

betaMC: Internal Tests

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Tests

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#> test-betaMC-beta-mc-est-mi
#> Call:
#> BetaMC(object = mc)
#>
#> Standardized regression slopes
#> type = "mvn"
#>      est      se R  0.05%   0.5%   2.5%  97.5%  99.5% 99.95%
#> NARTIC  0.4951 0.0919 5 0.2983 0.2999 0.3070 0.5154 0.5171 0.5175
#> PCTGRT  0.3915 0.0649 5 0.3633 0.3643 0.3688 0.5294 0.5334 0.5343
#> PCTSUPP 0.2632 0.0475 5 0.1678 0.1690 0.1747 0.2930 0.2956 0.2961
#> Call:
#> BetaMC(object = mc)
#>
#> Standardized regression slopes
#> type = "mvn"
#> Test passed
#> Call:
#> BetaMC(object = mc)
#>
#> Standardized regression slopes
#> type = "mvn"
#>      est      se R  0.05%   0.5%   2.5%  97.5%  99.5% 99.95%
#> NARTIC 0.7622 0.0425 5 0.6991 0.6993 0.7004 0.8004 0.8061 0.8074
#> Call:
#> BetaMC(object = mc)
#>
#> Standardized regression slopes
#> type = "mvn"

#> test-betaMC-beta-mc-est
#> Call:
#> BetaMC(object = mc)
#>
#> Standardized regression slopes
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#> type = "mvn"
#>           est      se R  0.05%   0.5%   2.5%  97.5%  99.5% 99.95%
#> NARTIC  0.4951 0.0776 5 0.3463 0.3476 0.3537 0.5324 0.5331 0.5333
#> PCTGRT  0.3915 0.0960 5 0.3342 0.3345 0.3357 0.5477 0.5536 0.5549
#> PCTSUPP 0.2632 0.0613 5 0.2305 0.2313 0.2352 0.3712 0.3720 0.3722
#> Call:
#> BetaMC(object = mc)
#>
#> Standardized regression slopes
#> type = "mvn"
#> Test passed
#> Call:
#> BetaMC(object = mc)
#>
#> Standardized regression slopes
#> type = "mvn"
#>           est      se R 0.05%   0.5%   2.5%  97.5%  99.5% 99.95%
#> NARTIC 0.7622 0.1047 5 0.607 0.6083 0.6139 0.8641 0.8706 0.8721
#> Call:
#> BetaMC(object = mc)
#>
#> Standardized regression slopes
#> type = "mvn"

#> test-betaMC-delta-r-sq-mc-est-mi

#> Call:
#> DeltaRSqMC(object = mc)
#>
#> Improvement in R-squared
#> type = "mvn"
#>           est      se R  0.05%   0.5%   2.5%  97.5%  99.5% 99.95%
#> NARTIC  0.1859 0.0616 5 0.1448 0.1455 0.1482 0.2977 0.3038 0.3051
#> PCTGRT  0.1177 0.0601 5 0.0638 0.0640 0.0650 0.1974 0.2072 0.2095
#> PCTSUPP 0.0569 0.0122 5 0.0432 0.0433 0.0437 0.0724 0.0731 0.0732
#> Call:
#> DeltaRSqMC(object = mc)
#>
#> Improvement in R-squared
#> type = "mvn"
#> Test passed
#> Test passed

#> test-betaMC-delta-r-sq-mc-est

#> Call:
#> DeltaRSqMC(object = mc)

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#>
#> Improvement in R-squared
#> type = "mvn"
#>          est      se R  0.05%   0.5%   2.5%  97.5%  99.5% 99.95%
#> NARTIC  0.1859 0.0777 5 0.1203 0.1203 0.1206 0.2841 0.2891 0.2902
#> PCTGRT  0.1177 0.0465 5 0.0622 0.0626 0.0645 0.1770 0.1808 0.1817
#> PCTSUPP 0.0569 0.0341 5 0.0284 0.0286 0.0296 0.1093 0.1135 0.1144
#> Call:
#> DeltaRSqMC(object = mc)
#>
#> Improvement in R-squared
#> type = "mvn"
#> Test passed
#> Test passed

