

Fixed Effects and Random Effects Estimation of Higher-Order Spatial Autoregressive Models with Spatial Autoregressive and Heteroskedastic Disturbances

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Published: 01/01/2014

Document Version:
Publisher's PDF, also known as Version of record

Document License:
Other

[Link to publication](#)

Citation for published version (APA):
Badinger, H., & Egger, P. (2014). *Fixed Effects and Random Effects Estimation of Higher-Order Spatial Autoregressive Models with Spatial Autoregressive and Heteroskedastic Disturbances*. Department of Economics Working Paper Series No. 173

Corrigendum to “Fixed effects and random effects estimation of higher-order spatial autoregressive models with spatial autoregressive and heteroskedastic disturbances.”

(WU Economics Working Paper, No 173, April 2014)

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September 2016

We are grateful to Di Liu for pointing out two errors in the definition of the matrices $\mathbf{A}_{1,N}^{s,s'}$ and $\mathbf{A}_{3,N}^{s,s'}$, appearing in the quadratic form of the moment conditions in equations (12a) and (12c).

In equation (12a), the correct definition of matrix $\mathbf{A}_{1,N}^{s,s'}$ is

$$\mathbf{A}_{1,N}^{s,s'} = \mathbf{Q}_{0,N} (\mathbf{I}_T \otimes \mathbf{M}'_{s',N} \mathbf{M}_{s,N}) - \text{diag}_{n=1}^{NT} [\mathbf{Q}_{0,N} (\mathbf{I}_T \otimes \mathbf{M}'_{s',N} \mathbf{M}_{s,N})_{nn}].$$

In equation (12c), the correct definition of matrix $\mathbf{A}_{3,N}^{s,s'}$ is

$$\mathbf{A}_{3,N}^{s,s'} = \mathbf{Q}_{1,N} (\mathbf{I}_T \otimes \mathbf{M}'_{s',N} \mathbf{M}_{s,N}) - \text{diag}_{n=1}^{NT} [\mathbf{Q}_{1,N} (\mathbf{I}_T \otimes \mathbf{M}'_{s',N} \mathbf{M}_{s,N})_{nn}].$$

The definition of the GM estimator (equations (13)-(18)) does not make use of the matrices $\mathbf{A}_{1,N}^{s,s'}$ and $\mathbf{A}_{3,N}^{s,s'}$ and remains unchanged. The only consequential error appears in the derivation of the variance-covariance matrix of the GM estimator, where the matrices $\mathbf{A}_{1,N}^{s,s'}$ and $\mathbf{A}_{3,N}^{s,s'}$ enter through equation (22) and show up ultimately in the definition of the blocks of the matrices $\bar{\mathbf{A}}_{1,N}^{s,s'}$ and $\bar{\mathbf{A}}_{3,N}^{s,s'}$ in equations (26a)-(26d).

In equation (26a), the correct definitions of the blocks of matrix $\bar{\mathbf{A}}_{1,N}^{s,s'}$ are

$$\begin{aligned} \mathbf{A}_{1,v,N}^{s,s'} &= \frac{1}{2(T-1)} [\mathbf{A}_{1,N}^{s,s'} + (\mathbf{A}_{1,N}^{s,s'})'] \\ \mathbf{A}_{1,\mu,N}^{s,s'} &= -\frac{1}{(T-1)} (\mathbf{e}'_T \otimes \mathbf{I}_N) \text{diag}_{n=1}^{NT} [\mathbf{Q}_{0,N} (\mathbf{I}_T \otimes \mathbf{M}'_{s',N} \mathbf{M}_{s,N})] (\mathbf{e}_T \otimes \mathbf{I}_N) \\ \mathbf{A}_{1,v,\mu,N}^{s,s'} &= -\frac{1}{(T-1)} \text{diag}_{n=1}^{NT} [\mathbf{Q}_{0,N} (\mathbf{I}_T \otimes \mathbf{M}'_{s',N} \mathbf{M}_{s,N})] (\mathbf{e}_T \otimes \mathbf{I}_N). \end{aligned}$$

In equation (26c), the correct definitions of the blocks of matrix $\bar{\mathbf{A}}_{3,N}^{s,s'}$ are

$$\begin{aligned} \mathbf{A}_{3,v,N}^{s,s'} &= \frac{1}{2} \{ \mathbf{Q}_{1,N} [\mathbf{I}_T \otimes (\mathbf{M}'_{s',N} \mathbf{M}_{s,N} + \mathbf{M}'_{s,N} \mathbf{M}_{s',N})] \mathbf{Q}_{1,N} - 2 \text{diag}_{n=1}^{NT} [(\mathbf{Q}_{1,N} (\mathbf{I}_T \otimes (\mathbf{M}'_{s',N} \mathbf{M}_{s,N})))] \} \text{ or} \\ \mathbf{A}_{3,v,N}^{s,s'} &= \frac{1}{2} [\mathbf{A}_{3,N}^{s,s'} + (\mathbf{A}_{3,N}^{s,s'})'], \\ \mathbf{A}_{3,\mu,N}^{s,s'} &= \frac{1}{2} \{ T(\mathbf{M}'_{s',N} \mathbf{M}_{s,N} + \mathbf{M}'_{s,N} \mathbf{M}_{s',N}) - 2(\mathbf{e}'_T \otimes \mathbf{I}_N) \text{diag}_{n=1}^{NT} [(\mathbf{Q}_{1,N} (\mathbf{I}_T \otimes (\mathbf{M}'_{s',N} \mathbf{M}_{s,N})))] (\mathbf{e}_T \otimes \mathbf{I}_N) \}, \\ \mathbf{A}_{3,v,\mu,N}^{s,s'} &= \frac{1}{2} \{ [\mathbf{e}_T \otimes (\mathbf{M}'_{s',N} \mathbf{M}_{s,N} + \mathbf{M}'_{s,N} \mathbf{M}_{s',N})] - 2 \text{diag}_{n=1}^{NT} [(\mathbf{Q}_{1,N} (\mathbf{I}_T \otimes (\mathbf{M}'_{s',N} \mathbf{M}_{s,N})))] (\mathbf{e}_T \otimes \mathbf{I}_N) \}. \end{aligned}$$