Corrigendum to 'A Coincident Index, Common Factors, and Monthly Real GDP' [*]

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The score function in Mariano and Murasawa (2010, p. 34) has an error. It should be as follows:

$$\ell_{\boldsymbol{\phi}}(\boldsymbol{\theta}; \boldsymbol{Y}_T^*, \boldsymbol{S}_T) = \ldots$$

$$= \left(\boldsymbol{\Sigma}^{-1} \otimes \boldsymbol{I}_{pN}\right) \sum_{t=1}^{T} \left[\left(\boldsymbol{F}\boldsymbol{s}_t \otimes \boldsymbol{G}\boldsymbol{s}_{t-1}\right) - \left(\boldsymbol{I}_N \otimes \boldsymbol{G}\boldsymbol{s}_{t-1}\boldsymbol{s}_{t-1}'\boldsymbol{G}'\right)\boldsymbol{\phi}\right]$$

$$= \left(\boldsymbol{\Sigma}^{-1} \otimes \boldsymbol{I}_{pN}\right) \sum_{t=1}^{T} \operatorname{vec}\left(\boldsymbol{G}\boldsymbol{s}_{t-1}\boldsymbol{s}_t'\boldsymbol{F}' - \boldsymbol{G}\boldsymbol{s}_{t-1}\boldsymbol{s}_{t-1}'\boldsymbol{G}'\boldsymbol{\Phi}'\right)$$

This error does not affect the likelihood equation and the EM algorithm.

The score function with respect to $\boldsymbol{\Sigma}^{-1}$ does not impose symmetry of $\boldsymbol{\Sigma}^{-1}$. One can impose symmetry, but it is not necessary; see Magnus and Neudecker (1999, p. 316). So this is not an error.

References

Magnus, J. R. and Neudecker, H. (1999). *Matrix Differential Calculus with Applications in Statistics and Econometrics*, revised edn., John Wiley & Sons.

Mariano, R. S. and Murasawa, Y. (2010). 'A coincident index, common factors, and monthly real GDP', *Oxford Bulletin of Economics and Statistics*, vol. 72, pp. 27–46.

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