large_sim1_results

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This is not an exhaustive visualization, just some preliminary visual inspection.

Simulation parameters

Variables

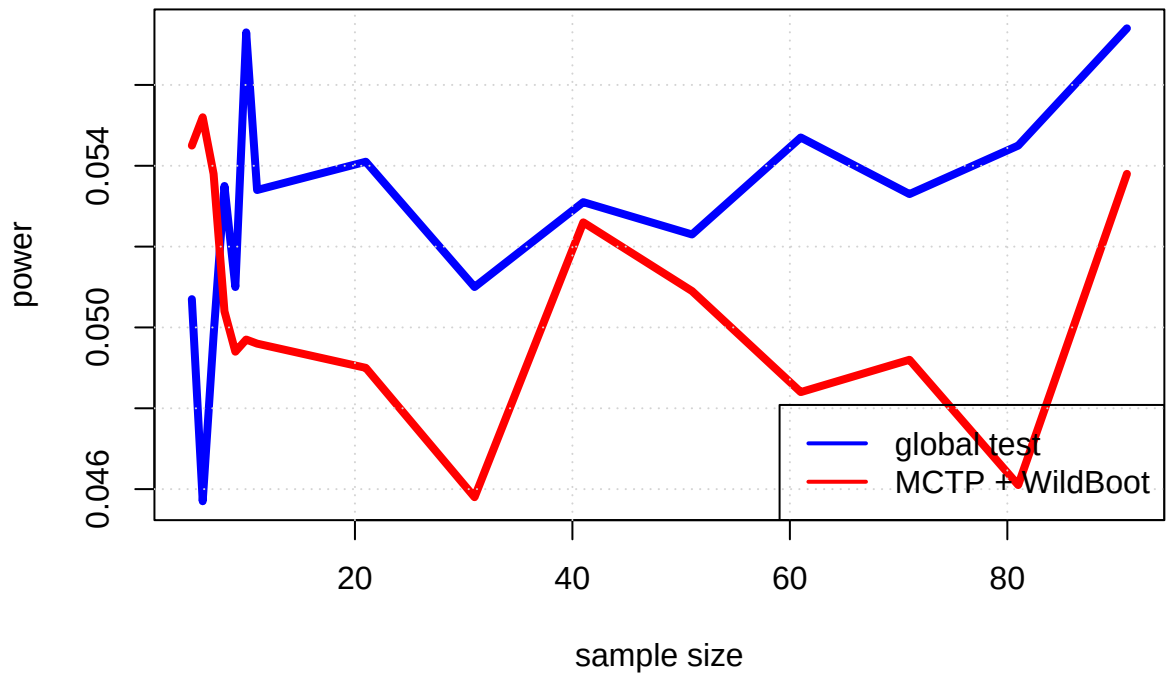
- covariance structure
- effect size (in the means)
- sample size ### Simulation numbers
- for each of the combinations of the variables the data was simulated 10,000 times
- per simulation there where 10,000 Wild Bootstrap iterations as part of the maximum test ### Bradley Limits:
- BL = 0.0457
- BU = 0.0543
- accuracy = 0.86%

```
library(data.table)
```

