	1	1	0	0.94	1
Res. var. Y	0.59	3	0	0.91	1	Res. var. Y	0.97	1	0	0.96	1
N = 15, T = 100						N = 200, T = 15					
phi	1	1	0	0.96	1	phi	0.99	1	0	0.95	1
residual_Y	1	1	0	0.95	1	residual_Y	1	1	0	0.96	1
Y ON w	1.04	1	0.02	0.97	0.26	Y ON w	0.99	1	0	0.95	0.99
Intercept Y	1	1	0	0.96	1	Intercept Y	1	1	0	0.95	1
Res. var. Y	0.73	2	0	0.93	1	Res. var. Y	0.98	1	0	0.97	1
N = 20, T = 100						N = 200, T = 20					
phi	1	1	0	0.93	1	phi	1	1	0	0.94	1
residual_Y	1	1	0	0.95	1	residual_Y	1	1	0	0.96	1
Y ON w	1.01	1	0.01	0.96	0.39	Y ON w	1	1	0	0.96	0.99
Intercept Y	1	1	0	0.96	1	Intercept Y	1	1	0	0.96	1
Res. var. Y	0.79	1	0	0.92	1	Res. var. Y	0.96	1	0	0.95	1
N = 25, T = 25						N = 200, T = 25					
phi	1.02	1	0	0.94	1	phi	1	1	0	0.95	1
residual_Y	1	1	0	0.95	1	residual_Y	1	1	0	0.97	1
Y ON w	1.08	1	0.02	0.97	0.26	Y ON w	1.01	1	0	0.96	0.99
Intercept Y	1	1	0	0.95	1	Intercept Y	1	1	0	0.96	1
Res. var. Y	0.73	1	0	0.95	1	Res. var. Y	0.97	1	0	0.95	1
N = 25, T = 100						N = 200, T = 50					
phi	1	1	0	0.96	1	phi	1	1	0	0.95	1
residual_Y	1	1	0	0.95	1	residual_Y	1	1	0	0.95	1
Y ON w	1.02	1	0.01	0.96	0.49	Y ON w	1	1	0	0.97	1
Intercept Y	1	1	0	0.96	1	Intercept Y	1	1	0	0.96	1
Res. var. Y	0.84	1	0	0.94	1	Res. var. Y	0.96	1	0	0.96	1
N = 50, T = 50						N = 200, T = 100					
phi	1	1	0	0.95	1	phi	1	1	0	0.94	1
residual_Y	1	1	0	0.96	1	residual_Y	1	1	0	0.94	1
Y ON w	1	1	0.01	0.94	0.76	Y ON w	1	1	0	0.96	1
Intercept Y	1	1	0	0.95	1	Intercept Y	1	1	0	0.95	1
Res. var. Y	0.89	1	0	0.95	1	Res. var. Y	0.99	1	0	0.95	1
N = 50, T = 100						N = 200, T = 200					
phi	1	1	0	0.94	1	phi	1	1	0	0.96	1
residual_Y	1	1	0	0.95	1	residual_Y	1	1	0	0.96	1
Y ON w	1	1	0	0.96	0.84	Y ON w	1	1	0	0.95	1
Intercept Y	1	1	0	0.97	1	Intercept Y	1	1	0	0.94	1
Res. var. Y	0.93	1	0	0.94	1	Res. var. Y	0.98	1	0	0.95	1
N = 75, T = 75						N = 300, T = 300					
phi	1	1	0	0.95	1	phi	1	1	0	0.95	1
residual_Y	1	1	0	0.94	1	residual_Y	1	1	0	0.95	1
Y ON w	1	1	0	0.96	0.95	Y ON w	0.99	1	0	0.95	1
Intercept Y	1	1	0	0.96	1	Intercept Y	1	1	0	0.94	1
Res. var. Y	0.95	1	0	0.95	1	Res. var. Y	0.99	1	0	0.97	1
N = 100, T = 100						N = 500, T = 100					
phi	1	1	0	0.93	1	phi	1	1	0	0.95	1
residual_Y	1	1	0	0.96	1	residual_Y	1	1	0	0.95	1
Y ON w	0.99	1	0	0.96	0.98	Y ON w	1	1	0	0.97	1
Intercept Y	1	1	0	0.94	1	Intercept Y	1	1	0	0.97	1
Res. var. Y	0.97	1	0	0.94	1	Res. var. Y	0.99	1	0	0.93	1

A.5   Results Model 5

Parameter	Effect size	R^2
Y on		0.189
W	0.435	
phi on		0.217
W	0.465	

Table 2: Effect size and R^2 of the between level regressions of Model 5 with effect size setting 1.

Parameter	Effect size	R^2
Y on		0.171
W	0.414	
phi on		0.339
W	0.582	

Table 3: Effect size and R^2 of the between level regressions of Model 5 with effect size setting 2.

N = 10, T = 100

Parameter	Rel. Bias	SE/SD	MSE	95% cover	Power
residual_Y	0.99	1	0	0.97	1
phi on w	0.97	1	0.04	0.98	0.2
Y on w	0.99	1	0.65	0.98	0.33
Intercept Y on w	0.99	1	0.06	0.97	0.33
Intercept Y on phi	1	1	0	0.99	0.32
Res. var. Y	0.65	3	0.17	0.93	1
Res. var. phi	0.56	3	0	0.94	1

N = 15, T = 100

Parameter	Rel. Bias	SE/SD	MSE	95% cover	Power
residual_Y	1	1	0	0.96	1
phi on w	1.01	1	0.02	0.98	0.45
Y on w	0.99	1	0.34	0.97	0.59
Intercept Y on w	0.97	1	0.03	0.97	0.7
Intercept Y on phi	1	1	0	0.98	0.62
Res. var. Y	0.79	2	0.06	0.93	1
Res. var. phi	0.71	2	0	0.94	1

N = 20, T = 100

Parameter	Rel. Bias	SE/SD	MSE	95% cover	Power
residual_Y	1	1	0	0.96	1
phi on w	1	1	0.02	0.97	0.64
Y on w	1	1	0.23	0.96	0.78
Intercept Y on w	0.97	1	0.02	0.97	0.84
Intercept Y on phi	1.01	1	0	0.96	0.82
Res. var. Y	0.86	1	0.04	0.94	1
Res. var. phi	0.78	1	0	0.94	1

N = 25, T = 25

Parameter	Rel. Bias	SE/SD	MSE	95% cover	Power
residual_Y	0.99	1	0	0.94	1
phi on w	1.02	1	0.03	0.96	0.4
Y on w	0.99	1	0.19	0.95	0.86
Intercept Y on w	0.99	1	0.02	0.97	0.92
Intercept Y on phi	0.98	1	0	0.97	0.65
Res. var. Y	0.88	1	0.03	0.94	1
Res. var. phi	0.67	2	0	0.96	1

N = 25, T = 100

Parameter	Rel. Bias	SE/SD	MSE	95% cover	Power
residual_Y	1	1	0	0.96	1
phi on w	1	1	0.01	0.95	0.72
Y on w	1	1	0.18	0.95	0.88
Intercept Y on w	0.98	1	0.02	0.97	0.93
Intercept Y on phi	1.01	1	0	0.96	0.93
Res. var. Y	0.89	1	0.02	0.95	1
Res. var. phi	0.83	1	0	0.94	1

N = 50, T = 50

Parameter	Rel. Bias	SE/SD	MSE	95% cover	Power
residual_Y	1	1	0	0.95	1
phi on w	1.03	1	0.01	0.96	0.9
Y on w	1.01	1	0.08	0.97	0.99
Intercept Y on w	0.99	1	0.01	0.94	1
Intercept Y on phi	1	1	0	0.95	0.99
Res. var. Y	0.94	1	0.01	0.93	1
Res. var. phi	0.9	1	0	0.96	1

N = 50, T = 100

Parameter	Rel. Bias	SE/SD	MSE	95% cover	Power
residual_Y	1	1	0	0.97	1
phi on w	1.01	1	0.01	0.96	0.96
Y on w	1	1	0.08	0.95	0.99
Intercept Y on w	0.99	1	0.01	0.94	1
Intercept Y on phi	1	1	0	0.94	1
Res. var. Y	0.95	1	0.01	0.95	1
Res. var. phi	0.91	1	0	0.95	1

N = 50, T = 200

Parameter	Rel. Bias	SE/SD	MSE	95% cover	Power
residual_Y	1	1	0	0.95	1
phi on w	1	1	0	0.94	0.98
Y on w	1.01	1	0.08	0.98	0.99
Intercept Y on w	1	1	0.01	0.95	1
Intercept Y on phi	1	1	0	0.96	1
Res. var. Y	0.95	1	0.01	0.96	1
Res. var. phi	0.95	1	0	0.94	1

N = 75, T = 75

Parameter	Rel. Bias	SE/SD	MSE	95% cover	Power
residual_Y	1	1	0	0.95	1
phi on w	1.01	1	0	0.94	0.99
Y on w	1.01	1	0.05	0.95	1
Intercept Y on w	1	1	0.01	0.96	1
Intercept Y on phi	1	1	0	0.95	1
Res. var. Y	0.96	1	0.01	0.96	1
Res. var. phi	0.97	1	0	0.95	1

N = 100, T = 100

Parameter	Rel. Bias	SE/SD	MSE	95% cover	Power
residual_Y	1	1	0	0.95	1
phi on w	1.01	1	0	0.95	1
Y on w	0.99	1	0.04	0.95	1
Intercept Y on w	1	1	0	0.95	1
Intercept Y on phi	1.01	1	0	0.95	1
Res. var. Y	0.97	1	0	0.95	1
Res. var. phi	0.95	1	0	0.95	1

N = 150, T = 150

Parameter	Rel. Bias	SE/SD	MSE	95% cover	Power
residual_Y	1	1	0	0.94	1
phi on w	1	1	0	0.93	1
Y on w	1	1	0.03	0.96	1
Intercept Y on w	1	1	0	0.96	1
Intercept Y on phi	1	1	0	0.96	1
Res. var. Y	0.98	1	0	0.95	1
Res. var. phi	0.97	1	0	0.96	1

N = 200, T = 10

Parameter	Rel. Bias	SE/SD	MSE	95% cover	Power
residual_Y	0.99	1	0	0.94	1
phi on w	0.94	1	0.01	0.94	0.94
Y on w	1.01	1	0.02	0.97	1
Intercept Y on w	1	1	0	0.96	1
Intercept Y on phi	0.89	1	0	0.93	1
Res. var. Y	0.99	1	0	0.95	1
Res. var. phi	0.65	1	0	0.91	1

N = 200, T = 15

Parameter	Rel. Bias	SE/SD	MSE	95% cover	Power
residual_Y	1	1	0	0.97	1
phi on w	0.99	1	0	0.94	0.99
Y on w	1	1	0.02	0.95	1
Intercept Y on w	1	1	0	0.95	1
Intercept Y on phi	0.98	1	0	0.94	1
Res. var. Y	0.99	1	0	0.97	1
Res. var. phi	0.83	1	0	0.93	1

N = 200, T = 20

Parameter	Rel. Bias	SE/SD	MSE	95% cover	Power
residual_Y	1	1	0	0.96	1
phi on w	0.98	1	0	0.95	1
Y on w	1	1	0.02	0.96	1
Intercept Y on w	1	1	0	0.94	1
Intercept Y on phi	0.99	1	0	0.96	1
Res. var. Y	0.99	1	0	0.94	1
Res. var. phi	0.93	1	0	0.94	1

N = 200, T = 25

Parameter	Rel. Bias	SE/SD	MSE	95% cover	Power
residual_Y	1	1	0	0.95	1
phi on w	0.99	1	0	0.95	1
Y on w	1	1	0.02	0.95	1
Intercept Y on w	1	1	0	0.96	1
Intercept Y on phi	0.99	1	0	0.96	1
Res. var. Y	0.99	1	0	0.95	1
Res. var. phi	0.94	1	0	0.95	1

