Bootstrap estimates

Bootstrap estimates of the matrix specified with MA = XX (XX = CM, KM, PM, OM, RM, TM, etc.) on the OU command and its asymptotic covariance matrix specified with SA = *filename* or AC = *filename* may be obtained. This is controlled with the following keywords on the OU command:

BS	number of bootstrap samples to be generated
SF	sample fraction of each sample in percentage
IX	integer starting value for the random number generator
BM	to save all the MA matrices computed for each bootstrap sample to a file
ME	to save all the mean vectors computed for each bootstrap sample to a file
SD	to save all the standard deviations computed for each bootstrap sample to a file

If BS = *n*, the MA matrix in the output will be the mean of all *n* bootstrap estimates and the AC matrix will be the empirical covariance matrix of all *n* bootstrap estimates. The latter is often a better estimate than that estimated from asymptotic theory. Note that this option makes it possible to estimate the asymptotic covariance matrix for OM, RM, TM matrices are otherwise not available.

The file **EFFICACY.RAW** in the **PRELIS Examples** folder contains data on six ordinal variables for 297 cases. The following input file (**EX9.PRL**) will generate 50 bootstrap samples of 148 cases each and estimate the RM matrix (Spearman rank correlations) for each of these samples.

All the estimated RM matrices are saved in the file **BOOTSTR.RML**, their mean is saved in the file **EFFICACY.RMB** and 141 times their covariance matrix is saved in binary form in the file **EFFICACY.ACR**.

```
EXAMPLE 9
ESTIMATING RM AND AC MATRICES BY BOOTSTRAP
DA NI=6
LA=EFFICACY.LAB
RA=EFFICACY.RAW FO;(6F2.0)
OU MA=RM BS=50 SF=50 RM=EFFICACY.RMB AC=EFFICACY.ACR BM=BOOTSTR.RML
```

The RM matrix in **EFFICACY.RMB** may be analyzed by WLS in LISREL as follows.

```
ESTIMATING MODEL BY ANALYZING AN RM MATRIX BY WLS. THE RM MATRIX AND
THE AC MATRIX HAVE BEEN GENERATED BY BOOTSTRAP IN PRELIS
DA NI-6 NO=141 MA=RM
LA=EFFICACY.LAB
RM=EFFICACY.RMB
AC=EFFICACY.ACT
MO …
…
OU
```