

Fixing the parameter estimates at the starting values

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Contents

```
library(OpenMx)

set.seed(12345)

## Generate some artificial data
df <- MASS::mvrnorm(n=100, mu=c(0,0),
                    Sigma=matrix(c(1,.5,.5,1), ncol=2, nrow=2))
colnames(df) <- c("x", "y")
df <- data.frame(df)

## Parameter estimates from lm()
(beta <- coef(lm(y~x, data=df)))

## (Intercept)          x
## 0.1167949  0.6228241

(sigma2 <- summary(lm(y~x, data=df))$sigma^2)

## [1] 0.876986

(meanx <- mean(df[, "x"]))

## [1] 0.1897304

(varx <- var(df[, "x"]))

## [1] 1.085887

## mxModel using the parameter estimates as starting values
myData <- mxData(observed=df, type="raw")
matrA <- mxMatrix(type="Full", nrow=2, ncol=2,
                  free=c(F,F,T,F), values=c(0,0,beta[2],0),
                  labels=c(NA,NA,"beta1",NA), byrow=TRUE, name="A" )
matrS <- mxMatrix(type="Symm", nrow=2, ncol=2,
                  free=c(T,F,F,T), values=c(varx,0,0,sigma2),
                  labels=c("varx",NA,NA,"sigma2"), byrow=TRUE, name="S" )
matrF <- mxMatrix(type="Iden", nrow=2, ncol=2, name="F")
matrM <- mxMatrix(type="Full", nrow=1, ncol=2,
                  free=c(T,T), values=c(meanx,beta[1]),
                  labels=c("meanx","beta0"), name="M")
expRAM <- mxExpectationRAM("A","S","F","M", dimnames=c("x","y"))
funML <- mxFitFunctionML()
```

```
uniModel <- mxModel("Simple Regression",
                    myData, matRA, matRS, matRF, matRM, expRAM, funML)
```

```
## Normal fitting
```

```
fit1 <- mxRun(uniModel)
summary(fit1)
```

```
## Summary of Simple Regression
```

```
##
```

```
## free parameters:
```

```
##   name matrix row col Estimate Std.Error A
## 1 beta1      A   2   1 0.6228241 0.08941274
## 2 varx       S   1   1 1.0750283 0.15203193
## 3 sigma2     S   2   2 0.8594463 0.12154419
## 4 meanx      M   1   x 0.1897304 0.10368345
## 5 beta0      M   1   y 0.1167949 0.09424579
```

```
##
```

```
## Model Statistics:
```

```
##           | Parameters | Degrees of Freedom | Fit (-2lnL units)
##   Model:   |         5 |             195     |         559.6634
## Saturated: |         5 |             195     |         NA
## Independence: |         4 |             196     |         NA
```

```
## Number of observations/statistics: 100/200
```

```
##
```

```
## Information Criteria:
```

```
##   | df Penalty | Parameters Penalty | Sample-Size Adjusted
## AIC: 169.6634          569.6634          570.3017
## BIC: -338.3448        582.6893          566.8980
```

```
## CFI: NA
```

```
## TLI: 1 (also known as NNFI)
```

```
## RMSEA: 0 [95% CI (NA, NA)]
```

```
## Prob(RMSEA <= 0.05): NA
```

```
## To get additional fit indices, see help(mxRefModels)
```

```
## timestamp: 2021-07-09 12:15:22
```

```
## Wall clock time: 0.06473446 secs
```

```
## optimizer: SLSQP
```

```
## OpenMx version number: 2.19.6
```

```
## Need help? See help(mxSummary)
```

```
## Treat starting values as parameter estimates
```

```
fit2 <- mxRun(uniModel, useOptimizer = FALSE)
summary(fit2)
```

```
## Summary of Simple Regression
```

```
##
```

```
## free parameters:
```

```
##   name matrix row col Estimate
## 1 beta1      A   2   1 0.6228241
## 2 varx       S   1   1 1.0858872
## 3 sigma2     S   2   2 0.8769860
## 4 meanx      M   1   x 0.1897304
## 5 beta0      M   1   y 0.1167949
```

```
##
```

```
## Model Statistics:
```

```

##           | Parameters | Degrees of Freedom | Fit (-2lnL units)
##      Model:           5           195           559.6887
##      Saturated:       5           195           NA
## Independence:         4           196           NA
## Number of observations/statistics: 100/200
##
## Information Criteria:
##      | df Penalty | Parameters Penalty | Sample-Size Adjusted
## AIC:      169.6887           569.6887           570.3270
## BIC:      -338.3195           582.7146           566.9233
## CFI: NA
## TLI: 1 (also known as NNFI)
## RMSEA: 0 [95% CI (NA, NA)]
## Prob(RMSEA <= 0.05): NA
## To get additional fit indices, see help(mxRefModels)
## timestamp: 2021-07-09 12:15:22
## Wall clock time: 0.02705979 secs
## OpenMx version number: 2.19.6
## Need help? See help(mxSummary)

```