N = 200, T = 50

Parameter	Rel. Bias	SE/SD	MSE	95% cover	Power
residual_Y	1	1	0	0.95	1
phi on w	1	1	0	0.95	1
Y on w	1	1	0.02	0.95	1
Intercept Y on w	1	1	0	0.94	1
Intercept Y on phi	1	1	0	0.94	1
Res. var. Y	0.98	1	0	0.94	1
Res. var. phi	0.98	1	0	0.94	1

N = 200, T = 100

Parameter	Rel. Bias	SE/SD	MSE	95% cover	Power
residual_Y	1	1	0	0.94	1
phi on w	1	1	0	0.96	1
Y on w	1	1	0.02	0.95	1
Intercept Y on w	1	1	0	0.96	1
Intercept Y on phi	1	1	0	0.95	1
Res. var. Y	0.99	1	0	0.94	1
Res. var. phi	0.98	1	0	0.96	1

N = 200, T = 200

Parameter	Rel. Bias	SE/SD	MSE	95% cover	Power
residual_Y	1	1	0	0.95	1
phi on w	1	1	0	0.95	1
Y on w	1	1	0.02	0.95	1
Intercept Y on w	1	1	0	0.95	1
Intercept Y on phi	1	1	0	0.94	1
Res. var. Y	1	1	0	0.95	1
Res. var. phi	0.99	1	0	0.94	1

Table 4: Peak effects

Parameter	Rel. Bias	SE/SD	MSE	95% cover	Power
N = 300, T = 300					
residual_Y	1	1	0	0.95	1
phi on w	0.99	1	0	0.96	1
Y on w	0.99	1	0.01	0.96	1
Intercept Y on w	1	1	0	0.95	1
Intercept Y on phi	1	1	0	0.95	1
Res. var. Y	0.99	1	0	0.95	1
Res. var. phi	0.99	1	0	0.94	1
N = 500, T = 100					
residual_Y	1	1	0	0.95	1
phi on w	1	1	0	0.94	1
Y on w	1	1	0.01	0.97	1
Intercept Y on w	1	1	0	0.96	1
Intercept Y on phi	1	1	0	0.94	1
Res. var. Y	0.99	1	0	0.95	1
Res. var. phi	0.99	1	0	0.97	1

Table 5: weak effects

Parameter	Rel. Bias	SE/SD	MSE	95% cover	Power	Parameter	Rel. Bias	SE/SD	MSE	95% cover	Power
N = 10, T = 10						N = 50, T = 50					
residual_Y	0.93		0	0.95	1	residual_Y	1	1	0	0.95	1
phi on w	1.06	2	0.19	1	0.01	phi on w	1.02	1	0.01	0.96	1
Y on w	1.02	114	0.78	0.98	0.19	Y on w	1.01	1	0.09	0.97	0.99
Intercept Y on w	1.02	121	0.07	0.99	0.24	Intercept Y on w	0.99	1	0.01	0.94	1
Intercept Y on phi	0.82	2	0.02	1	0.03	Intercept Y on phi	1	1	0	0.95	0.99
Res. var. Y	0.7		0.25	0.96	1	Res. var. Y	0.94	1	0.02	0.93	1
Res. var. phi	0.14	5	0.02	0.91	1	Res. var. phi	0.9	1	0	0.96	1
N = 10, T = 100						N = 50, T = 100					
residual_Y	0.99	1	0	0.97	1	residual_Y	1	1	0	0.97	1
phi on w	0.98	1	0.04	0.98	0.38	phi on w	1.01	1	0.01	0.96	1
Y on w	0.98	1	0.81	0.98	0.26	Y on w	1	1	0.1	0.95	0.99
Intercept Y on w	0.99	1	0.07	0.97	0.29	Intercept Y on w	0.99	1	0.01	0.94	1
Intercept Y on phi	1	1	0	0.99	0.33	Intercept Y on phi	1	1	0	0.94	1
Res. var. Y	0.65	3	0.26	0.93	1	Res. var. Y	0.95	1	0.01	0.96	1
Res. var. phi	0.56	3	0	0.94	1	Res. var. phi	0.91	1	0	0.95	1
N = 15, T = 100						N = 50, T = 200					
residual_Y	1	1	0	0.96	1	residual_Y	1	1	0	0.95	1
phi on w	1.01	1	0.02	0.98	0.68	phi on w	1	1	0	0.94	1
Y on w	0.99	1	0.42	0.97	0.5	Y on w	1.01	1	0.09	0.98	0.99
Intercept Y on w	0.97	1	0.04	0.97	0.59	Intercept Y on w	1	1	0.01	0.95	1
Intercept Y on phi	1	1	0	0.98	0.62	Intercept Y on phi	1	1	0	0.96	1
Res. var. Y	0.79	2	0.1	0.93	1	Res. var. Y	0.95	1	0.02	0.96	1
Res. var. phi	0.71	2	0	0.94	1	Res. var. phi	0.95	1	0	0.94	1
N = 20, T = 100						N = 75, T = 75					
residual_Y	1	1	0	0.96	1	residual_Y	1	1	0	0.95	1
phi on w	1	1	0.02	0.97	0.84	phi on w	1.01	1	0	0.94	1
Y on w	0.99	1	0.28	0.96	0.66	Y on w	1.01	1	0.06	0.95	1
Intercept Y on w	0.97	1	0.03	0.97	0.74	Intercept Y on w	1	1	0.01	0.96	1
Intercept Y on phi	1.01	1	0	0.96	0.83	Intercept Y on phi	1	1	0	0.95	1
Res. var. Y	0.86	1	0.06	0.94	1	Res. var. Y	0.96	1	0.01	0.96	1
Res. var. phi	0.78	1	0	0.94	1	Res. var. phi	0.97	1	0	0.95	1
N = 25, T = 25						N = 100, T = 25					
residual_Y	0.99	1	0	0.95	1	residual_Y	1	1	0	0.97	1
phi on w	1.02	1	0.03	0.97	0.61	phi on w	1	1	0.01	0.93	1
Y on w	0.99	1	0.23	0.95	0.78	Y on w	1.01	1	0.05	0.94	1
Intercept Y on w	0.99	1	0.02	0.97	0.87	Intercept Y on w	1.01	1	0.01	0.95	1
Intercept Y on phi	0.97	1	0	0.97	0.65	Intercept Y on phi	0.99	1	0	0.94	1
Res. var. Y	0.88	1	0.04	0.94	1	Res. var. Y	0.98	1	0.01	0.95	1
Res. var. phi	0.67	2	0	0.96	1	Res. var. phi	0.88	1	0	0.94	1
N = 25, T = 50						N = 100, T = 50					
residual_Y	1	1	0	0.96	1	residual_Y	1	1	0	0.93	1
phi on w	1.03	1	0.01	0.97	0.83	phi on w	1.01	1	0	0.96	1
Y on w	1	1	0.22	0.95	0.81	Y on w	1	1	0.05	0.95	1
Intercept Y on w	0.99	1	0.02	0.97	0.84	Intercept Y on w	1	1	0.01	0.96	1
Intercept Y on phi	1	1	0	0.94	0.81	Intercept Y on phi	1	1	0	0.95	1
Res. var. Y	0.87	1	0.04	0.93	1	Res. var. Y	0.96	1	0.01	0.94	1
Res. var. phi	0.8	1	0	0.95	1	Res. var. phi	0.97	1	0	0.95	1
N = 25, T = 100						N = 100, T = 100					
residual_Y	1	1	0	0.96	1	residual_Y	1	1	0	0.96	1
phi on w	1	1	0.01	0.95	0.92	phi on w	1.01	1	0	0.94	1
Y on w	1	1	0.23	0.95	0.8	Y on w	0.99	1	0.05	0.95	1
Intercept Y on w	0.98	1	0.02	0.97	0.87	Intercept Y on w	1	1	0.01	0.95	1
Intercept Y on phi	1.01	1	0	0.96	0.93	Intercept Y on phi	1.01	1	0	0.95	1
Res. var. Y	0.89	1	0.04	0.95	1	Res. var. Y	0.97	1	0.01	0.96	1
Res. var. phi	0.83	1	0	0.93	1	Res. var. phi	0.95	1	0	0.95	1
N = 25, T = 200						N = 100, T = 200					
residual_Y	1	1	0	0.96	1	residual_Y	1	1	0	0.95	1
phi on w	1	1	0.01	0.96	0.96	phi on w	1	1	0	0.95	1
Y on w	1.01	1	0.21	0.94	0.79	Y on w	1.01	1	0.05	0.96	1
Intercept Y on w	0.98	1	0.02	0.97	0.87	Intercept Y on w	0.99	1	0.01	0.94	1
Intercept Y on phi	1	1	0	0.97	0.97	Intercept Y on phi	1	1	0	0.95	1
Res. var. Y	0.89	1	0.04	0.94	1	Res. var. Y	0.99	1	0.01	0.95	1
Res. var. phi	0.87	1	0	0.96	1	Res. var. phi	0.97	1	0	0.95	1
N = 50, T = 25						N = 150, T = 150					
residual_Y	1	1	0	0.96	1	residual_Y	1	1	0	0.94	1
phi on w	1	1	0.01	0.93	0.93	phi on w	1	1	0	0.93	1
Y on w	0.99	1	0.11	0.95	0.99	Y on w	1	1	0.03	0.96	1
Intercept Y on w	1	1	0.01	0.97	1	Intercept Y on w	1	1	0	0.96	1
Intercept Y on phi	0.98	1	0	0.95	0.93	Intercept Y on phi	1	1	0	0.96	1
Res. var. Y	0.95	1	0.02	0.94	1	Res. var. Y	0.98	1	0	0.95	1
Res. var. phi	0.82	1	0	0.95	1	Res. var. phi	0.97	1	0	0.97	1

Table 6: Strong effects.

Left panel:

Parameter	Rel. Bias	SE/SD	MSE	95% cover	Power
N = 200, T = 10					
residual_Y	0.99	1	0	0.94	1
phi on w	0.93	1	0.01	0.95	1
Y on w	1.01	1	0.03	0.97	1
Intercept Y on w	1.01	1	0	0.96	1
Intercept Y on phi	0.87	1	0	0.9	1
Res. var. Y	0.99	1	0	0.96	1
Res. var. phi	0.62	1	0	0.9	1
N = 200, T = 15					
residual_Y	1	1	0	0.96	1
phi on w	0.98	1	0	0.94	1
Y on w	1	1	0.03	0.96	1
Intercept Y on w	1	1	0	0.95	1
Intercept Y on phi	0.97	1	0	0.94	1
Res. var. Y	0.99	1	0	0.96	1
Res. var. phi	0.83	1	0	0.93	1
N = 200, T = 20					
residual_Y	1	1	0	0.96	1
phi on w	0.98	1	0	0.95	1
Y on w	1	1	0.02	0.96	1
Intercept Y on w	1	1	0	0.94	1
Intercept Y on phi	0.98	1	0	0.96	1
Res. var. Y	0.99	1	0	0.94	1
Res. var. phi	0.93	1	0	0.95	1
N = 200, T = 25					
residual_Y	1	1	0	0.96	1
phi on w	0.99	1	0	0.95	1
Y on w	1	1	0.03	0.95	1
Intercept Y on w	1	1	0	0.96	1
Intercept Y on phi	0.99	1	0	0.96	1
Res. var. Y	0.99	1	0	0.94	1
Res. var. phi	0.93	1	0	0.96	1
N = 200, T = 50					
residual_Y	1	1	0	0.95	1
phi on w	1	1	0	0.95	1
Y on w	1	1	0.02	0.95	1
Intercept Y on w	1	1	0	0.94	1
Intercept Y on phi	1	1	0	0.94	1
Res. var. Y	0.98	1	0	0.94	1
Res. var. phi	0.98	1	0	0.95	1
N = 200, T = 100					
residual_Y	1	1	0	0.94	1
phi on w	1	1	0	0.96	1
Y on w	1	1	0.02	0.95	1
Intercept Y on w	1	1	0	0.96	1
Intercept Y on phi	1	1	0	0.95	1
Res. var. Y	0.99	1	0	0.94	1
Res. var. phi	0.98	1	0	0.96	1
N = 200, T = 200					
residual_Y	1	1	0	0.95	1
phi on w	1	1	0	0.95	1
Y on w	1	1	0.02	0.95	1
Intercept Y on w	1	1	0	0.95	1
Intercept Y on phi	1	1	0	0.94	1
Res. var. Y	1	1	0	0.95	1
Res. var. phi	0.99	1	0	0.94	1