#> test-betaMC-diff-beta-mc-est-mi

#> Call:
#> DiffBetaMC(object = mc)
#>
#> Differences of standardized regression slopes
#> type = "mvn"
#>          est      se R   0.05%   0.5%   2.5%  97.5%  99.5% 99.95%
#> NARTIC-PCTGRT  0.1037 0.1742 5 -0.0725 -0.0696 -0.0566 0.3663 0.3743 0.3761
#> NARTIC-PCTSUPP 0.2319 0.1254 5  0.1008  0.1022  0.1085 0.4201 0.4333 0.4362
#> PCTGRT-PCTSUPP 0.1282 0.0657 5 -0.0065 -0.0054 -0.0006 0.1651 0.1718 0.1733
#> Call:
#> DiffBetaMC(object = mc)
#>
#> Differences of standardized regression slopes
#> type = "mvn"
#> Test passed
#> Test passed

#> test-betaMC-diff-beta-mc-est

#> Call:
#> DiffBetaMC(object = mc)
#>
#> Differences of standardized regression slopes
#> type = "mvn"
#>          est      se R   0.05%   0.5%   2.5%  97.5%  99.5% 99.95%
#> NARTIC-PCTGRT  0.1037 0.0627 5 0.0780 0.0784 0.0804 0.2292 0.2339 0.2350
#> NARTIC-PCTSUPP 0.2319 0.0816 5 0.1627 0.1647 0.1733 0.3800 0.3860 0.3874
#> PCTGRT-PCTSUPP 0.1282 0.0659 5 0.0601 0.0607 0.0633 0.2254 0.2319 0.2334
#> Call:
#> DiffBetaMC(object = mc)

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#>
#> Differences of standardized regression slopes
#> type = "mvn"
#> Test passed
#> Test passed

#> test-betaMC-mc-fixed-x-mi

#> MCMi(object = object, mi = mi, R = R, type = "mvn", fixed_x = TRUE)
#> MCMi(object = object, mi = mi, R = R, type = "adf", fixed_x = TRUE)
#> MCMi(object = object, mi = mi, R = R, type = "hc0", fixed_x = TRUE)
#> MCMi(object = object, mi = mi, R = R, type = "hc1", fixed_x = TRUE)
#> MCMi(object = object, mi = mi, R = R, type = "hc2", fixed_x = TRUE)
#> MCMi(object = object, mi = mi, R = R, type = "hc3", fixed_x = TRUE)
#> MCMi(object = object, mi = mi, R = R, type = "hc4", fixed_x = TRUE)
#> MCMi(object = object, mi = mi, R = R, type = "hc4m", fixed_x = TRUE)
#> MCMi(object = object, mi = mi, R = R, type = "hc5", fixed_x = TRUE)
#> Test passed
#> Test passed
#> Test passed
#> Test passed
#> Test passed
#> Test passed
#> Test passed
#> Test passed
#> Test passed
#> Test passed

#> test-betaMC-mc-fixed-x

#> MC(object = object, R = R, type = "mvn", fixed_x = TRUE)
#> MC(object = object, R = R, type = "adf", fixed_x = TRUE)
#> MC(object = object, R = R, type = "hc0", fixed_x = TRUE)
#> MC(object = object, R = R, type = "hc1", fixed_x = TRUE)
#> MC(object = object, R = R, type = "hc2", fixed_x = TRUE)
#> MC(object = object, R = R, type = "hc3", fixed_x = TRUE)
#> MC(object = object, R = R, type = "hc4", fixed_x = TRUE)
#> MC(object = object, R = R, type = "hc4m", fixed_x = TRUE)
#> MC(object = object, R = R, type = "hc5", fixed_x = TRUE)
#> Test passed
#> Test passed
#> Test passed
#> Test passed
#> Test passed
#> Test passed
#> Test passed
#> Test passed

