Appendix B. SEM model output with unstandardized and standardized parameter estimates

<u>**SEM model, unstandardized parameters**</u>

```
sem (DA -> D1 D2 D3 D4 D5 D6 D7) ///
(MA -> M1 M3 M5 M6 M7 M8 M9), ///
covstruct(_lexogenous, diagonal) method(mlmv) latent(DA MA ) ///
cov( DA@1 DA*MA e.D1*e.D2 e.D1*e.D3 e.D6*e.D7 ///
MA@1 e.M3*e.M5) means( DA@0 MA@0) nocapslatent
```

```
Endogenous variables
  Measurement: D1 D2 D3 D4 D5 D6 D7 M1 M3 M5 M6 M7 M8 M9

Exogenous variables
  Latent: DA MA

Fitting saturated model:
Iteration 0:   log likelihood = -9003.3706
Iteration 1:   log likelihood = -8997.7694
Iteration 2:   log likelihood = -8997.6553
Iteration 3:   log likelihood = -8997.6552

Fitting baseline model:
Iteration 0:   log likelihood = -10330.968
Iteration 1:   log likelihood = -10330.943
Iteration 2:   log likelihood = -10330.943

Fitting target model:
Iteration 0:   log likelihood = -9400.7225  (not concave)
Iteration 1:   log likelihood = -9245.5222  (not concave)
Iteration 2:   log likelihood = -9156.9711
Iteration 3:   log likelihood = -9105.7863
Iteration 4:   log likelihood = -9092.2796
Iteration 5:   log likelihood = -9092.0466
Iteration 6:   log likelihood = -9092.0465
```

```
Structural equation model                        Number of obs = 674
Estimation method: mlmv

Log likelihood = -9092.0465

 ( 1)  [/]var(DA) = 1
 ( 2)  [/]var(MA) = 1
```