Right panel:

Parameter	Rel. Bias	SE/SD	MSE	95% cover	Power
N = 300, T = 300					
residual_Y	1	1	0	0.95	1
phi on w	0.99	1	0	0.96	1
Y on w	0.99	1	0.02	0.96	1
Intercept Y on w	1	1	0	0.95	1
Intercept Y on phi	1	1	0	0.95	1
Res. var. Y	0.99	1	0	0.95	1
Res. var. phi	0.99	1	0	0.94	1
N = 500, T = 25					
residual_Y	1	1	0	0.95	1
phi on w	0.99	1	0	0.92	1
Y on w	1	1	0.01	0.95	1
Intercept Y on w	1.01	1	0	0.96	1
Intercept Y on phi	1	1	0	0.96	1
Res. var. Y	0.99	1	0	0.94	1
Res. var. phi	0.95	1	0	0.93	1
N = 500, T = 50					
residual_Y	1	1	0	0.94	1
phi on w	1	1	0	0.95	1
Y on w	1	1	0.01	0.95	1
Intercept Y on w	1	1	0	0.95	1
Intercept Y on phi	1	1	0	0.93	1
Res. var. Y	1	1	0	0.95	1
Res. var. phi	0.98	1	0	0.95	1
N = 500, T = 100					
residual_Y	1	1	0	0.95	1
phi on w	1	1	0	0.94	1
Y on w	1	1	0.01	0.97	1
Intercept Y on w	1	1	0	0.96	1
Intercept Y on phi	1	1	0	0.94	1
Res. var. Y	0.99	1	0	0.95	1
Res. var. phi	0.99	1	0	0.97	1
N = 1000, T = 25					
residual_Y	1	1	0	0.96	1
phi on w	0.99	1	0	0.96	1
Y on w	1	1	0	0.96	1
Intercept Y on w	1	1	0	0.94	1
Intercept Y on phi	0.99	1	0	0.94	1
Res. var. Y	1	1	0	0.94	1
Res. var. phi	0.97	1	0	0.93	1
N = 1000, T = 50					
residual_Y	1	1	0	0.96	1
phi on w	1	1	0	0.95	1
Y on w	1	1	0	0.95	1
Intercept Y on w	1	1	0	0.95	1
Intercept Y on phi	1	1	0	0.93	1
Res. var. Y	1	1	0	0.95	1
Res. var. phi	0.99	1	0	0.96	1

Table 7: Strong effects

A.6   Results Model 6

Parameter	Effect size	R^2
Y on		0.245
W	0.495	
phi on		0.242
W	0.492	
logv on		0.211
W	0.460	

Table 8: Effect size and R^2 of the between level regressions of Model 6.

Parameter	Rel. Bias	SE/SD	MSE	95% cover	Power
N = 10, T = 10					
phi on w	1.09	2	0.18	1	0.01
logv on w	1.02	1	0.36	1	0.01
Y on w	0.95	2	0.17	0.99	0.05
Intercept Y on w	0.98	2	0.01	0.99	0.81
Intercept phi on w	1.04	2	0.02	1	0.08
Intercept logv on w	0.98	1	0.03	1	1
Res. var. Y	0.49	4	0.01	0.98	1
Res. var. phi	0.31	5	0.01	0.98	1
Res. var. logv	0.08	4	0.08	0.77	1
N = 10, T = 100					
phi on w	0.98	1	0.03	0.98	0.33
logv on w	0.97	1	0.02	0.98	0.19
Y on w	0.97	1	0.06	0.96	0.38
Intercept Y on w	1.01	1	0.01	0.97	1
Intercept phi on w	1.02	1	0	0.97	0.8
Intercept logv on w	1	1	0	0.99	1
Res. var. Y	0.75	2	0	0.92	1
Res. var. phi	0.78	2	0	0.95	1
Res. var. logv	0.62	2	0	0.94	1
N = 15, T = 100					
phi on w	0.99	1	0.05	0.98	0.15
logv on w	0.91	1	0.05	0.99	0.07
Y on w	0.93	1	0.1	0.97	0.17
Intercept Y on w	1.01	1	0.01	0.97	0.97
Intercept phi on w	1.02	1	0.01	0.97	0.46
Intercept logv on w	1	2	0	0.99	1
Res. var. Y	0.63	3	0.01	0.92	1
Res. var. phi	0.65	3	0	0.93	1
Res. var. logv	0.45	3	0	0.92	1
N = 20, T = 100					
phi on w	0.98	1	0.02	0.97	0.47
logv on w	0.98	1	0.02	0.97	0.3
Y on w	1.01	1	0.04	0.96	0.47
Intercept Y on w	1.01	1	0	0.95	1
Intercept phi on w	1.01	1	0	0.97	0.95
Intercept logv on w	1	1	0	0.96	1
Res. var. Y	0.82	1	0	0.94	1
Res. var. phi	0.84	1	0	0.94	1
Res. var. logv	0.7	1	0	0.94	1
N = 25, T = 25					
phi on w	1.01	1	0.03	0.96	0.37
logv on w	0.95	1	0.04	0.98	0.16
Y on w	1.01	1	0.04	0.97	0.46
Intercept Y on w	1	1	0	0.96	1
Intercept phi on w	1.02	1	0	0.95	0.84
Intercept logv on w	0.99	1	0	0.96	1
Res. var. Y	0.86	1	0	0.95	1
Res. var. phi	0.81	1	0	0.97	1
Res. var. logv	0.44	1	0	0.93	1
N = 25, T = 100					
phi on w	0.99	1	0.02	0.96	0.57
logv on w	0.97	1	0.02	0.96	0.42
Y on w	1.01	1	0.03	0.95	0.57
Intercept Y on w	1.01	1	0	0.95	1
Intercept phi on w	1	1	0	0.96	0.98
Intercept logv on w	1	1	0	0.96	1
Res. var. Y	0.84	1	0	0.94	1
Res. var. phi	0.88	1	0	0.96	1
Res. var. logv	0.77	1	0	0.93	1
N = 50, T = 50					
phi on w	1	1	0.01	0.95	0.81
logv on w	0.97	1	0.01	0.97	0.56
Y on w	0.99	1	0.02	0.94	0.92
Intercept Y on w	0.99	1	0	0.94	1
Intercept phi on w	0.99	1	0	0.94	1
Intercept logv on w	1	1	0	0.98	1
Res. var. Y	0.95	1	0	0.95	1
Res. var. phi	0.93	1	0	0.93	1
Res. var. logv	0.81	1	0	0.96	1

Parameter	Rel. Bias	SE/SD	MSE	95% cover	Power
N = 50, T = 100					
phi on w	0.99	1	0.01	0.95	0.9
logv on w	0.98	1	0.01	0.94	0.73
Y on w	0.99	1	0.02	0.95	0.9
Intercept Y on w	1	1	0	0.95	1
Intercept phi on w	1	1	0	0.95	1
Intercept logv on w	1	1	0	0.96	1
Res. var. Y	0.92	1	0	0.94	1
Res. var. phi	0.94	1	0	0.95	1
Res. var. logv	0.9	1	0	0.94	1
N = 75, T = 75					
phi on w	1.02	1	0.01	0.95	0.96
logv on w	1	1	0.01	0.96	0.85
Y on w	1.01	1	0.01	0.95	0.98
Intercept Y on w	1	1	0	0.94	1
Intercept phi on w	1	1	0	0.96	1
Intercept logv on w	1	1	0	0.94	1
Res. var. Y	0.97	1	0	0.96	1
Res. var. phi	0.96	1	0	0.95	1
Res. var. logv	0.92	1	0	0.94	1
N = 100, T = 100					
phi on w	0.99	1	0	0.95	0.99
logv on w	0.98	1	0	0.95	0.96
Y on w	1	1	0.01	0.95	0.99
Intercept Y on w	1	1	0	0.95	1
Intercept phi on w	1	1	0	0.95	1
Intercept logv on w	1	1	0	0.96	1
Res. var. Y	0.96	1	0	0.94	1
Res. var. phi	0.96	1	0	0.93	1
Res. var. logv	0.93	1	0	0.95	1
N = 150, T = 150					
phi on w	1.01	1	0	0.96	1
logv on w	1.01	1	0	0.95	1
Y on w	1	1	0	0.94	1
Intercept Y on w	1	1	0	0.94	1
Intercept phi on w	0.99	1	0	0.94	1
Intercept logv on w	1	1	0	0.95	1
Res. var. Y	0.99	1	0	0.95	1
Res. var. phi	0.99	1	0	0.95	1
Res. var. logv	0.96	1	0	0.96	1
N = 200, T = 10					
phi on w	0.97	1	0.01	0.96	0.95
logv on w	0.95	1	0.01	0.94	0.61
Y on w	0.99	1	0.01	0.97	1
Intercept Y on w	1	1	0	0.95	1
Intercept phi on w	0.95	1	0	0.95	1
Intercept logv on w	1.01	1	0	0.94	1
Res. var. Y	1.02	1	0	0.96	1
Res. var. phi	0.92	1	0	0.96	1
Res. var. logv	0.63	1	0	0.93	1
N = 200, T = 15					
phi on w	0.98	1	0.01	0.95	0.99
logv on w	0.94	1	0.01	0.93	0.78
Y on w	0.99	1	0	0.97	1
Intercept Y on w	1	1	0	0.95	1
Intercept phi on w	0.98	1	0	0.94	1
Intercept logv on w	1	1	0	0.94	1
Res. var. Y	0.99	1	0	0.95	1
Res. var. phi	0.93	1	0	0.96	1
Res. var. logv	0.78	1	0	0.95	1
N = 200, T = 20					
phi on w	1	1	0	0.94	1
logv on w	0.97	1	0.01	0.93	0.85
Y on w	0.99	1	0	0.95	1
Intercept Y on w	1	1	0	0.95	1
Intercept phi on w	0.99	1	0	0.96	1
Intercept logv on w	1	1	0	0.94	1
Res. var. Y	0.99	1	0	0.96	1
Res. var. phi	0.95	1	0	0.95	1
Res. var. logv	0.83	1	0	0.94	1

Parameter	Rel. Bias	SE/SD	MSE	95% cover	Power
N = 200, T = 25					
phi on w	0.99	1	0	0.96	1
logv on w	0.99	1	0	0.95	0.92
Y on w	1.01	1	0	0.95	1
Intercept Y on w	1	1	0	0.94	1
Intercept phi on w	0.99	1	0	0.95	1
Intercept logv on w	1	1	0	0.95	1
Res. var. Y	0.98	1	0	0.94	1
Res. var. phi	0.97	1	0	0.94	1
Res. var. logv	0.9	1	0	0.94	1
N = 200, T = 50					
phi on w	1	1	0	0.97	1
logv on w	1	1	0	0.95	0.99
Y on w	1	1	0	0.93	1
Intercept Y on w	1	1	0	0.93	1
Intercept phi on w	1	1	0	0.94	1
Intercept logv on w	1	1	0	0.96	1
Res. var. Y	0.99	1	0	0.97	1
Res. var. phi	0.99	1	0	0.93	1
Res. var. logv	0.96	1	0	0.96	1
N = 200, T = 100					
phi on w	1	1	0	0.94	1
logv on w	0.99	1	0	0.94	1
Y on w	1	1	0	0.97	1
Intercept Y on w	1	1	0	0.95	1
Intercept phi on w	1	1	0	0.94	1
Intercept logv on w	1	1	0	0.95	1
Res. var. Y	0.98	1	0	0.94	1
Res. var. phi	0.99	1	0	0.95	1
Res. var. logv	0.97	1	0	0.94	1
N = 200, T = 200					
phi on w	1.01	1	0	0.95	1
logv on w	0.99	1	0	0.94	1
Y on w	0.99	1	0	0.93	1
Intercept Y on w	1	1	0	0.97	1
Intercept phi on w	1	1	0	0.94	1
Intercept logv on w	1	1	0	0.95	1
Res. var. Y	0.98	1	0	0.94	1
Res. var. phi	0.99	1	0	0.96	1
Res. var. logv	0.97	1	0	0.97	1
N = 300, T = 300					
phi on w	1	1	0	0.95	1
logv on w	1	1	0	0.96	1
Y on w	1	1	0	0.94	1
Intercept Y on w	1	1	0	0.94	1
Intercept phi on w	1	1	0	0.96	1
Intercept logv on w	1	1	0	0.97	1
Res. var. Y	0.99	1	0	0.96	1
Res. var. phi	0.99	1	0	0.96	1
Res. var. logv	0.98	1	0	0.94	1
N = 500, T = 100					
phi on w	1	1	0	0.93	1
logv on w	0.99	1	0	0.96	1
Y on w	1	1	0	0.94	1
Intercept Y on w	1	1	0	0.94	1
Intercept phi on w	1	1	0	0.93	1
Intercept logv on w	1	1	0	0.95	1
Res. var. Y	0.99	1	0	0.94	1
Res. var. phi	1	1	0	0.96	1
Res. var. logv	0.98	1	0	0.94	1

A.7 Results Model 7

Parameter	Effect size	R^2
Y on		0.241
W	0.491	
Z on		0.316
W	0.316	
Y	0.334	

Table 9: Effect size and R^2 of the between level regressions of Model 7.