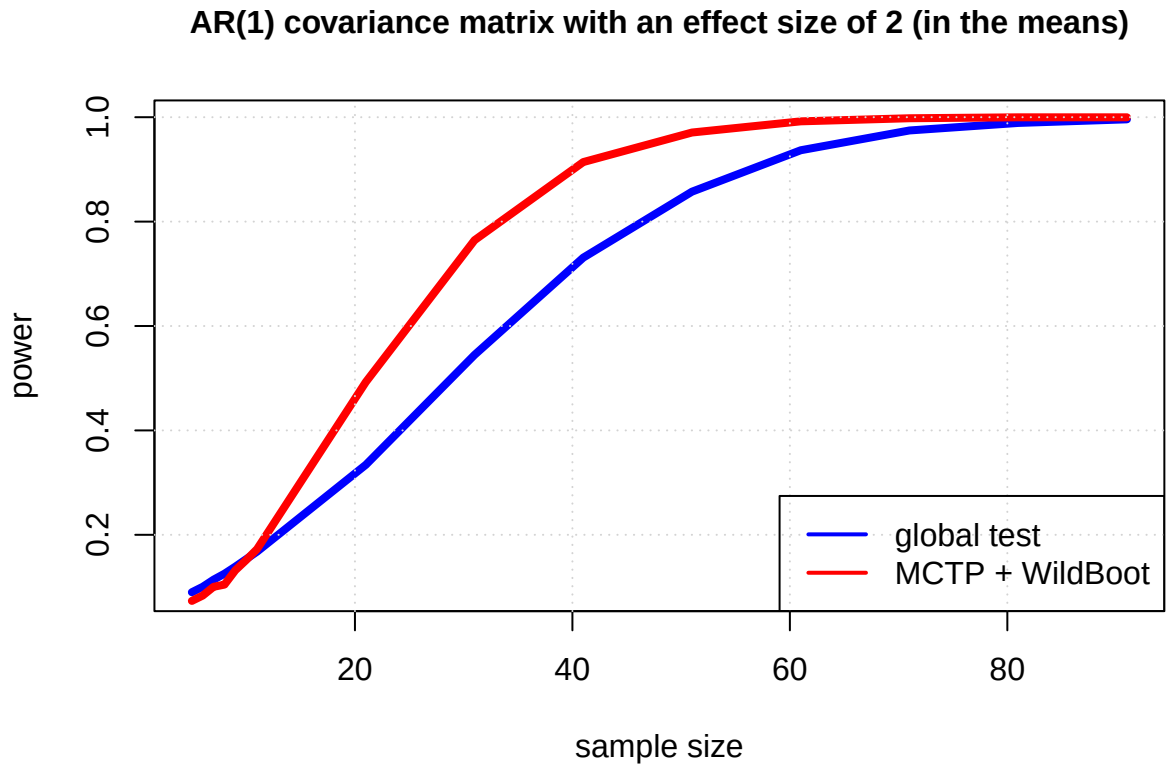
```
## Warning: package 'data.table' was built under R version 4.4.3
```

```
data <- fread("C:/Users/Qba Liu/Documents/STUDIA/BIOINF_MASTER_BERLIN/MASTER_THESIS/MasterThesis_FUB/SI
data$V1 <- NULL
Unst <- data[data$covariance_structures == 'Unstructured',]
AR1 <- data[data$covariance_structures == 'AR(1)',]
AR2 <- data[data$covariance_structures == 'AR(2)',]
Toeplitz <- data[data$covariance_structures == 'Toeplitz',]
```

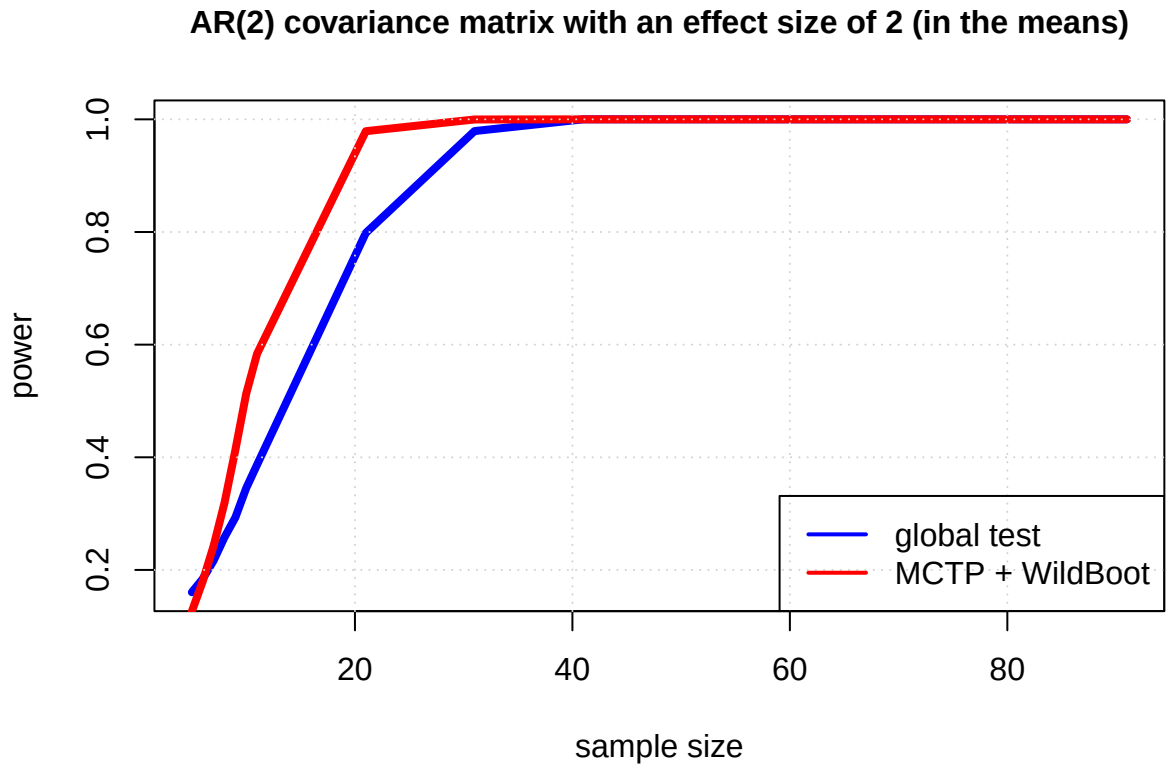
```
plot(Unst[Unst$effect_sizes == 2,]$sample_sizes, Unst[Unst$effect_sizes == 2, ]$power_global, col = 'blu
     cex.main = 1)
lines(Unst[Unst$effect_sizes == 2,]$sample_sizes, Unst[Unst$effect_sizes == 2, ]$power_max, col = 'red'
grid()
legend("bottomright",
       legend = c('global test', 'MCTP + WildBoot'),
       col = c("blue", "red"),
       lty = 1,
       lwd = 2)
```