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#> Test passed
#> Call:
#> MC(object = object, R = 5L, decomposition = "chol", fixed_x = TRUE)
#> The first set of simulated parameter estimates
#> and model-implied covariance matrix.
#>
#> $coef
#> [1] 0.4707541 0.5605690
#>
#> $sigmasq
#> [1] 0.5350711
#>
#> $vechsigmacapx
#> [1] 1.000000e+00 2.496804e-16 1.000000e+00
#>
#> $sigmacapx
#>      [,1]      [,2]
#> [1,] 1.000000e+00 2.496804e-16
#> [2,] 2.496804e-16 1.000000e+00
#>
#> $sigmaysq
#> [1] 1.070918
#>
#> $sigmayx
#> [1] 0.4707541 0.5605690
#>
#> $sigmacap
#>      [,1]      [,2]      [,3]
#> [1,] 1.0709181 4.707541e-01 5.605690e-01
#> [2,] 0.4707541 1.000000e+00 2.496804e-16
#> [3,] 0.5605690 2.496804e-16 1.000000e+00
#>
#> $pd
#> [1] TRUE
#>
#> Call:
#> MC(object = object, R = 5L, decomposition = "svd", fixed_x = TRUE)
#> The first set of simulated parameter estimates
#> and model-implied covariance matrix.
#>
#> $coef
#> [1] 0.4856229 0.5227846
#>
#> $sigmasq
#> [1] 0.5353172
#>

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#> $vechsigmacapx
#> [1] 1.000000e+00 2.496804e-16 1.000000e+00
#>
#> $sigmacapx
#>           [,1]           [,2]
#> [1,] 1.000000e+00 2.496804e-16
#> [2,] 2.496804e-16 1.000000e+00
#>
#> $sigmaysq
#> [1] 1.044451
#>
#> $sigmayx
#> [1] 0.4856229 0.5227846
#>
#> $sigmacap
#>           [,1]           [,2]           [,3]
#> [1,] 1.0444506 4.856229e-01 5.227846e-01
#> [2,] 0.4856229 1.000000e+00 2.496804e-16
#> [3,] 0.5227846 2.496804e-16 1.000000e+00
#>
#> $pd
#> [1] TRUE

#> test-betaMC-mc-mi

#> MCMC(object = object, mi = mi, R = R, type = "mvn")
#> MCMC(object = object, mi = mi, R = R, type = "adf")
#> MCMC(object = object, mi = mi, R = R, type = "hc0")
#> MCMC(object = object, mi = mi, R = R, type = "hc1")
#> MCMC(object = object, mi = mi, R = R, type = "hc2")
#> MCMC(object = object, mi = mi, R = R, type = "hc3")
#> MCMC(object = object, mi = mi, R = R, type = "hc4")
#> MCMC(object = object, mi = mi, R = R, type = "hc4m")
#> MCMC(object = object, mi = mi, R = R, type = "hc5")
#> Test passed
#> Test passed
#> Test passed
#> Test passed
#> Test passed
#> Test passed
#> Test passed
#> Test passed
#> Test passed
#> Test passed

#> test-betaMC-mc

#> MC(object = object, R = R, type = "mvn")