Left half:

Parameter	Rel. Bias	SE/SD	MSE	95% cover	Power
N = 10, T = 10					
phi	0.98	1	0.02	0.96	0.34
residual_Y	0.95		0	0.95	1
Y ON w	1.02	139	0.28	0.98	0.16
Z ON Y	0.86	13	1.43	0.98	0.04
Intercept Z	1.03	11	0.51	0.99	0.12
Intercept Y	0.99	167	0.03	0.96	0.65
Res. var. Z	0.69	4	0.75	0.98	1
Res. var. Y	0.76		0.04	0.93	1
N = 10, T = 100					
phi	1	1	0	0.96	1
residual_Y	1	1	0	0.95	1
Y ON w	1.02	1	0.27	0.98	0.19
Z ON Y	1.08	1	0.79	0.99	0.05
Intercept Z	0.95	2	0.29	1	0.25
Intercept Y	1.01	1	0.02	0.98	0.67
Res. var. Z	0.63	3	1.04	0.95	1
Res. var. Y	0.66	3	0.03	0.93	1
N = 15, T = 100					
phi	0.99	1	0	0.94	1
residual_Y	1	1	0	0.94	1
Y ON w	1.01	1	0.14	0.96	0.36
Z ON Y	1.03	1	0.46	0.97	0.12
Intercept Z	0.98	1	0.17	0.97	0.49
Intercept Y	1	1	0.02	0.97	0.94
Res. var. Z	0.79	2	0.33	0.95	1
Res. var. Y	0.79	2	0.01	0.93	1
N = 20, T = 100					
phi	0.99	1	0	0.95	1
residual_Y	1	1	0	0.95	1
Y ON w	1.01	1	0.1	0.98	0.52
Z ON Y	1.03	1	0.31	0.97	0.2
Intercept Z	0.98	1	0.12	0.96	0.73
Intercept Y	1.01	1	0.01	0.96	0.99
Res. var. Z	0.85	1	0.2	0.95	1
Res. var. Y	0.84	1	0.01	0.93	1
N = 25, T = 25					
phi	1.01	1	0	0.94	1
residual_Y	1	1	0	0.96	1
Y ON w	1.01	1	0.09	0.95	0.63
Z ON Y	1.02	1	0.26	0.97	0.23
Intercept Z	1	1	0.11	0.97	0.79
Intercept Y	0.99	1	0.01	0.97	1
Res. var. Z	0.85	1	0.14	0.94	1
Res. var. Y	0.88	1	0.01	0.94	1
N = 25, T = 100					
phi	1	1	0	0.94	1
residual_Y	1	1	0	0.95	1
Y ON w	1.02	1	0.09	0.95	0.66
Z ON Y	1	1	0.23	0.98	0.27
Intercept Z	0.99	1	0.09	0.97	0.84
Intercept Y	1	1	0.01	0.95	0.99
Res. var. Z	0.88	1	0.14	0.94	1
Res. var. Y	0.88	1	0.01	0.96	1
N = 50, T = 50					
phi	1	1	0	0.94	1
residual_Y	1	1	0	0.95	1
Y ON w	0.99	1	0.04	0.95	0.96
Z ON Y	0.98	1	0.12	0.95	0.52
Intercept Z	1.01	1	0.05	0.95	0.98
Intercept Y	1	1	0	0.95	1
Res. var. Z	0.93	1	0.06	0.91	1
Res. var. Y	0.93	1	0	0.93	1
N = 50, T = 100					
phi	0.99	1	0	0.94	1
residual_Y	1	1	0	0.94	1
Y ON w	1.02	1	0.04	0.95	0.92
Z ON Y	1	1	0.11	0.95	0.54
Intercept Z	1	1	0.05	0.93	0.99
Intercept Y	1.01	1	0	0.95	1
Res. var. Z	0.94	1	0.05	0.95	1
Res. var. Y	0.92	1	0	0.95	1

Right half:

Parameter	Rel. Bias	SE/SD	MSE	95% cover	Power
N = 75, T = 75					
phi	1	1	0	0.96	1
residual_Y	1	1	0	0.97	1
Y ON w	0.99	1	0.02	0.97	0.99
Z ON Y	1.01	1	0.07	0.95	0.72
Intercept Z	1.01	1	0.03	0.96	1
Intercept Y	0.99	1	0	0.95	1
Res. var. Z	0.96	1	0.03	0.95	1
Res. var. Y	0.97	1	0	0.95	1
N = 100, T = 100					
phi	0.99	1	0	0.95	1
residual_Y	1	1	0	0.94	1
Y ON w	1	1	0.02	0.94	1
Z ON Y	0.99	1	0.06	0.95	0.84
Intercept Z	1	1	0.03	0.94	1
Intercept Y	1.01	1	0	0.95	1
Res. var. Z	0.97	1	0.02	0.95	1
Res. var. Y	0.96	1	0	0.95	1
N = 150, T = 150					
phi	1	1	0	0.95	1
residual_Y	1	1	0	0.95	1
Y ON w	1	1	0.01	0.94	1
Z ON Y	1.01	1	0.04	0.96	0.95
Intercept Z	1	1	0.02	0.95	1
Intercept Y	1	1	0	0.95	1
Res. var. Z	0.97	1	0.02	0.94	1
Res. var. Y	0.98	1	0	0.94	1
N = 200, T = 10					
phi	0.96	1	0	0.95	1
residual_Y	0.99	1	0	0.95	1
Y ON w	1	1	0.01	0.96	1
Z ON Y	1	1	0.04	0.94	0.96
Intercept Z	1	1	0.01	0.96	1
Intercept Y	1	1	0	0.94	1
Res. var. Z	0.99	1	0.01	0.94	1
Res. var. Y	1	1	0	0.96	1
N = 200, T = 15					
phi	0.98	1	0	0.94	1
residual_Y	0.99	1	0	0.94	1
Y ON w	1	1	0.01	0.94	1
Z ON Y	1	1	0.03	0.95	0.98
Intercept Z	1	1	0.01	0.96	1
Intercept Y	1.01	1	0	0.95	1
Res. var. Z	0.99	1	0.01	0.95	1
Res. var. Y	0.99	1	0	0.96	1
N = 200, T = 20					
phi	1	1	0	0.95	1
residual_Y	1	1	0	0.96	1
Y ON w	1.01	1	0.01	0.94	1
Z ON Y	1.01	1	0.03	0.96	0.98
Intercept Z	1	1	0.01	0.95	1
Intercept Y	1	1	0	0.95	1
Res. var. Z	0.98	1	0.01	0.93	1
Res. var. Y	0.98	1	0	0.95	1
N = 200, T = 25					
phi	0.99	1	0	0.96	1
residual_Y	1	1	0	0.94	1
Y ON w	1	1	0.01	0.95	1
Z ON Y	1	1	0.03	0.95	0.98
Intercept Z	1	1	0.01	0.96	1
Intercept Y	1	1	0	0.95	1
Res. var. Z	0.99	1	0.01	0.94	1
Res. var. Y	0.98	1	0	0.95	1
N = 200, T = 50					
phi	1	1	0	0.94	1
residual_Y	1	1	0	0.96	1
Y ON w	0.99	1	0.01	0.96	1
Z ON Y	1	1	0.03	0.95	0.98
Intercept Z	1	1	0.01	0.95	1
Intercept Y	1	1	0	0.94	1
Res. var. Z	0.98	1	0.01	0.94	1
Res. var. Y	0.97	1	0	0.93	1

Parameter	Rel. Bias	SE/SD	MSE	95% cover	Power
N = 200, T = 100					
phi	1	1	0	0.94	1
residual_Y	1	1	0	0.95	1
Y ON w	1	1	0.01	0.95	1
Z ON Y	1.01	1	0.03	0.93	0.99
Intercept Z	0.99	1	0.01	0.93	1
Intercept Y	1	1	0	0.94	1
Res. var. Z	0.98	1	0.01	0.97	1
Res. var. Y	0.99	1	0	0.95	1
N = 200, T = 200					
phi	1	1	0	0.97	1
residual_Y	1	1	0	0.94	1
Y ON w	1.01	1	0.01	0.96	1
Z ON Y	1.01	1	0.02	0.97	0.99
Intercept Z	1	1	0.01	0.95	1
Intercept Y	1	1	0	0.95	1
Res. var. Z	0.99	1	0.01	0.95	1
Res. var. Y	0.99	1	0	0.95	1
N = 300, T = 300					
phi	1	1	0	0.94	1
residual_Y	1	1	0	0.95	1
Y ON w	0.99	1	0	0.97	1
Z ON Y	1	1	0.02	0.95	1
Intercept Z	1	1	0.01	0.94	1
Intercept Y	1	1	0	0.96	1
Res. var. Z	0.99	1	0.01	0.96	1
Res. var. Y	0.99	1	0	0.95	1
N = 500, T = 100					
phi	1	1	0	0.94	1
residual_Y	1	1	0	0.96	1
Y ON w	1	1	0	0.95	1
Z ON Y	1.01	1	0.01	0.97	1
Intercept Z	0.99	1	0	0.95	1
Intercept Y	1	1	0	0.94	1
Res. var. Z	0.99	1	0	0.95	1
Res. var. Y	0.99	1	0	0.95	1
N = 500, T = 500					
phi	1	1	0	0.94	1
residual_Y	1	1	0	0.95	1
Y ON w	1	1	0	0.93	1
Z ON Y	1	1	0.01	0.94	1
Intercept Z	1	1	0	0.95	1
Intercept Y	1	1	0	0.96	1
Res. var. Z	1	1	0	0.95	1
Res. var. Y	1	1	0	0.94	1

A.8   Results Model 8

Parameter	Effect size	R^2
Y on		0.249
W	0.499	
phi on		0.265
W	0.515	
Z on		0.370
W	0.273	
Y	0.245	
phi	0.254	

Table 10: Effect size and R^2 of the between level regressions of Model 8 weak effect.