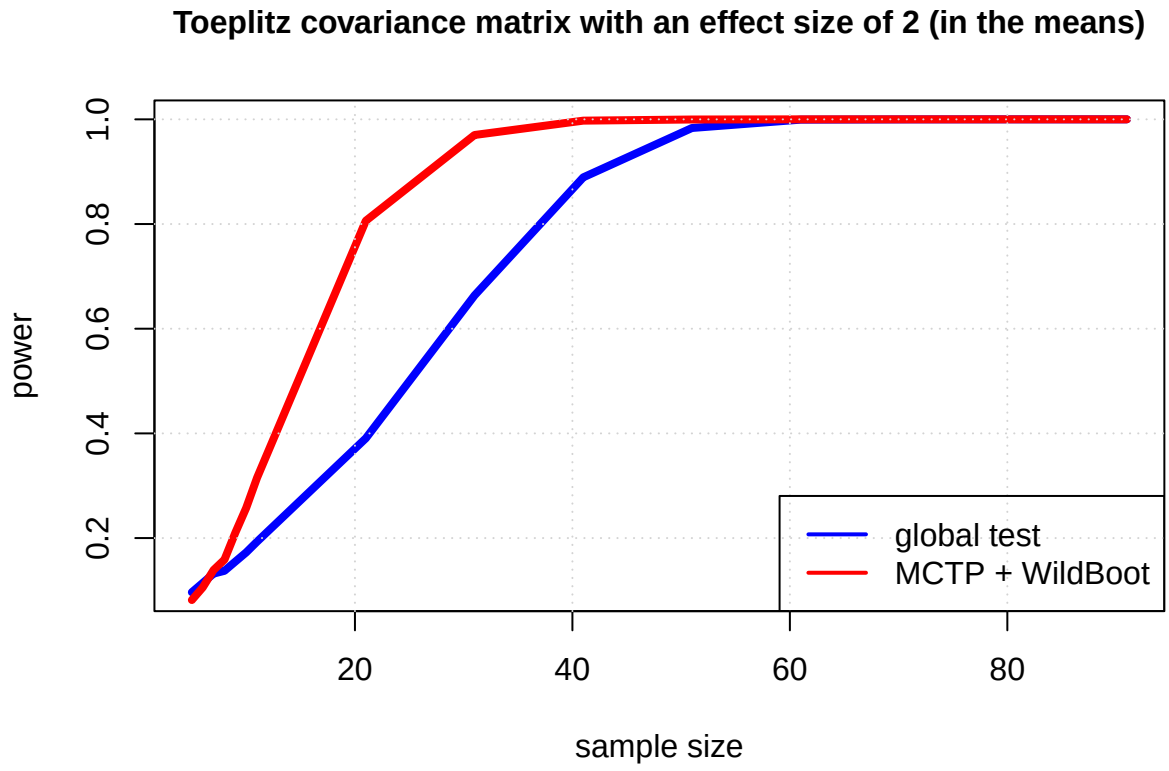

```
plot(AR1[AR1$effect_sizes == 2,]$sample_sizes, AR1[AR1$effect_sizes == 2, ]$power_global, col = 'blue',
     cex.main = 1)
lines(AR1[AR1$effect_sizes == 2,]$sample_sizes, AR1[AR1$effect_sizes == 2, ]$power_max, col = 'red', ty
grid()
legend("bottomright",
       legend = c('global test', 'MCTP + WildBoot'),
       col = c("blue", "red"),
       lty = 1,
       lwd = 2)
```