		Coefficient	OIM std. err.	z	P>|z|	[95% conf. interval]	
Measurement							
D1							
	DA	.3486842	.024949	13.98	0.000	.299785	.3975834
	_cons	.9244126	.0243675	37.94	0.000	.8766532	.972172
D2							
	DA	.3888214	.0253654	15.33	0.000	.339106	.4385367
	_cons	.8137719	.0252892	32.18	0.000	.764206	.8633377
D3							
	DA	.3941736	.0267853	14.72	0.000	.3416754	.4466718
	_cons	1.528536	.0265495	57.57	0.000	1.4765	1.580572

```
D4              |
             DA |  .5187783   .0271534    19.11   0.000    .4655586   .5719981
           _cons |  1.397599   .0286939    48.71   0.000     1.34136   1.453838
----------------+----------------------------------------------------------------
D5              |
             DA |  .5655215   .0250344    22.59   0.000    .5164549   .6145881
           _cons |  1.198423   .0274681    43.63   0.000    1.144587    1.25226

----------------+----------------------------------------------------------------
D6              |
             DA |   .451687   .0262365    17.22   0.000    .4002643   .5031096
           _cons |  1.116315   .0267977    41.66   0.000    1.063793   1.168838
----------------+----------------------------------------------------------------
D7              |
             DA |  .4850119   .0253704    19.12   0.000    .4352869   .5347369
           _cons |  1.309397   .0266232    49.18   0.000    1.257216   1.361577
----------------+----------------------------------------------------------------
M1              |
             MA |  .2450332    .032317     7.58   0.000     .181693   .3083734
           _cons |  .4735249   .0265114    17.86   0.000    .4215635   .5254862
----------------+----------------------------------------------------------------
M3              |
             MA |  .4358736   .0406288    10.73   0.000    .3562427   .5155045
           _cons |  1.557871   .0336245    46.33   0.000    1.491969   1.623774
----------------+----------------------------------------------------------------
M5              |
             MA |  .3174876   .0349667     9.08   0.000     .248954   .3860211
           _cons |  1.682033   .0282872    59.46   0.000    1.626591   1.737475
----------------+----------------------------------------------------------------
M6              |
             MA |   .564611    .04103     13.76   0.000    .4841937   .6450282
           _cons |  1.320031   .0338208    39.03   0.000    1.253743   1.386318
----------------+----------------------------------------------------------------
M7              |
             MA |  .2735698   .0354087     7.73   0.000    .2041701   .3429696
           _cons |  1.019152    .028904    35.26   0.000    .9625017   1.075803
----------------+----------------------------------------------------------------
M8              |
             MA |   .316009   .0367879     8.59   0.000    .2439059    .388112
           _cons |  .7539231   .0304473    24.76   0.000    .6942474   .8135987
----------------+----------------------------------------------------------------
M9              |
             MA |  .2944739   .0392457     7.50   0.000    .2175538    .371394
           _cons |  .9448263   .0322884    29.26   0.000    .8815422    1.00811
----------------+----------------------------------------------------------------
      var(e.D1)|  .2772418   .0159373                      .2477007   .3103059
      var(e.D2)|  .2780465   .0173755                      .2459942   .3142752
      var(e.D3)|  .3153143   .0194907                      .2793366   .3559258
      var(e.D4)|  .2727252   .0189302                      .2380359     .31247
      var(e.D5)|  .1825767   .0157442                      .1541854   .2161959
      var(e.D6)|  .2771729   .0181754                      .2437439   .3151866
      var(e.D7)|  .2384281   .0165656                      .2080738   .2732106
      var(e.M1)|  .4103434   .0244338                      .3651429   .4611392
      var(e.M3)|  .5654357   .0382852                       .495164     .64568
      var(e.M5)|    .42057   .0273808                      .3701873   .4778097
      var(e.M6)|  .4454257   .0397492                      .3739514   .5305612
      var(e.M7)|  .4812024   .0289572                      .4276665   .5414399
      var(e.M8)|  .5214561   .0318201                       .462675    .587705
      var(e.M9)|  .6110143   .0362391                      .5439599   .6863346
         var(DA)|         1  (constrained)
         var(MA)|         1  (constrained)
----------------+----------------------------------------------------------------
   cov(e.D1,e.D2)|  .1435695   .0134754    10.65   0.000    .1171583   .1699808
   cov(e.D1,e.D3)|  .0560801   .0110049     5.10   0.000    .0345109   .0776494
   cov(e.D6,e.D7)|  .1053647   .0138636     7.60   0.000    .0781926   .1325367
   cov(e.M3,e.M5)|  .1694005   .0252511     6.71   0.000    .1199093   .2188918
   cov(DA,MA).   |  .4027982   .0478745     8.41   0.000    .3089659   .4966305
----------------+----------------------------------------------------------------
LR test of model vs. saturated: chi2(72) = 188.78          Prob > chi2 = 0.0000
```

```
sem (DA -> D1 D2 D3 D4 D5 D6 D7) ///
(MA -> M1 M3 M5 M6 M7 M8 M9), ///
covstruct(_lexogenous, diagonal) method(mlmv) latent(DA MA ) ///
cov( DA@1 DA*MA e.D1*e.D2 e.D1*e.D3 e.D6*e.D7 ///
MA@1 e.M3*e.M5) means( DA@0 MA@0) nocapslatent ///
standardized
```

Endogenous variables
  Measurement: D1 D2 D3 D4 D5 D6 D7 M1 M3 M5 M6 M7 M8 M9

Exogenous variables
  Latent: DA MA

Fitting saturated model:
Iteration 0:   log likelihood = -9003.3706
Iteration 1:   log likelihood = -8997.7694
Iteration 2:   log likelihood = -8997.6553
Iteration 3:   log likelihood = -8997.6552

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Fitting target model:
Iteration 0:   log likelihood = -9400.7225   (not concave)
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Iteration 2:   log likelihood = -9156.9711
Iteration 3:   log likelihood = -9105.7863
Iteration 4:   log likelihood = -9092.2796
Iteration 5:   log likelihood = -9092.0466
Iteration 6:   log likelihood = -9092.0465

