

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

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

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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

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