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#> MC(object = object, R = R, type = "adf")
#> MC(object = object, R = R, type = "hc0")
#> MC(object = object, R = R, type = "hc1")
#> MC(object = object, R = R, type = "hc2")
#> MC(object = object, R = R, type = "hc3")
#> MC(object = object, R = R, type = "hc4")
#> MC(object = object, R = R, type = "hc4m")
#> MC(object = object, R = R, type = "hc5")
#> Test passed
#> Test passed
#> Test passed
#> Test passed
#> Test passed
#> Test passed
#> Test passed
#> Test passed
#> Call:
#> MC(object = object, R = 5L, decomposition = "chol")
#> The first set of simulated parameter estimates
#> and model-implied covariance matrix.
#>
#> $coef
#> [1] 0.4978847 0.4790253
#>
#> $sigmasq
#> [1] 0.5306945
#>
#> $vechsigmacapx
#> [1] 0.955281633 -0.001173332 1.020657470
#>
#> $sigmacapx
#>      [,1]      [,2]
#> [1,] 0.955281633 -0.001173332
#> [2,] -0.001173332 1.020657470
#>
#> $sigmaysq
#> [1] 1.001144
#>
#> $sigmayx
#> [1] 0.4750580 0.4883366
#>
#> $sigmacap
#>      [,1]      [,2]      [,3]
#> [1,] 1.0011441 0.475058028 0.488336553

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#> [2,] 0.4750580 0.955281633 -0.001173332
#> [3,] 0.4883366 -0.001173332 1.020657470
#>
#> $pd
#> [1] TRUE
#>
#> Call:
#> MC(object = object, R = 5L, decomposition = "svd")
#> The first set of simulated parameter estimates
#> and model-implied covariance matrix.
#>
#> $coef
#> [1] 0.4740785 0.4793779
#>
#> $sigmasq
#> [1] 0.5177365
#>
#> $vechsigmacapx
#> [1] 0.97130876 0.02027368 1.01085406
#>
#> $sigmacapx
#>      [,1]      [,2]
#> [1,] 0.97130876 0.02027368
#> [2,] 0.02027368 1.01085406
#>
#> $sigmaysq
#> [1] 0.977551
#>
#> $sigmayx
#> [1] 0.4701954 0.4941924
#>
#> $sigmacap
#>      [,1]      [,2]      [,3]
#> [1,] 0.9775510 0.47019536 0.49419242
#> [2,] 0.4701954 0.97130876 0.02027368
#> [3,] 0.4941924 0.02027368 1.01085406
#>
#> $pd
#> [1] TRUE
#> test-betaMC-p-cor-mc-est-mi
#> Call:
#> PCorMC(object = mc)
#>
#> Squared partial correlations
#> type = "mvn"

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#>          est      se R  0.05%   0.5%   2.5%  97.5%  99.5% 99.95%
#> NARTIC  0.4874 0.1449 5 0.2651 0.2673 0.2770 0.6354 0.6449 0.6470
#> PCTGRT  0.3757 0.0669 5 0.3264 0.3270 0.3298 0.4836 0.4860 0.4865
#> PCTSUPP 0.2254 0.0664 5 0.0847 0.0856 0.0893 0.2558 0.2633 0.2649
#> Call:
#> PCorMC(object = mc)
#>
#> Squared partial correlations
#> type = "mvn"
#> Test passed
#> Test passed

#> test-betaMC-p-cor-mc-est

#> Call:
#> PCorMC(object = mc)
#>
#> Squared partial correlations
#> type = "mvn"
#>          est      se R  0.05%   0.5%   2.5%  97.5%  99.5% 99.95%
#> NARTIC  0.4874 0.1132 5 0.3174 0.3178 0.3196 0.5580 0.5593 0.5596
#> PCTGRT  0.3757 0.1324 5 0.1567 0.1575 0.1611 0.4643 0.4721 0.4739
#> PCTSUPP 0.2254 0.0823 5 0.0730 0.0749 0.0834 0.2921 0.2981 0.2994
#> Call:
#> PCorMC(object = mc)
#>
#> Squared partial correlations
#> type = "mvn"
#> Test passed
#> Test passed

#> test-betaMC-r-sq-mc-est-mi

#> Call:
#> RSqMC(object = mc)
#>
#> R-squared and adjusted R-squared
#> type = "mvn"
#>          est      se R  0.05%   0.5%   2.5%  97.5%  99.5% 99.95%
#> rsq 0.8045 0.0376 5 0.7107 0.7115 0.7150 0.8007 0.8009 0.8010
#> adj 0.7906 0.0402 5 0.6901 0.6909 0.6946 0.7864 0.7867 0.7868
#> Call:
#> RSqMC(object = mc)
#>
#> R-squared and adjusted R-squared
#> type = "mvn"
#> Test passed