Parameter	Rel. Bias	SE/SD	MSE	95% cover	Power	Parameter	Rel. Bias	SE/SD	MSE	95% cover	Power
N = 10, T = 10						N = 25, T = 25					
residual_Y	0.93	1	0	0.94	1	residual_Y	0.99	1	0	0.96	1
phi ON w	1	1	0.22	0.99	0.07	phi ON w	0.97	1	0.03	0.95	0.59
Z ON phi	3.48	58	2.45	1	0	Z ON phi	0.88	14	3.32	0.98	0.07
Y ON w	0.98	1	0.76	0.98	0.24	Y ON w	1.01	1	0.2	0.98	0.79
Z ON Y	0.95	12	0.37	1	0.01	Z ON Y	0.99	1	0.08	0.96	0.18
Z ON w	0.77	31	3.11	1	0	Z ON w	1.12	11	1.29	0.98	0.08
Intercept Z	1.59	38	0.28	1	0	Intercept Z	0.91	10	0.14	0.98	0.06
Intercept Y	1.02	1	0.08	0.97	0.24	Intercept Y	0.99	1	0.02	0.96	0.86
Intercept phi	0.76	1	0.02	0.98	0.1	Intercept phi	0.96	1	0	0.94	0.57
Res. var. Z	0.71	7	0.65	1	1	Res. var. Z	0.98	1	0.1	0.98	1
Res. var. Y	0.75	3	0.23	0.96	1	Res. var. Y	0.88	1	0.04	0.94	1
Res. var. phi	0.43	4	0.01	0.98	1	Res. var. phi	0.94	1	0	0.95	1
N = 10, T = 100						N = 25, T = 100					
residual_Y	1	1	0	0.96	1	residual_Y	1	1	0	0.96	1
phi ON w	1.01	1	0.06	0.98	0.25	phi ON w	0.99	1	0.02	0.95	0.78
Z ON phi	1.03	8	6.38	0.98	0.02	Z ON phi	1.02	1	1.74	0.96	0.14
Y ON w	0.99	1	0.68	0.98	0.25	Y ON w	1	1	0.2	0.97	0.8
Z ON Y	0.95	2	0.3	0.99	0.04	Z ON Y	0.98	1	0.08	0.97	0.18
Z ON w	1.05	6	3.1	0.99	0.01	Z ON w	0.98	1	0.74	0.97	0.14
Intercept Z	0.98	5	0.34	0.99	0.02	Intercept Z	0.99	1	0.09	0.96	0.13
Intercept Y	0.99	1	0.06	0.99	0.27	Intercept Y	0.99	1	0.02	0.97	0.86
Intercept phi	0.99	1	0.01	0.97	0.24	Intercept phi	0.99	1	0	0.96	0.76
Res. var. Z	0.58	5	1.38	0.93	1	Res. var. Z	0.88	1	0.12	0.95	1
Res. var. Y	0.66	3	0.25	0.93	1	Res. var. Y	0.88	1	0.04	0.94	1
Res. var. phi	0.68	3	0	0.94	1	Res. var. phi	0.9	1	0	0.95	1
N = 15, T = 100						N = 50, T = 50					
residual_Y	1	1	0	0.95	1	residual_Y	1	1	0	0.96	1
phi ON w	0.99	1	0.04	0.97	0.49	phi ON w	1	1	0.01	0.96	0.95
Z ON phi	0.93	3	3.92	0.97	0.09	Z ON phi	0.98	1	0.95	0.96	0.28
Y ON w	0.99	1	0.41	0.97	0.49	Y ON w	1	1	0.1	0.96	0.98
Z ON Y	0.99	1	0.15	0.97	0.08	Z ON Y	1.01	1	0.04	0.96	0.4
Z ON w	1.05	2	1.86	0.97	0.07	Z ON w	0.98	1	0.41	0.95	0.3
Intercept Z	0.91	2	0.2	0.97	0.06	Intercept Z	0.99	1	0.05	0.96	0.23
Intercept Y	0.99	1	0.04	0.98	0.57	Intercept Y	0.99	1	0.01	0.95	1
Intercept phi	0.99	1	0	0.97	0.48	Intercept phi	1	1	0	0.95	0.94
Res. var. Z	0.77	2	0.35	0.94	1	Res. var. Z	0.96	1	0.05	0.94	1
Res. var. Y	0.79	2	0.09	0.93	1	Res. var. Y	0.94	1	0.02	0.94	1
Res. var. phi	0.81	2	0	0.95	1	Res. var. phi	0.94	1	0	0.95	1
N = 20, T = 100						N = 50, T = 100					
residual_Y	1	1	0	0.96	1	residual_Y	1	1	0	0.96	1
phi ON w	0.99	1	0.03	0.94	0.67	phi ON w	0.99	1	0.01	0.96	0.97
Z ON phi	1.01	1	2.24	0.96	0.11	Z ON phi	1.01	1	0.65	0.96	0.31
Y ON w	1	1	0.28	0.97	0.69	Y ON w	1.01	1	0.1	0.96	0.98
Z ON Y	0.98	1	0.11	0.97	0.14	Z ON Y	0.99	1	0.03	0.96	0.43
Z ON w	1.01	1	1.1	0.96	0.1	Z ON w	0.99	1	0.34	0.96	0.31
Intercept Z	0.99	1	0.12	0.96	0.11	Intercept Z	0.99	1	0.04	0.96	0.26
Intercept Y	0.98	1	0.03	0.98	0.76	Intercept Y	0.99	1	0.01	0.96	1
Intercept phi	0.99	1	0	0.96	0.65	Intercept phi	1	1	0	0.96	0.98
Res. var. Z	0.84	1	0.18	0.93	1	Res. var. Z	0.95	1	0.04	0.94	1
Res. var. Y	0.86	1	0.06	0.94	1	Res. var. Y	0.95	1	0.02	0.94	1
Res. var. phi	0.87	1	0	0.96	1	Res. var. phi	0.95	1	0	0.95	1

Table 11: Weak effects

Parameter	Rel. Bias	SE/SD	MSE	95% cover	Power	Parameter	Rel. Bias	SE/SD	MSE	95% cover	Power
N = 75, T = 75						N = 200, T = 15					
residual_Y	1	1	0	0.94	1	residual_Y	0.99	1	0	0.94	1
phi ON w	1.01	1	0.01	0.94	1	phi ON w	0.97	1	0.01	0.94	1
Z ON phi	1.02	1	0.48	0.94	0.42	Z ON phi	0.93	1	0.73	0.94	0.49
Y ON w	1	1	0.06	0.96	1	Y ON w	1	1	0.03	0.96	1
Z ON Y	1	1	0.02	0.96	0.62	Z ON Y	0.99	1	0.01	0.94	0.95
Z ON w	1	1	0.22	0.95	0.44	Z ON w	1.08	1	0.19	0.96	0.52
Intercept Z	0.99	1	0.03	0.95	0.38	Intercept Z	0.92	1	0.02	0.94	0.63
Intercept Y	0.99	1	0.01	0.94	1	Intercept Y	1	1	0	0.95	1
Intercept phi	1	1	0	0.95	1	Intercept phi	0.95	1	0	0.95	1
Res. var. Z	0.97	1	0.03	0.95	1	Res. var. Z	1.01	1	0.01	0.95	1
Res. var. Y	0.97	1	0.01	0.95	1	Res. var. Y	0.99	1	0	0.96	1
Res. var. phi	0.95	1	0	0.94	1	Res. var. phi	0.95	1	0	0.94	1
N = 100, T = 100						N = 200, T = 20					
residual_Y	1	1	0	0.95	1	residual_Y	1	1	0	0.95	1
phi ON w	1	1	0	0.95	1	phi ON w	0.98	1	0	0.94	1
Z ON phi	1.02	1	0.29	0.96	0.56	Z ON phi	0.97	1	0.34	0.96	0.62
Y ON w	1.01	1	0.05	0.95	1	Y ON w	1	1	0.03	0.96	1
Z ON Y	0.99	1	0.02	0.96	0.77	Z ON Y	0.99	1	0.01	0.96	0.96
Z ON w	0.99	1	0.16	0.95	0.62	Z ON w	1.04	1	0.13	0.94	0.65
Intercept Z	1	1	0.02	0.96	0.51	Intercept Z	0.95	1	0.01	0.96	0.7
Intercept Y	0.99	1	0.01	0.96	1	Intercept Y	1	1	0	0.96	1
Intercept phi	1	1	0	0.94	1	Intercept phi	0.97	1	0	0.95	1
Res. var. Z	0.97	1	0.02	0.95	1	Res. var. Z	1	1	0.01	0.96	1
Res. var. Y	0.97	1	0.01	0.93	1	Res. var. Y	0.99	1	0	0.94	1
Res. var. phi	0.97	1	0	0.95	1	Res. var. phi	0.95	1	0	0.94	1
N = 150, T = 150						N = 200, T = 25					
residual_Y	1	1	0	0.93	1	residual_Y	1	1	0	0.95	1
phi ON w	1.01	1	0	0.96	1	phi ON w	0.98	1	0	0.95	1
Z ON phi	1	1	0.17	0.97	0.79	Z ON phi	0.97	1	0.28	0.96	0.65
Y ON w	0.99	1	0.03	0.96	1	Y ON w	1	1	0.02	0.95	1
Z ON Y	0.99	1	0.01	0.95	0.9	Z ON Y	0.99	1	0.01	0.96	0.95
Z ON w	1	1	0.1	0.96	0.8	Z ON w	1.05	1	0.1	0.96	0.71
Intercept Z	0.98	1	0.01	0.94	0.71	Intercept Z	0.97	1	0.01	0.94	0.72
Intercept Y	1	1	0	0.95	1	Intercept Y	1	1	0	0.95	1
Intercept phi	1	1	0	0.95	1	Intercept phi	0.98	1	0	0.95	1
Res. var. Z	0.98	1	0.01	0.97	1	Res. var. Z	1	1	0.01	0.95	1
Res. var. Y	0.99	1	0	0.96	1	Res. var. Y	0.98	1	0	0.96	1
Res. var. phi	0.97	1	0	0.93	1	Res. var. phi	0.97	1	0	0.95	1
N = 200, T = 10						N = 200, T = 50					
residual_Y	0.99	1	0	0.94	1	residual_Y	1	1	0	0.96	1
phi ON w	0.92	1	0.01	0.92	0.99	phi ON w	1	1	0	0.94	1
Z ON phi	0.94	4	1.17	0.95	0.35	Z ON phi	0.99	1	0.21	0.94	0.78
Y ON w	1	1	0.03	0.94	1	Y ON w	1	1	0.02	0.96	1
Z ON Y	0.97	1	0.01	0.97	0.95	Z ON Y	1.01	1	0.01	0.95	0.96
Z ON w	1.1	4	0.29	0.97	0.37	Z ON w	0.98	1	0.09	0.95	0.84
Intercept Z	0.87	4	0.03	0.96	0.52	Intercept Z	1	1	0.01	0.94	0.76
Intercept Y	1	1	0	0.96	1	Intercept Y	1	1	0	0.96	1
Intercept phi	0.86	1	0	0.89	0.99	Intercept phi	0.99	1	0	0.94	1
Res. var. Z	1.04	1	0.02	0.95	1	Res. var. Z	0.99	1	0.01	0.95	1
Res. var. Y	1.01	1	0	0.96	1	Res. var. Y	0.98	1	0	0.94	1
Res. var. phi	0.83	1	0	0.87	1	Res. var. phi	0.99	1	0	0.94	1

Table 12: Weak effects

Parameter	Rel. Bias	SE/SD	MSE	95% cover	Power
N = 200, T = 100					
residual_Y	1	1	0	0.96	1
phi ON w	1	1	0	0.96	1
Z ON phi	1	1	0.14	0.95	0.87
Y ON w	1	1	0.02	0.96	1
Z ON Y	1.01	1	0.01	0.95	0.95
Z ON w	0.99	1	0.08	0.95	0.87
Intercept Z	1	1	0.01	0.95	0.79
Intercept Y	0.99	1	0	0.96	1
Intercept phi	0.99	1	0	0.94	1
Res. var. Z	0.98	1	0.01	0.96	1
Res. var. Y	0.99	1	0	0.96	1
Res. var. phi	0.99	1	0	0.96	1
N = 200, T = 200					
residual_Y	1	1	0	0.95	1
phi ON w	1	1	0	0.95	1
Z ON phi	1.01	1	0.14	0.95	0.9
Y ON w	1	1	0.02	0.95	1
Z ON Y	0.99	1	0.01	0.95	0.97
Z ON w	1	1	0.08	0.95	0.9
Intercept Z	1.03	1	0.01	0.94	0.79
Intercept Y	0.99	1	0	0.96	1
Intercept phi	1	1	0	0.96	1
Res. var. Z	0.99	1	0.01	0.96	1
Res. var. Y	0.98	1	0	0.95	1
Res. var. phi	0.99	1	0	0.95	1
N = 300, T = 300					
residual_Y	1	1	0	0.96	1
phi ON w	1	1	0	0.94	1
Z ON phi	1	1	0.08	0.96	0.99
Y ON w	1	1	0.02	0.96	1
Z ON Y	1	1	0.01	0.96	1
Z ON w	1	1	0.05	0.94	0.97
Intercept Z	0.99	1	0.01	0.96	0.96
Intercept Y	1	1	0	0.96	1
Intercept phi	1	1	0	0.95	1
Res. var. Z	0.99	1	0.01	0.96	1
Res. var. Y	0.99	1	0	0.94	1
Res. var. phi	0.99	1	0	0.95	1
N = 500, T = 100					
residual_Y	1	1	0	0.95	1
phi ON w	1	1	0	0.95	1
Z ON phi	0.99	1	0.06	0.95	1
Y ON w	1	1	0.01	0.96	1
Z ON Y	1.01	1	0	0.94	1
Z ON w	1	1	0.03	0.95	1
Intercept Z	1	1	0	0.95	0.99
Intercept Y	1	1	0	0.94	1
Intercept phi	1	1	0	0.94	1
Res. var. Z	0.99	1	0	0.95	1
Res. var. Y	0.99	1	0	0.94	1
Res. var. phi	1	1	0	0.95	1

Table 13: Weak effects

A.9 Results Model 9

Parameter	Effect size	R^2
Y on		0.189
W	0.435	
phi on		0.223
W	0.473	
logv on		0.215
W	0.463	
Z on		0.330
W	0.156	
Y	0.203	
phi	0.232	
logv	0.224	

Table 14: Effect size and R^2 of the between level regressions of Model 9 weak effect.