Structural equation model   Number of obs = 674
Estimation method: mlmv

Log likelihood = -9092.0465

 (1) [/]var(DA) = 1
 (2) [/]var(MA) = 1

Standardized	Coefficient	OIM std. err.	z	P>|z|	[95% conf. interval]
Measurement						
D1						
DA	.5521314	.0312781	17.65	0.000	.4908275	.6134354
_cons	1.463781	.0552059	26.51	0.000	1.355579	1.571983
D2						
DA	.5934796	.0299261	19.83	0.000	.5348255	.6521338
_cons	1.242105	.0513869	24.17	0.000	1.141389	1.342822
D3						
DA	.5745415	.0307952	18.66	0.000	.514184	.634899
_cons	2.227971	.0722038	30.86	0.000	2.086454	2.369488
D4						
DA	.7047577	.0246295	28.61	0.000	.6564848	.7530306
_cons	1.898631	.065287	29.08	0.000	1.770671	2.026592
D5						
DA	.7978625	.0206478	38.64	0.000	.7573937	.8383314
_cons	1.690788	.060418	27.98	0.000	1.572371	1.809205

```
D6              |
             DA |    .6511446    .0274026    23.76   0.000     .5974366    .7048526
           _cons |    1.609262    .0584756    27.52   0.000     1.494652    1.723872
----------------+----------------------------------------------------------------
D7              |
             DA |    .7047205     .024738    28.49   0.000     .6562349    .7532061
           _cons |    1.902549    .0649566    29.29   0.000     1.775236    2.029861
----------------+----------------------------------------------------------------
M1              |
             MA |    .3572715    .0442704     8.07   0.000      .270503    .4440399
           _cons |    .6904246    .0430247    16.05   0.000     .6060977    .7747515
----------------+----------------------------------------------------------------
M3              |
             MA |    .5014942    .0414454    12.10   0.000     .4202626    .5827257
           _cons |    1.792408    .0625061    28.68   0.000     1.669899    1.914918
----------------+----------------------------------------------------------------
M5              |
             MA |    .4396979    .0442702     9.93   0.000     .3529299    .5264659
           _cons |    2.329497    .0757595    30.75   0.000     2.181011    2.477983
----------------+----------------------------------------------------------------
M6              |
             MA |    .6458662    .0390259    16.55   0.000     .5693768    .7223556
           _cons |    1.510001    .0566647    26.65   0.000     1.398941    1.621062
----------------+----------------------------------------------------------------
M7              |
             MA |    .3668716    .0444832     8.25   0.000     .2796861     .454057
           _cons |    1.366737    .0538633    25.37   0.000     1.261167    1.472307
----------------+----------------------------------------------------------------
M8              |
             MA |     .400906    .0431015     9.30   0.000     .3164285    .4853835
           _cons |    .9564673    .0466249    20.51   0.000     .8650841    1.047851
----------------+----------------------------------------------------------------
M9              |
             MA |    .3525359    .0441984     7.98   0.000     .2659086    .4391632
           _cons |     1.13112    .0494899    22.86   0.000     1.034121    1.228118
----------------+----------------------------------------------------------------
      var(e.D1)|    .6951509    .0345393                       .6306469    .7662524
      var(e.D2)|    .6477819    .0355211                       .5817726    .7212809
      var(e.D3)|    .6699021    .0353863                       .6040158    .7429753
      var(e.D4)|    .5033166    .0347156                       .4396739    .5761716
      var(e.D5)|    .3634154    .0329481                       .3042505    .4340856
      var(e.D6)|    .5760107    .0356861                        .510147    .6503778
      var(e.D7)|     .503369    .0348667                       .4394673    .5765626
      var(e.M1)|    .8723571    .0316331                       .8125092    .9366132
      var(e.M3)|    .7485036    .0415693                       .6713069    .8345775
      var(e.M5)|    .8066657     .038931                         .73386    .8866945
      var(e.M6)|    .5828568     .050411                       .4919736     .690529
      var(e.M7)|    .8654052    .0326392                       .8037408    .9318007
      var(e.M8)|    .8392744    .0345593                       .7742006    .9098178
      var(e.M9)|    .8757184    .0311631                       .8167213    .9389773
        var(DA)|           1  (constrained)
        var(MA)|           1  (constrained)
----------------+----------------------------------------------------------------
   cov(e.D1,e.D2)|    .5170997    .0304622    16.98   0.000      .457395    .5768044
   cov(e.D1,e.D3)|    .1896741    .0349009     5.43   0.000     .1212696    .2580785
   cov(e.D6,e.D7)|    .4098651    .0380125    10.78   0.000     .3353619    .4843683
   cov(e.M3,e.M5)|    .3473794    .0401006     8.66   0.000     .2687838     .425975
   cov(DA,MA). |    .4027982    .0478745     8.41   0.000     .3089659    .4966305
----------------+----------------------------------------------------------------
LR test of model vs. saturated: chi2(72) = 188.78          Prob > chi2 = 0.0000
```

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