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```

#> Call:
#> RSqMC(object = mc)
#>
#> R-squared and adjusted R-squared
#> type = "mvn"
#>      est      se R  0.05%   0.5%   2.5%  97.5%  99.5% 99.95%
#> rsq 0.5809 0.1133 5 0.5152 0.5165 0.5221 0.7990 0.8084 0.8105
#> adj 0.5714 0.1159 5 0.5042 0.5055 0.5113 0.7945 0.8040 0.8062
#> Call:
#> RSqMC(object = mc)
#>
#> R-squared and adjusted R-squared
#> type = "mvn"
#> Test passed

#> test-betaMC-r-sq-mc-est

#> Call:
#> RSqMC(object = mc)
#>
#> R-squared and adjusted R-squared
#> type = "mvn"
#>      est      se R  0.05%   0.5%   2.5%  97.5%  99.5% 99.95%
#> rsq 0.8045 0.0577 5 0.6937 0.6939 0.6951 0.8283 0.8313 0.832
#> adj 0.7906 0.0618 5 0.6718 0.6721 0.6734 0.8160 0.8193 0.820
#> Call:
#> RSqMC(object = mc)
#>
#> R-squared and adjusted R-squared
#> type = "mvn"
#> Test passed
#> Call:
#> RSqMC(object = mc)
#>
#> R-squared and adjusted R-squared
#> type = "mvn"
#>      est      se R  0.05%   0.5%   2.5%  97.5%  99.5% 99.95%
#> rsq 0.5809 0.0479 5 0.4305 0.4319 0.4381 0.5569 0.5596 0.5602
#> adj 0.5714 0.0490 5 0.4175 0.4190 0.4253 0.5468 0.5496 0.5502
#> Call:
#> RSqMC(object = mc)
#>
#> R-squared and adjusted R-squared
#> type = "mvn"
#> Test passed

#> test-betaMC-s-cor-mc-est-mi

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#> Call:
#> SCorMC(object = mc)
#>
#> Semipartial correlations
#> type = "mvn"
#>      est      se R  0.05%   0.5%   2.5%  97.5%  99.5% 99.95%
#> NARTIC  0.4312 0.0590 5 0.3421 0.3428 0.3460 0.4892 0.4926 0.4934
#> PCTGRT  0.3430 0.0744 5 0.2027 0.2042 0.2108 0.3989 0.4050 0.4063
#> PCTSUPP 0.2385 0.0629 5 0.1256 0.1267 0.1320 0.2836 0.2865 0.2871
#> Call:
#> SCorMC(object = mc)
#>
#> Semipartial correlations
#> type = "mvn"
#> Test passed
#> Test passed

#> test-betaMC-s-cor-mc-est

#> Call:
#> SCorMC(object = mc)
#>
#> Semipartial correlations
#> type = "mvn"
#>      est      se R  0.05%   0.5%   2.5%  97.5%  99.5% 99.95%
#> NARTIC  0.4312 0.0705 5 0.3318 0.3325 0.3353 0.4968 0.4989 0.4993
#> PCTGRT  0.3430 0.1178 5 0.1568 0.1597 0.1727 0.4738 0.4853 0.4878
#> PCTSUPP 0.2385 0.0943 5 0.2254 0.2255 0.2262 0.4393 0.4533 0.4564
#> Call:
#> SCorMC(object = mc)
#>
#> Semipartial correlations
#> type = "mvn"
#> Test passed
#> Test passed