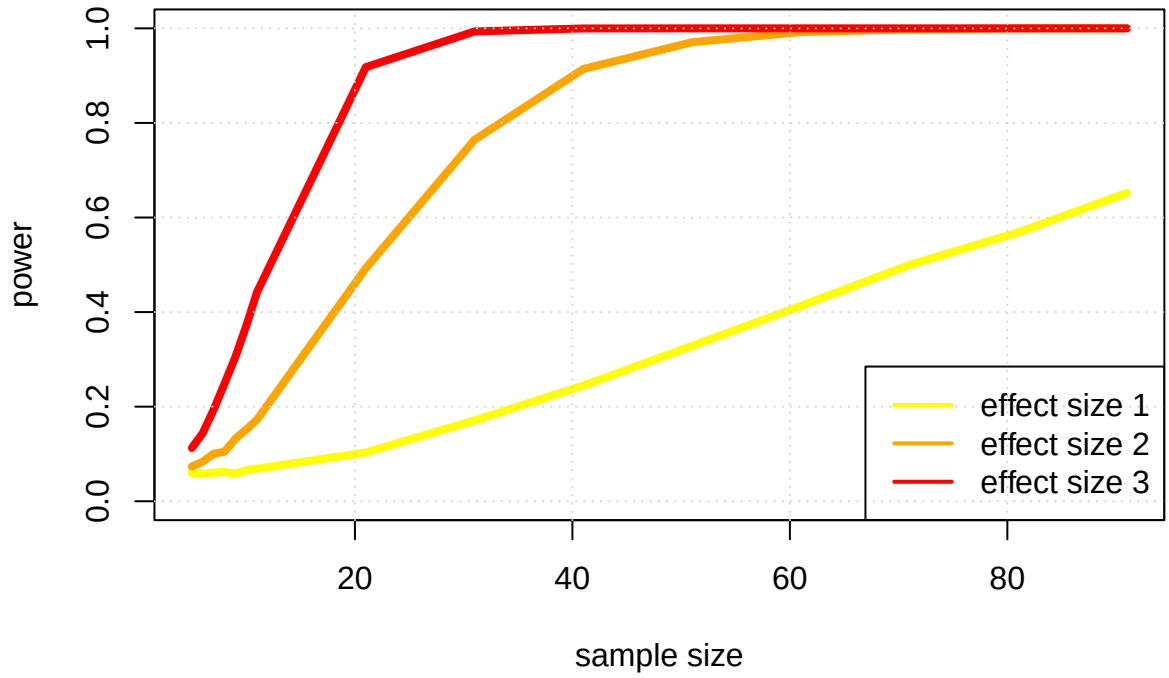

```
plot(AR2[AR2$effect_sizes == 2,]$sample_sizes, AR2[AR2$effect_sizes == 2, ]$power_global, col = 'blue',
     cex.main = 1)
lines(AR2[AR2$effect_sizes == 2,]$sample_sizes, AR2[AR2$effect_sizes == 2, ]$power_max, col = 'red', ty
grid()
legend("bottomright",
       legend = c('global test', 'MCTP + WildBoot'),
       col = c("blue", "red"),
       lty = 1,
       lwd = 2)
```