Parameter	Effect size	R^2
Y on		0.214
W	0.463	
phi on		0.203
W	0.450	
logv on		0.211
W	0.459	
Z on		0.833
W	0.307	
Y	0.372	
phi	0.350	
logv	0.257	

Table 15: Effect size and R^2 of the between level regressions of Model 9 mod strong effect.

Parameter	Rel. Bias	SE/SD	MSE	95% cover	Power	Parameter	Rel. Bias	SE/SD	MSE	95% cover	Power
N = 10, T = 10						N = 25, T = 25					
phi on w	1.19	5	0.18	1	0	phi on w	1.04	1	0.04	0.97	0.27
logv on w	1	5	0.35	1	0	logv on w	0.96	1	0.04	0.98	0.14
Z on phi	4.51	71	0.43	1	0	Z on phi	0.98	21	0.81	1	0
Z on logv	19.58	79	0.64	1	0	Z on logv	2.44	17	1.19	1	0.01
Y on w	1.02	6	0.16	1	0	Y on w	0.99	1	0.04	0.98	0.36
Z on Y	2.12	94	0.39	1	0	Z on Y	0.95	19	0.39	1	0
Z on w	0.27	57	0.61	1	0	Z on w	0.61	16	0.4	1	0
Intercept Z	2.56	68	0.69	1	0	Intercept Z	2.21	18	1.78	1	0.01
Intercept Y on w	1.02	6	0.02	1	0.01	Intercept Y on w	1	1	0	0.98	1
Intercept Y on phi	1.08	5	0.02	1	0	Intercept Y on phi	1.02	1	0	0.96	0.77
intercept logv	0.98	6	0.03	1	0.23	intercept logv	1	1	0	0.98	1
Res. var. Z	0.66	19	0.04	1	1	Res. var. Z	1.22	2	0.01	0.97	1
Res. var. Y	0.09	222	0.63	0.59	1	Res. var. Y	0.65	1	0	0.86	1
Res. var. phi	0.06	269	0.51	0.39	1	Res. var. phi	0.58	1	0	0.88	1
Res. var. logv	0.01	240	2.47	0.04	1	Res. var. logv	0.3	2	0	0.77	1
N = 10, T = 100						N = 25, T = 100					
phi on w	1.03	5	0.06	1	0	phi on w	1	1	0.02	0.97	0.48
logv on w	1	5	0.05	1	0	logv on w	0.97	1	0.02	0.96	0.36
Z on phi	1.23	37	1.46	1	0	Z on phi	1.07	6	0.52	0.97	0.05
Z on logv	1.71	47	1.93	1	0	Z on logv	0.96	8	1.98	0.97	0.05
Y on w	0.96	5	0.09	1	0	Y on w	1	1	0.03	0.98	0.51
Z on Y	1.12	28	0.86	1	0	Z on Y	0.97	5	0.27	0.98	0.1
Z on w	0.51	28	0.93	1	0	Z on w	0.91	5	0.36	0.98	0.03
Intercept Z	1.44	46	2.94	1	0	Intercept Z	0.96	8	2.85	0.97	0.07
Intercept Y on w	0.99	5	0.01	1	0.12	Intercept Y on w	1	1	0	0.98	1
Intercept Y on phi	1.03	6	0.01	1	0	Intercept Y on phi	1.02	1	0	0.97	0.96
intercept logv	1	5	0	1	1	intercept logv	1	1	0	0.97	1
Res. var. Z	0.61	18	0.05	1	1	Res. var. Z	1.03	1	0	0.97	1
Res. var. Y	0.16	146	0.18	0.54	1	Res. var. Y	0.7	1	0	0.85	1
Res. var. phi	0.16	164	0.06	0.55	1	Res. var. phi	0.68	1	0	0.85	1
Res. var. logv	0.11	135	0.04	0.62	1	Res. var. logv	0.65	1	0	0.91	1
N = 15, T = 100						N = 50, T = 50					
phi on w	1.02	1	0.04	0.99	0.14	phi on w	1.03	1	0.01	0.96	0.75
logv on w	0.97	1	0.03	0.99	0.1	logv on w	0.98	1	0.01	0.98	0.56
Z on phi	1.08	15	1	0.99	0.02	Z on phi	0.95	4	0.34	0.98	0.1
Z on logv	1.14	20	1.88	0.99	0.02	Z on logv	0.78	6	1.49	0.97	0.11
Y on w	0.97	1	0.06	1	0.16	Y on w	1.01	1	0.01	0.97	0.85
Z on Y	1.14	10	0.53	0.99	0.03	Z on Y	0.96	4	0.15	0.98	0.16
Z on w	0.77	12	0.6	0.99	0.01	Z on w	1.44	5	0.18	0.98	0.02
Intercept Z	1.07	19	2.8	0.99	0.02	Intercept Z	0.81	6	2.12	0.96	0.12
Intercept Y on w	1	1	0.01	0.99	0.99	Intercept Y on w	1	1	0	0.95	1
Intercept Y on phi	1.02	2	0	1	0.55	Intercept Y on phi	1.01	1	0	0.95	1
intercept logv	1	2	0	0.99	1	intercept logv	1	1	0	0.96	1
Res. var. Z	0.93	2	0.01	1	1	Res. var. Z	1.11	1	0	0.96	1
Res. var. Y	0.48	3	0.01	0.78	1	Res. var. Y	0.84	1	0	0.9	1
Res. var. phi	0.46	3	0	0.78	1	Res. var. phi	0.83	1	0	0.91	1
Res. var. logv	0.38	3	0	0.85	1	Res. var. logv	0.75	1	0	0.92	1
N = 20, T = 100						N = 50, T = 100					
phi on w	1.01	1	0.03	0.98	0.31	phi on w	1.01	1	0.01	0.96	0.88
logv on w	0.97	1	0.02	0.98	0.24	logv on w	0.98	1	0.01	0.96	0.74
Z on phi	1.01	7	0.71	0.97	0.05	Z on phi	1.03	2	0.21	0.97	0.19
Z on logv	0.98	13	1.97	0.98	0.04	Z on logv	0.89	3	1.04	0.94	0.17
Y on w	1	1	0.04	0.99	0.33	Y on w	1	1	0.01	0.96	0.9
Z on Y	1	7	0.37	0.99	0.05	Z on Y	0.98	2	0.09	0.97	0.3
Z on w	0.98	9	0.41	0.99	0.02	Z on w	1.18	2	0.16	0.96	0.06
Intercept Z	0.98	13	2.86	0.97	0.04	Intercept Z	0.9	3	1.45	0.94	0.19
Intercept Y on w	1	1	0	0.98	1	Intercept Y on w	1	1	0	0.97	1
Intercept Y on phi	1.01	1	0	0.98	0.86	Intercept Y on phi	1.01	1	0	0.96	1
intercept logv	1	1	0	0.98	1	intercept logv	1	1	0	0.95	1
Res. var. Z	1.01	2	0.01	0.99	1	Res. var. Z	1.02	1	0	0.96	1
Res. var. Y	0.62	2	0	0.83	1	Res. var. Y	0.86	1	0	0.88	1
Res. var. phi	0.6	2	0	0.83	1	Res. var. phi	0.84	1	0	0.9	1
Res. var. logv	0.53	2	0	0.9	1	Res. var. logv	0.85	1	0	0.93	1