#> test-zzz-coverage

#>      beta1    beta2    beta3 sigmasq  sigmax1x1  sigmax2x1  sigmax3x1
#> sigmaysq  909.1981 257.2976 276.0367      1 0.007091036 0.03637752 0.01896371
#> sigmayx1 3507.1691 471.2058 510.5430      0 0.084208291 0.21599726 0.11260003
#> sigmayx2  471.2058 333.2295 150.9121      0 0.000000000 0.08420829 0.00000000
#> sigmayx3  510.5430 150.9121 554.4386      0 0.000000000 0.00000000 0.08420829
#> sigmax1x1  0.0000  0.0000  0.0000      0 1.000000000 0.00000000 0.00000000
#> sigmax2x1  0.0000  0.0000  0.0000      0 0.000000000 1.00000000 0.00000000
#> sigmax3x1  0.0000  0.0000  0.0000      0 0.000000000 0.00000000 1.00000000
#> sigmax2x2  0.0000  0.0000  0.0000      0 0.000000000 0.00000000 0.00000000

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#> sigmax3x2    0.0000    0.0000    0.0000    0 0.000000000 0.00000000 0.00000000
#> sigmax3x3    0.0000    0.0000    0.0000    0 0.000000000 0.00000000 0.00000000
#>          sigmax2x2 sigmax3x2 sigmax3x3
#> sigmaysq 0.04665482 0.0486426 0.01267877
#> sigmayx1 0.00000000 0.0000000 0.00000000
#> sigmayx2 0.21599726 0.1126000 0.00000000
#> sigmayx3 0.00000000 0.2159973 0.11260003
#> sigmax1x1 0.00000000 0.0000000 0.00000000
#> sigmax2x1 0.00000000 0.0000000 0.00000000
#> sigmax3x1 0.00000000 0.0000000 0.00000000
#> sigmax2x2 1.00000000 0.0000000 0.00000000
#> sigmax3x2 0.00000000 1.0000000 0.00000000
#> sigmax3x3 0.00000000 0.0000000 1.00000000
#>          beta1    beta2    beta3 sigmasq
#> sigmaysq  909.1981 257.2976 276.0367      1
#> sigmayx1 3507.1691 471.2058 510.5430      0
#> sigmayx2  471.2058 333.2295 150.9121      0
#> sigmayx3  510.5430 150.9121 554.4386      0
#> sigmax1x1    0.0000    0.0000    0.0000      0
#> sigmax2x1    0.0000    0.0000    0.0000      0
#> sigmax3x1    0.0000    0.0000    0.0000      0
#> sigmax2x2    0.0000    0.0000    0.0000      0
#> sigmax3x2    0.0000    0.0000    0.0000      0
#> sigmax3x3    0.0000    0.0000    0.0000      0
#>          beta1    beta2    beta3    rsq    sigmax1x1    sigmax2x1
#> sigmaysq  909.1981 257.2976 276.0367 -126.0843 0.007091036 0.03637752
#> sigmayx1 3507.1691 471.2058 510.5430   0.0000 0.084208291 0.21599726
#> sigmayx2  471.2058 333.2295 150.9121   0.0000 0.000000000 0.08420829
#> sigmayx3  510.5430 150.9121 554.4386   0.0000 0.000000000 0.00000000
#> sigmax1x1    0.0000    0.0000    0.0000   0.0000 1.000000000 0.00000000
#> sigmax2x1    0.0000    0.0000    0.0000   0.0000 0.000000000 1.00000000
#> sigmax3x1    0.0000    0.0000    0.0000   0.0000 0.000000000 0.00000000
#> sigmax2x2    0.0000    0.0000    0.0000   0.0000 0.000000000 0.00000000
#> sigmax3x2    0.0000    0.0000    0.0000   0.0000 0.000000000 0.00000000
#> sigmax3x3    0.0000    0.0000    0.0000   0.0000 0.000000000 0.00000000
#>          sigmax3x1 sigmax2x2 sigmax3x2 sigmax3x3
#> sigmaysq 0.01896371 0.04665482 0.0486426 0.01267877
#> sigmayx1 0.11260003 0.00000000 0.0000000 0.00000000
#> sigmayx2 0.00000000 0.21599726 0.1126000 0.00000000
#> sigmayx3 0.08420829 0.00000000 0.2159973 0.11260003
#> sigmax1x1 0.00000000 0.00000000 0.0000000 0.00000000
#> sigmax2x1 0.00000000 0.00000000 0.0000000 0.00000000
#> sigmax3x1 1.00000000 0.00000000 0.0000000 0.00000000
#> sigmax2x2 0.00000000 1.00000000 0.0000000 0.00000000
#> sigmax3x2 0.00000000 0.00000000 1.0000000 0.00000000
#> sigmax3x3 0.00000000 0.00000000 0.0000000 1.00000000

```