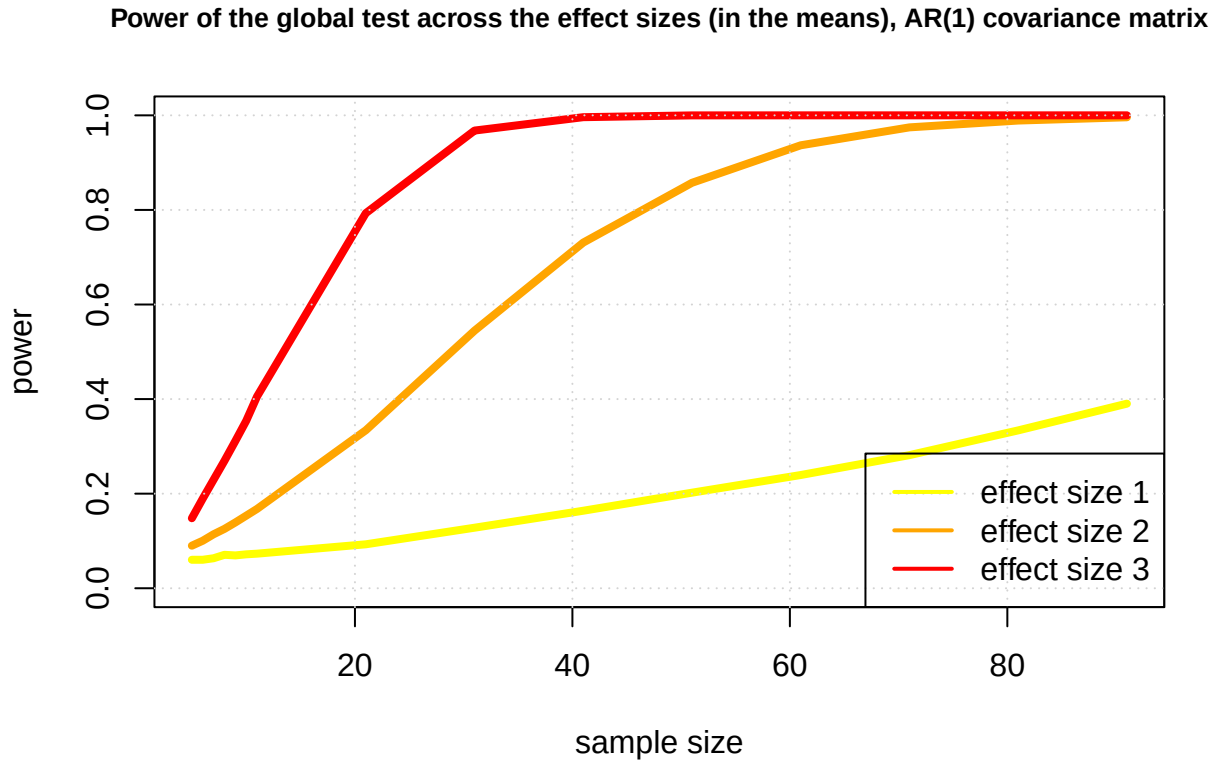

```
plot(Toeplitz[Toeplitz$effect_sizes == 2,]$sample_sizes, Toeplitz[Toeplitz$effect_sizes == 2, ]$power_gl
     cex.main = 1)
lines(Toeplitz[Toeplitz$effect_sizes == 2,]$sample_sizes, Toeplitz[Toeplitz$effect_sizes == 2, ]$power_m
grid()
legend("bottomright",
       legend = c('global test', 'MCTP + WildBoot'),
       col = c("blue", "red"),
       lty = 1,
       lwd = 2)
```




```
plot(AR1[AR1$effect_sizes == 1,]$sample_sizes, AR1[AR1$effect_sizes == 1, ]$power_max, col = 'yellow', t
     cex.main = 0.8, ylim = c(0,1))
lines(AR1[AR1$effect_sizes == 1,]$sample_sizes, AR1[AR1$effect_sizes == 2, ]$power_max, col = 'orange',
lines(AR1[AR1$effect_sizes == 1,]$sample_sizes, AR1[AR1$effect_sizes == 3, ]$power_max, col = 'red', ty
grid()
legend("bottomright",
       legend = c('effect size 1', 'effect size 2', 'effect size 3'),
       col = c("yellow", "orange", "red"),
       lty = 1,
       lwd = 2)
```




```
plot(AR1[AR1$effect_sizes == 1,]$sample_sizes, AR1[AR1$effect_sizes == 1, ]$power_global, col = 'yellow
     cex.main = 0.8, ylim = c(0,1))
lines(AR1[AR1$effect_sizes == 1,]$sample_sizes, AR1[AR1$effect_sizes == 2, ]$power_global, col = 'orang
lines(AR1[AR1$effect_sizes == 1,]$sample_sizes, AR1[AR1$effect_sizes == 3, ]$power_global, col = 'red',
grid()
legend("bottomright",
       legend = c('effect size 1', 'effect size 2', 'effect size 3'),
       col = c("yellow", "orange", "red"),
       lty = 1,
       lwd = 2)
```


Power of the global test across the effect sizes (in the means), AR(1) covariance matrix
power
0.0
0.2
0.4
0.6
0.8
1.0
20
40
60
80
sample size
effect size 1
effect size 2
effect size 3