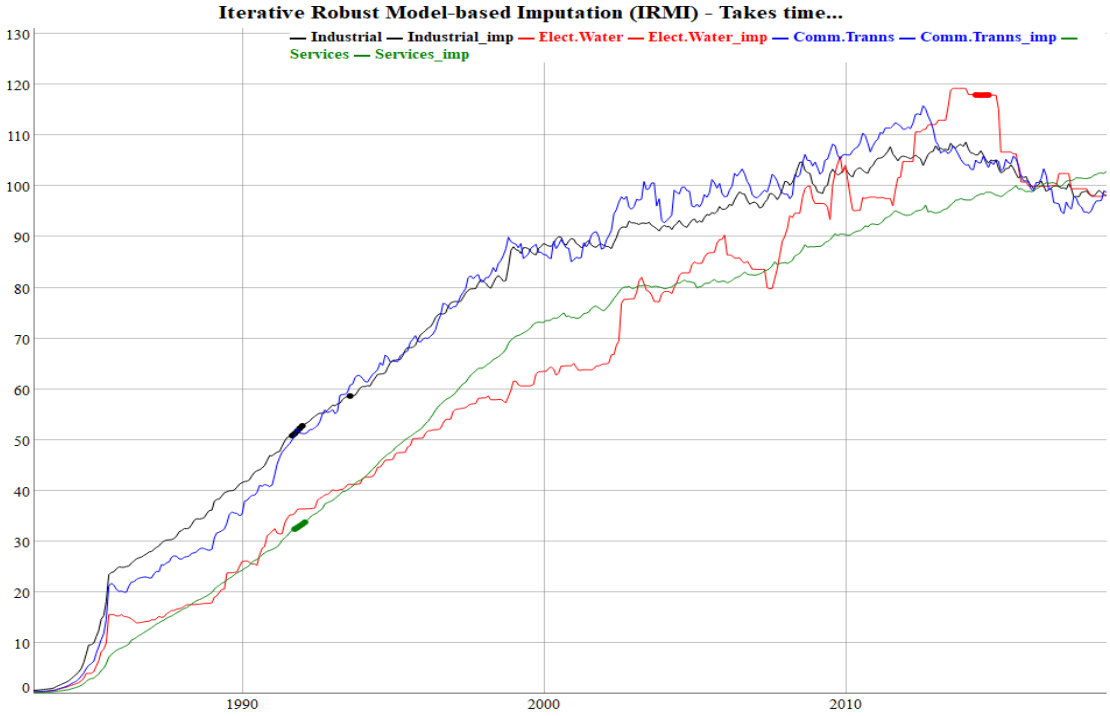
Help on Iterative robust model-based method

This iterative regression imputation method contains two steps: In each step of the iteration (inner loop), one variable is used as a response variable and the remaining variables serve as the regressors. The procedure is repeated until the algorithm converges (outer loop). Particularly, in each step of the iteration, one variable is used as a response variable and the remaining variables serve as the regressors and the multivariate information will be used for imputation in the response variable. The procedure algorithm can be summarized as follows: (1) Initializes the missing values. (2) Selects one variable as response and the remaining variables as predictors, and updates the former missing values in the response. (3) Goes to the next variable and repeats the procedure. (4) Repeats the whole procedure which is started from (2) until convergence. (5) Adds noise to final estimates in the a proper way to allow for multiple imputation. Robust regression using MM-estimation (Maronna et al. 2006) is used to get reliable results even if the data contains outliers. This method is most useful to get reliable imputations in an automated manner.

In all imputation figures, the non-NA observations are the colored lines while the imputed values are the colored dots.



References

Kowarik, A., & Templ, M. (2016). Imputation with the R Package VIM. Journal of Statistical Software, 74(7), 1-16.

Templ M, Kowarik A, Filzmoser P (2011). "Iterative Stepwise Regression Imputation Using Standard and Robust Methods." Computational Statistics & Data Analysis, 55(10), 2793–2806.