```

#>          beta1    beta2    beta3      rsq
#> sigmaysq   909.1981 257.2976 276.0367 -126.0843
#> sigmayx1  3507.1691 471.2058 510.5430   0.0000
#> sigmayx2   471.2058 333.2295 150.9121   0.0000
#> sigmayx3   510.5430 150.9121 554.4386   0.0000
#> sigmax1x1   0.0000   0.0000   0.0000   0.0000
#> sigmax2x1   0.0000   0.0000   0.0000   0.0000
#> sigmax3x1   0.0000   0.0000   0.0000   0.0000
#> sigmax2x2   0.0000   0.0000   0.0000   0.0000
#> sigmax3x2   0.0000   0.0000   0.0000   0.0000
#> sigmax3x3   0.0000   0.0000   0.0000   0.0000
#> [[1]]
#> [[1]][[1]]
#> [[1]][[1]]$value
#> [[1]][[1]]$value[[1]]
#>          2.5 %    97.5 %
#> NARTIC 0.7004325 0.8004442
#>
#>
#> [[1]][[1]]$visible
#> [1] TRUE
#>
#>
#> [[1]][[2]]
#> [[1]][[2]]$value
#> [[1]][[2]]$value[[1]]
#>          2.5 %    97.5 %
#> NARTIC 0.6138826 0.8641337
#>
#>
#> [[1]][[2]]$visible
#> [1] TRUE
#>
#>
#> [[1]][[3]]
#> [[1]][[3]]$value
#> [[1]][[3]]$value[[1]]
#> [1] TRUE
#>
#>
#> [[1]][[3]]$visible
#> [1] TRUE
#>
#>
#> [[1]][[4]]
#> [[1]][[4]]$value

```

```

#> [[1]][[4]]$value[[1]]
#> [1] TRUE
#>
#>
#> [[1]][[4]]$visible
#> [1] TRUE
#>
#>
#> [[1]][[5]]
#> [[1]][[5]]$value
#> [[1]][[5]]$value[[1]]
#> [1] TRUE
#>
#>
#> [[1]][[5]]$visible
#> [1] TRUE
#>
#>
#> [[1]][[6]]
#> [[1]][[6]]$value
#> [[1]][[6]]$value[[1]]
#> [1] TRUE
#>
#>
#> [[1]][[6]]$visible
#> [1] TRUE
#>
#>
#> [[1]][[7]]
#> [[1]][[7]]$value
#> [[1]][[7]]$value[[1]]
#> [1] TRUE
#>
#>
#> [[1]][[7]]$visible
#> [1] TRUE
#>
#>
#> [[1]][[8]]
#> [[1]][[8]]$value
#> [[1]][[8]]$value[[1]]
#> [[1]][[8]]$value[[1]]$coef
#> [1] 0.4856229 0.5227846
#>
#>
#> [[1]][[8]]$value[[1]]$sigmasq

```