Table 16: Weak effects

Parameter	Rel. Bias	SE/SD	MSE	95% cover	Power	Parameter	Rel. Bias	SE/SD	MSE	95% cover	Power
N = 75, T = 75						N = 200, T = 15					
phi on w	1.01	1	0.01	0.96	0.97	phi on w	0.99	1	0	0.96	0.97
logv on w	0.98	1	0.01	0.94	0.85	logv on w	0.97	1	0.01	0.94	0.77
Z on phi	0.95	2	0.15	0.97	0.34	Z on phi	0.87	4	0.3	0.98	0.15
Z on logv	0.83	3	0.67	0.96	0.23	Z on logv	0.88	4	1.14	0.98	0.12
Y on w	1	1	0.01	0.96	0.98	Y on w	1.01	1	0	0.96	1
Z on Y	0.99	2	0.07	0.95	0.46	Z on Y	0.96	4	0.06	0.99	0.25
Z on w	1.49	2	0.09	0.98	0.05	Z on w	1.66	3	0.12	0.98	0.03
Intercept Z	0.85	3	0.95	0.95	0.28	Intercept Z	0.92	4	1.6	0.97	0.14
Intercept Y on w	1	1	0	0.97	1	Intercept Y on w	1	1	0	0.95	1
Intercept Y on phi	1.01	1	0	0.96	1	Intercept Y on phi	0.99	1	0	0.95	1
intercept logv	1	1	0	0.95	1	intercept logv	1.01	1	0	0.94	1
Res. var. Z	1.04	1	0	0.96	1	Res. var. Z	1.13	2	0	0.95	1
Res. var. Y	0.9	1	0	0.92	1	Res. var. Y	0.97	1	0	0.95	1
Res. var. phi	0.9	1	0	0.91	1	Res. var. phi	0.93	1	0	0.93	1
Res. var. logv	0.87	1	0	0.93	1	Res. var. logv	0.81	1	0	0.94	1
N = 100, T = 100						N = 200, T = 20					
phi on w	1	1	0	0.96	0.99	phi on w	1	1	0	0.94	0.99
logv on w	0.98	1	0	0.94	0.97	logv on w	0.98	1	0.01	0.96	0.85
Z on phi	1	1	0.08	0.95	0.53	Z on phi	0.88	5	0.22	0.96	0.26
Z on logv	0.93	1	0.36	0.95	0.32	Z on logv	0.77	7	1.15	0.97	0.19
Y on w	1	1	0.01	0.97	1	Y on w	1	1	0	0.95	1
Z on Y	1.01	1	0.04	0.96	0.67	Z on Y	0.96	5	0.05	0.98	0.41
Z on w	1.11	1	0.06	0.95	0.11	Z on w	2.07	6	0.11	0.97	0.05
Intercept Z	0.94	1	0.52	0.94	0.39	Intercept Z	0.81	8	1.58	0.97	0.23
Intercept Y on w	1	1	0	0.97	1	Intercept Y on w	1	1	0	0.97	1
Intercept Y on phi	1.01	1	0	0.94	1	Intercept Y on phi	0.99	1	0	0.95	1
intercept logv	1	1	0	0.95	1	intercept logv	1	1	0	0.93	1
Res. var. Z	1	1	0	0.95	1	Res. var. Z	1.11	1	0	0.93	1
Res. var. Y	0.93	1	0	0.94	1	Res. var. Y	0.97	1	0	0.94	1
Res. var. phi	0.92	1	0	0.92	1	Res. var. phi	0.94	1	0	0.93	1
Res. var. logv	0.93	1	0	0.95	1	Res. var. logv	0.87	1	0	0.93	1
N = 150, T = 150						N = 200, T = 25					
phi on w	0.99	1	0	0.94	1	phi on w	1	1	0	0.96	1
logv on w	1	1	0	0.94	0.99	logv on w	0.98	1	0	0.94	0.9
Z on phi	1.01	1	0.05	0.96	0.76	Z on phi	0.95	2	0.13	0.97	0.34
Z on logv	0.98	1	0.14	0.96	0.56	Z on logv	0.72	3	1.03	0.94	0.26
Y on w	0.99	1	0	0.96	1	Y on w	1.01	1	0	0.95	1
Z on Y	1	1	0.02	0.94	0.9	Z on Y	0.99	2	0.04	0.98	0.52
Z on w	1.02	1	0.03	0.93	0.14	Z on w	2.16	2	0.09	0.97	0.05
Intercept Z	0.99	1	0.21	0.96	0.63	Intercept Z	0.76	3	1.43	0.96	0.31
Intercept Y on w	1	1	0	0.95	1	Intercept Y on w	1	1	0	0.96	1
Intercept Y on phi	1	1	0	0.95	1	Intercept Y on phi	1.01	1	0	0.95	1
intercept logv	1	1	0	0.94	1	intercept logv	1	1	0	0.94	1
Res. var. Z	1	1	0	0.95	1	Res. var. Z	1.08	1	0	0.94	1
Res. var. Y	0.95	1	0	0.93	1	Res. var. Y	0.97	1	0	0.94	1
Res. var. phi	0.96	1	0	0.95	1	Res. var. phi	0.94	1	0	0.95	1
Res. var. logv	0.96	1	0	0.94	1	Res. var. logv	0.96	1	0	0.95	1
N = 200, T = 10						N = 200, T = 50					
phi on w	0.97	1	0.01	0.93	0.92	phi on w	1.01	1	0	0.96	1
logv on w	0.98	1	0.01	0.93	0.56	logv on w	1	1	0	0.96	0.99
Z on phi	0.85	5	0.35	0.99	0.09	Z on phi	0.98	1	0.05	0.97	0.67
Z on logv	1.18	7	0.93	0.97	0.05	Z on logv	0.87	1	0.4	0.95	0.45
Y on w	1	1	0.01	0.94	1	Y on w	1	1	0	0.95	1
Z on Y	0.92	6	0.08	0.99	0.12	Z on Y	0.97	1	0.02	0.96	0.85
Z on w	1.31	6	0.11	1	0.01	Z on w	1.35	1	0.04	0.95	0.1
Intercept Z	1.24	7	1.37	0.97	0.06	Intercept Z	0.88	1	0.55	0.96	0.53
Intercept Y on w	1	1	0	0.95	1	Intercept Y on w	1	1	0	0.96	1
Intercept Y on phi	0.97	1	0	0.94	1	Intercept Y on phi	1.01	1	0	0.94	1
intercept logv	1	1	0	0.95	1	intercept logv	1	1	0	0.95	1
Res. var. Z	1.16	1	0	0.94	1	Res. var. Z	1.02	1	0	0.96	1
Res. var. Y	0.97	1	0	0.96	1	Res. var. Y	0.95	1	0	0.92	1
Res. var. phi	0.86	1	0	0.92	1	Res. var. phi	0.95	1	0	0.94	1
Res. var. logv	0.63	1	0	0.9	1	Res. var. logv	0.95	1	0	0.91	1

Table 17: Weak effects

Parameter	Rel. Bias	SE/SD	MSE	95% cover	Power
N = 200, T = 100					
phi on w	0.99	1	0	0.95	1
logv on w	0.99	1	0	0.94	1
Z on phi	1.01	1	0.04	0.94	0.83
Z on logv	0.99	1	0.13	0.95	0.56
Y on w	1	1	0	0.95	1
Z on Y	0.99	1	0.02	0.95	0.94
Z on w	1.04	1	0.02	0.95	0.15
Intercept Z	0.99	1	0.19	0.95	0.65
Intercept Y on w	1	1	0	0.96	1
Intercept Y on phi	1.01	1	0	0.96	1
intercept logv	1	1	0	0.95	1
Res. var. Z	1	1	0	0.96	1
Res. var. Y	0.97	1	0	0.95	1
Res. var. phi	0.96	1	0	0.95	1
Res. var. logv	0.96	1	0	0.95	1
N = 200, T = 200					
phi on w	1	1	0	0.95	1
logv on w	0.99	1	0	0.94	1
Z on phi	1	1	0.03	0.96	0.9
Z on logv	0.99	1	0.09	0.95	0.73
Y on w	0.99	1	0	0.94	1
Z on Y	0.99	1	0.02	0.94	0.96
Z on w	1.07	1	0.02	0.95	0.18
Intercept Z	0.99	1	0.13	0.95	0.82
Intercept Y on w	1	1	0	0.96	1
Intercept Y on phi	1	1	0	0.95	1
intercept logv	1	1	0	0.96	1
Res. var. Z	1	1	0	0.96	1
Res. var. Y	0.96	1	0	0.94	1
Res. var. phi	0.97	1	0	0.95	1
Res. var. logv	0.96	1	0	0.93	1
N = 300, T = 300					
phi on w	1	1	0	0.96	1
logv on w	1	1	0	0.95	1
Z on phi	1.01	1	0.02	0.96	0.99
Z on logv	1	1	0.05	0.95	0.93
Y on w	1	1	0	0.95	1
Z on Y	0.99	1	0.01	0.96	1
Z on w	1.01	1	0.01	0.94	0.27
Intercept Z	1	1	0.07	0.95	0.97
Intercept Y on w	1	1	0	0.95	1
Intercept Y on phi	1	1	0	0.95	1
intercept logv	1	1	0	0.97	1
Res. var. Z	1	1	0	0.95	1
Res. var. Y	0.98	1	0	0.95	1
Res. var. phi	0.98	1	0	0.95	1
Res. var. logv	0.96	1	0	0.93	1
N = 500, T = 100					
phi on w	1	1	0	0.97	1
logv on w	1	1	0	0.95	1
Z on phi	0.99	1	0.02	0.92	1
Z on logv	1	1	0.05	0.95	0.95
Y on w	0.99	1	0	0.94	1
Z on Y	1	1	0.01	0.94	1
Z on w	1.03	1	0.01	0.96	0.37
Intercept Z	1	1	0.07	0.94	0.99
Intercept Y on w	1	1	0	0.95	1
Intercept Y on phi	1.01	1	0	0.93	1
intercept logv	1	1	0	0.96	1
Res. var. Z	1	1	0	0.96	1
Res. var. Y	0.99	1	0	0.94	1
Res. var. phi	0.98	1	0	0.95	1
Res. var. logv	0.98	1	0	0.95	1

Table 18: Weak effects

Parameter	Rel. Bias	SE/SD	MSE	95% cover	Power	Parameter	Rel. Bias	SE/SD	MSE	95% cover	Power
N = 10, T = 10						N = 25, T = 25					
phi on w	1.21	6	0.17	1	0	phi on w	1.04	1	0.03	0.98	0.28
logv on w	0.98	6	0.34	1	0	logv on w	0.95	1	0.04	0.98	0.12
Z on phi	4.53	134	2.16	1	0	Z on phi	1.1	31	0.85	1	0.02
Z on logv	24.16	106	3.21	1	0	Z on logv	2.66	37	2.36	1	0
Y on w	1.05	7	0.18	1	0	Y on w	1.01	1	0.04	0.98	0.37
Z on Y	2.02	91	1.14	1	0	Z on Y	1	28	0.53	1	0.03
Z on w	0.5	80	2.1	1	0	Z on w	0.76	30	0.56	1	0.04
Intercept Z	-2.48	101	2.58	1	0	Intercept Z	-3.38	36	3.51	1	0
Intercept Y on w	1.02	7	0.01	1	0.01	Intercept Y on w	1.01	1	0	0.98	1
Intercept Y on phi	1.12	6	0.02	1	0	Intercept Y on phi	1.04	1	0	0.97	0.75
intercept logv	0.98	6	0.03	1	0.21	intercept logv	1	1	0	0.98	1
Res. var. Z	0.35	35	0.23	1	1	Res. var. Z	0.92	2	0.01	1	1
Res. var. Y	0.1	565	0.59	0.61	1	Res. var. Y	0.65	1	0	0.87	1
Res. var. phi	0.06	546	0.53	0.4	1	Res. var. phi	0.57	1	0	0.86	1
Res. var. logv	0.01	433	2.44	0.01	1	Res. var. logv	0.3	2	0	0.8	1
N = 10, T = 100						N = 25, T = 100					
phi on w	1.02	6	0.06	1	0	phi on w	1	1	0.02	0.98	0.46
logv on w	1	6	0.05	1	0	logv on w	0.97	1	0.02	0.98	0.35
Z on phi	1.12	38	1.71	1	0	Z on phi	0.98	6	0.64	0.98	0.35
Z on logv	1.67	50	2.52	1	0	Z on logv	0.97	9	2.06	0.98	0.2
Y on w	0.95	6	0.1	1	0	Y on w	1	1	0.03	0.98	0.52
Z on Y	1.04	29	1	1	0.01	Z on Y	0.97	6	0.32	0.99	0.45
Z on w	0.8	32	1.14	1	0.01	Z on w	1.01	6	0.42	0.98	0.19
Intercept Z	4.67	46	3.92	1	0	Intercept Z	0.97	8	2.96	0.98	0.06
Intercept Y on w	0.99	6	0.01	1	0.11	Intercept Y on w	1	1	0	0.98	1
Intercept Y on phi	1.03	6	0.01	1	0	Intercept Y on phi	1.02	1	0	0.96	0.95
intercept logv	1	6	0	1	1	intercept logv	1	1	0	0.98	1
Res. var. Z	0.46	18	0.12	0.99	1	Res. var. Z	0.96	2	0.01	0.99	1
Res. var. Y	0.16	348	0.2	0.53	1	Res. var. Y	0.71	1	0	0.85	1
Res. var. phi	0.16	543	0.06	0.55	1	Res. var. phi	0.68	1	0	0.86	1
Res. var. logv	0.11	363	0.04	0.62	1	Res. var. logv	0.62	1	0	0.91	1
N = 15, T = 100						N = 50, T = 50					
phi on w	1.02	1	0.04	0.99	0.14	phi on w	1.02	1	0.01	0.97	0.76
logv on w	0.96	1	0.03	0.99	0.09	logv on w	0.97	1	0.01	0.98	0.56
Z on phi	1.02	14	1.1	0.99	0.08	Z on phi	0.99	6	0.45	0.98	0.46
Z on logv	1.17	21	2.09	0.99	0.04	Z on logv	0.97	9	1.65	0.99	0.29
Y on w	0.98	1	0.06	1	0.18	Y on w	1	1	0.01	0.97	0.87
Z on Y	1	13	0.57	1	0.13	Z on Y	1	5	0.22	0.97	0.54
Z on w	0.94	14	0.63	0.99	0.05	Z on w	1	5	0.23	0.98	0.28
Intercept Z	1.42	20	3.12	0.99	0.01	Intercept Z	0.94	9	2.45	0.99	0.05
Intercept Y on w	1	1	0.01	0.99	1	Intercept Y on w	1	1	0	0.96	1
Intercept Y on phi	1.02	1	0	0.99	0.56	Intercept Y on phi	1.01	1	0	0.96	1
intercept logv	1	2	0	0.99	1	intercept logv	1	1	0	0.97	1
Res. var. Z	0.78	2	0.02	1	1	Res. var. Z	1.05	1	0	0.99	1
Res. var. Y	0.48	3	0.01	0.78	1	Res. var. Y	0.84	1	0	0.89	1
Res. var. phi	0.46	3	0	0.79	1	Res. var. phi	0.83	1	0	0.92	1
Res. var. logv	0.37	3	0	0.86	1	Res. var. logv	0.71	1	0	0.92	1
N = 20, T = 100						N = 50, T = 100					
phi on w	1.01	1	0.02	0.99	0.32	phi on w	1.01	1	0.01	0.96	0.88
logv on w	0.98	1	0.02	0.98	0.22	logv on w	0.99	1	0.01	0.96	0.72
Z on phi	0.99	19	0.8	0.98	0.22	Z on phi	0.99	2	0.29	0.97	0.82
Z on logv	1.02	22	2.17	0.98	0.1	Z on logv	0.87	2	1.67	0.95	0.59
Y on w	1	1	0.04	0.99	0.34	Y on w	1	1	0.01	0.97	0.9
Z on Y	0.97	13	0.42	1	0.27	Z on Y	0.97	2	0.15	0.96	0.87
Z on w	1	16	0.51	0.99	0.15	Z on w	1.08	2	0.21	0.97	0.5
Intercept Z	1.07	21	3.12	0.99	0.02	Intercept Z	0.77	2	2.38	0.95	0.16
Intercept Y on w	0.99	1	0	0.98	1	Intercept Y on w	1	1	0	0.96	1
Intercept Y on phi	1.01	1	0	0.98	0.87	Intercept Y on phi	1.01	1	0	0.96	1
intercept logv	1	1	0	0.98	1	intercept logv	1	1	0	0.96	1
Res. var. Z	0.91	2	0.01	0.99	1	Res. var. Z	1.01	1	0	0.97	1
Res. var. Y	0.62	2	0	0.83	1	Res. var. Y	0.85	1	0	0.9	1
Res. var. phi	0.6	2	0	0.85	1	Res. var. phi	0.84	1	0	0.91	1
Res. var. logv	0.52	2	0	0.89	1	Res. var. logv	0.83	1	0	0.92	1

