Corrigendum: Impact of population mobility on regional carbon emissions: empirical evidence from Australia

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KEYWORDS

population mobility, carbon emissions, Australia, heterogeneity, technological innovation

A Corrigendum on

Impact of population mobility on regional carbon emissions: empirical evidence from Australia

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In the published article, there were errors in the formulas and incorrect interpretation of variables.

A correction has been made to **Section: 3 Models and data**, *Subsection: 3.1 The econometric model and variables*, Paragraph 1 and 2. This sentence previously stated:

"This paper proposes the adoption of an econometric model based on panel data to investigate the impact of population mobility on carbon emissions in Australia. It is evident from prior empirical research that employing such an econometric analytical model significantly enhances the reliability of estimation results (Azomahou et al., 2006; Baltagi, 2021). Moreover, this model endeavors to incorporate various control variables to mitigate potential inaccuracies arising from the omission of relevant influencing factors (Halicioglu, 2009; Al-mulali and Sheau-Ting, 2014). Furthermore, recognizing the issue of multicollinearity between domestic and international population mobility within the same econometric framework (Zhong et al., 2021), both variables are included in the empirical analyses within the econometric model. Hence, this paper formulates the following econometric model:

$$CO_{2it} = \alpha_0 + \alpha_1 mig_{int\,it} + \alpha_2 mig_{dom\,it} + \alpha_3 Z_{it} + \eta_{it} + \mu_{it} + \xi_{it} \qquad (1)$$

$$CO_{2it} = \varphi_0 + \varphi_1 mig_{int\,it} + \varphi_2 Z_{it} + \eta_{it} + \mu_{it} + \xi_{it} \qquad (2)$$

$$CO_{2it} = \varphi_0 + \beta_1 mig_{dom\,it} + \beta_2 Z_{it} + \eta_{it} + \mu_{it} + \xi_{it} \qquad (3)$$

where t is the state, t is the time, φ_0 is a constant term and CO_{2it} is the state's domestic population mobility and international population mobility[2], respectively. The explanatory and explanatory variables are logarithmic in the empirical evidence. ξ is denoted as error terms, respectively. In addition, the paper controls for sectoral fixed effects (η) and time fixed effects (μ) to mitigate measurement bias arising from omitted variables (deHaan, deHaan, 2020). Z are control variables."

The corrected sentence appears below:

This paper proposes the adoption of an econometric model based on panel data to investigate the impact of population mobility on carbon emissions in Australia. It is evident from prior empirical research that employing such an econometric analytical model significantly enhances the reliability of estimation results (Azomahou et al., 2006; Baltagi, 2021). Moreover, this model endeavors to incorporate various control variables to mitigate potential inaccuracies arising from the omission of relevant influencing factors (Halicioglu, 2009; Al-mulali & Sheau-Ting, 2014). Furthermore, recognizing the issue of multicollinearity between domestic and international population mobility within the same econometric framework (Zhong et al., 2021), both variables are included in the empirical analyses within the econometric model. Hence, this paper formulates the following econometric model:

$$CO_{2_{it}} = \alpha_0 + \alpha_1 mig_{int_{it}} + \alpha_2 mig_{dom_{it}} + \alpha_3 Z_{it} + \eta_i + \mu_t + \xi_{it} \quad (1)$$

$$CO_{2_{it}} = \varphi_0 + \varphi_1 mig_{int_{it}} + \varphi_2 Z_{it} + \eta_i + \mu_t + \xi_{it} \quad (2)$$

$$CO_{2_{it}} = \varphi_0 + \beta_1 mig_{dom_{it}} + \beta_2 Z_{it} + \eta_i + \mu_t + \xi_{it} \quad (3)$$

where i is the state, t is the time, φ_0 is a constant term and $CO_{2_{it}}$ is the net CO_2 emissions[1] for the state of i, and mig_int_{it}、 mig_dom_{it} is the state i's international population

mobility and domestic population mobility[2], respectively. The explanatory and explanatory variables are logarithmic in the empirical evidence. ξ is denoted as error terms, respectively. In addition, the paper controls for time-fixed effects (η) and sectoral fixed effects (μ) to mitigate measurement bias arising from omitted variables (deHaan, 2020). Z are control variables."

The authors apologize for these errors and state that they do not change the scientific conclusions of the article in any way. The original article has been updated.

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1 Net CO_2 emissions are the amount of carbon dioxide after all emissions released by human activities have been offset by removing carbon from the atmosphere. Net CO_2 emissions consist of two main components. Firstly, human-caused CO_2 emissions (e.g., from fossil-fuelled cars and factories). Second, carbon removal, which is usually done through natural methods such as absorption by forests, land, and oceans, or through technologies such as direct air capture and storage (DACS), which removes carbon directly from the atmosphere.

2 Population mobility in this paper refers to the net inflow of population as a proportion of the total local population, i.e., population inflow minus population outflow divided by the total local population.