```

#> [1] 0.5353172
#>
#> [[1]][[8]]$value[[1]]$vechsigmacapx
#> [1] 1.000000e+00 2.496804e-16 1.000000e+00
#>
#> [[1]][[8]]$value[[1]]$sigmacapx
#>           [,1]           [,2]
#> [1,] 1.000000e+00 2.496804e-16
#> [2,] 2.496804e-16 1.000000e+00
#>
#> [[1]][[8]]$value[[1]]$sigmaysq
#> [1] 1.044451
#>
#> [[1]][[8]]$value[[1]]$sigmayx
#> [1] 0.4856229 0.5227846
#>
#> [[1]][[8]]$value[[1]]$sigmacap
#>           [,1]           [,2]           [,3]
#> [1,] 1.0444506 4.856229e-01 5.227846e-01
#> [2,] 0.4856229 1.000000e+00 2.496804e-16
#> [3,] 0.5227846 2.496804e-16 1.000000e+00
#>
#> [[1]][[8]]$value[[1]]$pd
#> [1] TRUE
#>
#>
#>
#> [[1]][[8]]$visible
#> [1] TRUE
#>
#>
#> [[1]][[9]]
#> [[1]][[9]]$value
#> [[1]][[9]]$value[[1]]
#> [1] TRUE
#>
#>
#> [[1]][[9]]$visible
#> [1] TRUE
#>
#>
#> [[1]][[10]]
#> [[1]][[10]]$value
#> [[1]][[10]]$value[[1]]
#>
#>           beta1 beta2 rsq sigmax1x1 sigmax2x1 sigmax2x2

```

```

#> sigmaysq      1      1  -2      0.25      0.5      0.25
#> sigmayx1      1      0   0      0.50      0.5      0.00
#> sigmayx2      0      1   0      0.00      0.5      0.50
#> sigmax1x1      0      0   0      1.00      0.0      0.00
#> sigmax2x1      0      0   0      0.00      1.0      0.00
#> sigmax2x2      0      0   0      0.00      0.0      1.00
#>
#>
#> [[1]][[10]]$visible
#> [1] TRUE
#>
#>
#> [[1]][[11]]
#> [[1]][[11]]$value
#> [[1]][[11]]$value[[1]]
#> [1] TRUE
#>
#>
#> [[1]][[11]]$visible
#> [1] TRUE
#>
#>
#> [[1]][[12]]
#> [[1]][[12]]$value
#> [[1]][[12]]$value[[1]]
#> [1] TRUE
#>
#>
#> [[1]][[12]]$visible
#> [1] TRUE
#>
#>
#> [[1]][[13]]
#> [[1]][[13]]$value
#> [[1]][[13]]$value[[1]]
#> [1] TRUE
#>
#>
#> [[1]][[13]]$visible
#> [1] TRUE
#>
#>
#> [[1]][[14]]
#> [[1]][[14]]$value
#> [[1]][[14]]$value[[1]]
#> [1] TRUE

```



```
#>
#>
#> [[1]][[14]]$visible
#> [1] TRUE
#>
#>
#> [[1]][[15]]
#> [[1]][[15]]$value
#> [[1]][[15]]$value[[1]]
#> [1] TRUE
#>
#>
#> [[1]][[15]]$visible
#> [1] TRUE
#>
#>
#> [[1]][[16]]
#> [[1]][[16]]$value
#> [[1]][[16]]$value[[1]]
#> [1] TRUE
#>
#>
#> [[1]][[16]]$visible
#> [1] TRUE
#>
#>
#> [[1]][[17]]
#> [[1]][[17]]$value
#> [[1]][[17]]$value[[1]]
#> [1] FALSE
#>
#>
#> [[1]][[17]]$visible
#> [1] TRUE
```

Environment

```
ls()
```

```
#> [1] "nas1982" "root"    "tex_file"
```

Class

```
#> [[1]]  
#> [1] "data.frame"  
#>  
#> [[2]]  
#> [1] "root_criterion"  
#>  
#> [[3]]  
#> [1] "character"
```

References

R Core Team. (2023). *R: A language and environment for statistical computing*. R Foundation for Statistical Computing. Vienna, Austria. <https://www.R-project.org/>