Table 19: Mod strong effects

Parameter	Rel. Bias	SE/SD	MSE	95% cover	Power	Parameter	Rel. Bias	SE/SD	MSE	95% cover	Power
N = 75, T = 75						N = 200, T = 15					
phi on w	1	1	0.01	0.96	0.97	phi on w	1	1	0	0.96	0.98
logv on w	0.98	1	0.01	0.94	0.83	logv on w	0.97	1	0.01	0.94	0.79
Z on phi	0.97	1	0.24	0.94	0.9	Z on phi	0.96	3	0.43	0.98	0.5
Z on logv	0.91	2	0.94	0.96	0.71	Z on logv	1.1	4	1.2	0.98	0.22
Y on w	1	1	0.01	0.96	0.99	Y on w	1.01	1	0	0.97	1
Z on Y	1	1	0.11	0.96	0.94	Z on Y	0.99	3	0.13	0.99	0.59
Z on w	1.06	2	0.14	0.96	0.6	Z on w	0.99	3	0.14	0.99	0.32
Intercept Z	0.83	2	1.31	0.96	0.21	Intercept Z	1.3	4	1.86	0.98	0.02
Intercept Y on w	1	1	0	0.96	1	Intercept Y on w	1	1	0	0.95	1
Intercept Y on phi	1.01	1	0	0.96	1	Intercept Y on phi	1.01	1	0	0.95	1
intercept logv	1	1	0	0.96	1	intercept logv	1	1	0	0.93	1
Res. var. Z	1.05	1	0	0.97	1	Res. var. Z	1.06	1	0	0.98	1
Res. var. Y	0.9	1	0	0.93	1	Res. var. Y	0.97	1	0	0.95	1
Res. var. phi	0.89	1	0	0.93	1	Res. var. phi	0.93	1	0	0.95	1
Res. var. logv	0.84	1	0	0.94	1	Res. var. logv	0.77	1	0	0.94	1
N = 100, T = 100						N = 200, T = 20					
phi on w	1	1	0	0.96	0.99	phi on w	1	1	0	0.94	0.99
logv on w	0.98	1	0	0.96	0.97	logv on w	0.99	1	0.01	0.96	0.85
Z on phi	1	1	0.13	0.94	0.98	Z on phi	0.96	2	0.35	0.97	0.66
Z on logv	0.94	1	0.49	0.95	0.9	Z on logv	0.98	3	1.09	0.98	0.42
Y on w	1	1	0.01	0.95	1	Y on w	1.01	1	0	0.96	1
Z on Y	1	1	0.05	0.97	1	Z on Y	1	2	0.11	0.96	0.76
Z on w	1.03	1	0.08	0.95	0.84	Z on w	1.02	2	0.13	0.98	0.45
Intercept Z	0.89	1	0.71	0.95	0.31	Intercept Z	0.98	3	1.6	0.98	0.08
Intercept Y on w	1	1	0	0.94	1	Intercept Y on w	1	1	0	0.97	1
Intercept Y on phi	1.01	1	0	0.95	1	Intercept Y on phi	1	1	0	0.95	1
intercept logv	1	1	0	0.96	1	intercept logv	1	1	0	0.93	1
Res. var. Z	1	1	0	0.96	1	Res. var. Z	1.08	1	0	0.97	1
Res. var. Y	0.93	1	0	0.95	1	Res. var. Y	0.97	1	0	0.96	1
Res. var. phi	0.92	1	0	0.92	1	Res. var. phi	0.94	1	0	0.94	1
Res. var. logv	0.92	1	0	0.95	1	Res. var. logv	0.82	1	0	0.93	1
N = 150, T = 150						N = 200, T = 25					
phi on w	0.99	1	0	0.96	1	phi on w	1	1	0	0.96	1
logv on w	0.99	1	0	0.94	0.99	logv on w	0.98	1	0	0.94	0.9
Z on phi	1	1	0.06	0.95	1	Z on phi	1	2	0.21	0.98	0.74
Z on logv	0.98	1	0.2	0.94	1	Z on logv	0.87	3	1.17	0.98	0.6
Y on w	0.99	1	0	0.96	1	Y on w	1.01	1	0	0.95	1
Z on Y	1	1	0.03	0.96	1	Z on Y	1	2	0.09	0.96	0.85
Z on w	1.02	1	0.04	0.94	0.99	Z on w	1.06	2	0.12	0.98	0.45
Intercept Z	0.95	1	0.3	0.94	0.55	Intercept Z	0.77	3	1.64	0.98	0.14
Intercept Y on w	1	1	0	0.96	1	Intercept Y on w	1	1	0	0.97	1
Intercept Y on phi	1	1	0	0.95	1	Intercept Y on phi	1.01	1	0	0.95	1
intercept logv	1	1	0	0.95	1	intercept logv	1	1	0	0.95	1
Res. var. Z	1	1	0	0.95	1	Res. var. Z	1.08	1	0	0.98	1
Res. var. Y	0.95	1	0	0.94	1	Res. var. Y	0.97	1	0	0.94	1
Res. var. phi	0.96	1	0	0.95	1	Res. var. phi	0.93	1	0	0.94	1
Res. var. logv	0.96	1	0	0.95	1	Res. var. logv	0.91	1	0	0.94	1
N = 200, T = 10						N = 200, T = 50					
phi on w	0.99	1	0.01	0.94	0.92	phi on w	1.01	1	0	0.95	1
logv on w	0.99	1	0.01	0.95	0.6	logv on w	1	1	0	0.96	1
Z on phi	0.98	5	0.48	1	0.31	Z on phi	0.99	2	0.1	0.97	0.98
Z on logv	1.55	7	1.44	0.97	0.09	Z on logv	0.9	2	0.71	0.95	0.94
Y on w	1.01	1	0.01	0.95	1	Y on w	1	1	0	0.96	1
Z on Y	0.98	4	0.17	0.99	0.4	Z on Y	0.99	1	0.04	0.97	0.98
Z on w	0.91	5	0.16	0.99	0.25	Z on w	1.06	2	0.07	0.95	0.79
Intercept Z	4.73	7	2.22	0.97	0.02	Intercept Z	0.82	2	0.97	0.95	0.34
Intercept Y on w	1	1	0	0.96	1	Intercept Y on w	1	1	0	0.96	1
Intercept Y on phi	0.99	1	0	0.96	1	Intercept Y on phi	1	1	0	0.95	1
intercept logv	1	1	0	0.95	1	intercept logv	1	1	0	0.95	1
Res. var. Z	1.02	1	0	0.99	1	Res. var. Z	1.05	1	0	0.96	1
Res. var. Y	0.96	1	0	0.97	1	Res. var. Y	0.95	1	0	0.94	1
Res. var. phi	0.86	1	0	0.94	1	Res. var. phi	0.95	1	0	0.94	1
Res. var. logv	0.63	1	0	0.91	1	Res. var. logv	0.93	1	0	0.9	1

Table 20: Mod strong effects

Parameter	Rel. Bias	SE/SD	MSE	95% cover	Power
N = 200, T = 100					
phi on w	0.99	1	0	0.96	1
logv on w	0.99	1	0	0.94	1
Z on phi	1	1	0.06	0.93	1
Z on logv	0.98	1	0.2	0.95	1
Y on w	1	1	0	0.96	1
Z on Y	0.99	1	0.02	0.98	1
Z on w	1.02	1	0.04	0.95	0.98
Intercept Z	0.96	1	0.28	0.95	0.56
Intercept Y on w	1	1	0	0.96	1
Intercept Y on phi	1.01	1	0	0.96	1
intercept logv	1	1	0	0.95	1
Res. var. Z	1	1	0	0.96	1
Res. var. Y	0.96	1	0	0.93	1
Res. var. phi	0.96	1	0	0.95	1
Res. var. logv	0.96	1	0	0.95	1
N = 200, T = 200					
phi on w	1	1	0	0.95	1
logv on w	0.99	1	0	0.94	1
Z on phi	0.99	1	0.04	0.95	1
Z on logv	0.98	1	0.12	0.95	1
Y on w	0.99	1	0	0.96	1
Z on Y	1	1	0.02	0.96	1
Z on w	1.02	1	0.02	0.96	1
Intercept Z	0.97	1	0.17	0.94	0.76
Intercept Y on w	1	1	0	0.97	1
Intercept Y on phi	1	1	0	0.94	1
intercept logv	1	1	0	0.97	1
Res. var. Z	1	1	0	0.95	1
Res. var. Y	0.96	1	0	0.94	1
Res. var. phi	0.97	1	0	0.93	1
Res. var. logv	0.96	1	0	0.95	1
N = 300, T = 300					
phi on w	1	1	0	0.95	1
logv on w	1	1	0	0.96	1
Z on phi	1	1	0.02	0.95	1
Z on logv	1	1	0.05	0.96	1
Y on w	1	1	0	0.95	1
Z on Y	1	1	0.01	0.96	1
Z on w	1	1	0.01	0.93	1
Intercept Z	1.01	1	0.08	0.95	0.95
Intercept Y on w	1	1	0	0.96	1
Intercept Y on phi	1	1	0	0.96	1
intercept logv	1	1	0	0.97	1
Res. var. Z	0.99	1	0	0.96	1
Res. var. Y	0.98	1	0	0.96	1
Res. var. phi	0.98	1	0	0.95	1
Res. var. logv	0.96	1	0	0.93	1
N = 500, T = 100					
phi on w	1	1	0	0.96	1
logv on w	1	1	0	0.95	1
Z on phi	1	1	0.02	0.94	1
Z on logv	0.99	1	0.07	0.96	1
Y on w	1	1	0	0.94	1
Z on Y	1	1	0.01	0.95	1
Z on w	1.01	1	0.01	0.95	1
Intercept Z	0.99	1	0.1	0.96	0.94
Intercept Y on w	1	1	0	0.95	1
Intercept Y on phi	1.01	1	0	0.95	1
intercept logv	1	1	0	0.97	1
Res. var. Z	1	1	0	0.95	1
Res. var. Y	0.99	1	0	0.94	1
Res. var. phi	0.98	1	0	0.95	1
Res. var. logv	0.98	1	0	0.95	1

Table 21: Mod strong effects