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EDITORIAL

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ABSTRACT
This editorial summarizes the papers published in issue 13(4) so as to raise the bar in applied spatial economic research and highlight new trends. The first paper develops an economic geography model with trade costs in all sectors and different shares of unskilled labour in all locations. The second paper translates an economic geography model into a dynamic spatial econometric model and then estimates the unknown parameters to test for congestion spillover effects among Chinese cities. The following paper also investigates spillover effects, but of sovereign and banking risks across countries. The fourth paper empirically examines if a higher market potential results in higher average productivity and lower productivity dispersion of Italian retailers. The fifth paper demonstrates that modelling more than one spatial lag in the independent variables, using different specifications of the spatial weight matrix, can be used as a tool to correct for an omitted variable bias. The final paper develops a test for the existence of non-parametric non-linearities in a linear spatial econometric model.

KEYWORDS
agglomeration, congestion, spillovers, productivity, model bias

Spatial Economic Analysis is a pioneering journal dedicated to the development of theory and methods in spatial economic analysis. This issue contains six papers contributing to these developments. Each is relatively short: lengths range from 13 to 22 pages, with an average of just over 17 pages. However, each paper also has an appendix (available in the journal's supplemental data online), such as theoretical derivations or proofs, additional explanations, results of robust checks or alternative specifications. Readers interested in a particular paper are recommended also to take a look at this material. Although not necessary for understanding the main arguments of the papers in this issue, the supplemental data online may help readers to have a more detailed understanding of all the theoretical and/or methodological ins and outs of the work done by the authors and judged by the journal referees.

In addition to this editorial, the issue also contains an editorial introducing a virtual special issue of *Spatial Economic Analysis* on regional inequality (Doran, Jordan & Elhorst, 2018, in this issue). This was compiled to mark the keynote lecture by Professor Sergio Rey of the University of California – Riverside at the 58th Annual Congress of the European Regional Science

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Association in Cork, Ireland. It draws together nine articles from previous issues of the journal dealing with regional and spatial inequalities, a central theme of regional science in general and Rey's research in particular, thereby providing an overview of the main sources of regional and spatial inequalities both within and across countries. The papers comprising this virtual special issue are freely downloadable until the end of August 2019 at: http://explore.tandfonline.com/content/bes/virtual-special-issue-on-regional-inequality/.

The first paper in the present issue, by Kichko (2018, in this issue), studies the joint impact of trade costs in all sectors and initial inequality between regions on spatial equilibria by mixing features of two pre-existing models of the New Economic Geography (NEG): one presented in the famous book by Fujita, Krugman, and Venables (1999), and another presented in a recent paper by Sidorov and Zhelobodko (2013). The first model introduces non-zero transport cost in the agricultural sector, and finds this can prevent the symmetric equilibrium from becoming unstable, and make agglomeration unsustainable for low transport costs in the industrial sector. The second model introduces an asymmetry in the number of immobile workers in the agricultural sector, and shows that the region with the higher number of agricultural workers is more likely to become the centre when the core–periphery (CP) configuration occurs. Kichko's paper may be seen as part of a series on NEG type and related models that has appeared in *Spatial Economic Analysis* in the last three years. This includes Noblet and Belgodere (2016), who modify the standard NEG model to show that peripheral regions may end up with 'simple' production only; Alvarado-Quesada and Weikard (2017), who are among the first to mix NEG models with models of international environmental agreements (IEAs); Bond-Smith, McCann, and Oxley (2018), who adopt a scale-neutral approach to investigate the spatial mechanisms that cause regional innovation and growth; and Kato (2018), who shows that lobbying by multinational firms may lead the government of a relatively small country to undercut the tax rate of its larger neighbour by so much that it hosts more firms relative to its size.

One potential objection to all these economic-theoretical NEG modelling developments is that their parameters are not empirically estimated. The second paper by Han, Xie, and Lai (2018, in this issue) provides an answer to this critique. These authors translate a theoretical NEG model specification into a dynamic spatial econometric Durbin model. They then estimate the unknown parameters of this empirical model to test for spatial spillover effects of traffic congestion in China using data on 283 cities over the period 2003–14. The congestion spillover effects on neighbouring cities appear to be smaller than the direct effects in the city itself, to be smaller in the short than in the long term, and to be smaller in the west and central part of China than in the highly urbanized eastern part of the country. Nevertheless, they are large enough to call for more coordination of local urban policies to tackle the negative externalities of further urbanization in China. One earlier study in which the parameters of the NEG model are estimated is by Modrego, McCann, Foster, and Olfert (2014), who investigate the relationship between the market potential and the spatial variation in the number and the average size of firms.

The third paper by Zhu (2018, in this issue) estimates a spatial vector autoregressive (SpVAR) model to explain the transmission (read: spillover effects) of sovereign and banking risks. It builds upon the previous work of Beenstock, Felsenstein, and Xieer (2018), who deal with non-stationarity and cointegration in a dynamic spatial econometric panel data model when the number of units in the cross-sectional domain of the sample (N) goes to infinity while the number of observations in the time domain (T) is 1 or fixed; and Elhorst, Gross, and Tereanu (2018), who bring together the spatial and global vector autoregressive (GVAR) classes of econometric models by providing a detailed methodological review of where they meet in terms of structure, interpretation and estimation methods. *Spatial Economic Analysis* previously paid attention to this important new development in the editorial to issue 11(4) (Elhorst et al., 2016) and in the publication of Carrion-i-Silvestre and Surdeanu (2016) in the same issue. Zhu shows that these kinds of models, originally developed from a regional-scientific perspective, are extremely

useful also to explain financial–economic phenomena using country data. The author finds empirical evidence in favour of a multi-country sovereign-bank-corporate feedback loop across 11 countries in the Eurozone. Hopefully, this paper will also inspire many researchers not working in the field of regional science, spatial economics or economic geography.

The same applies to the fourth paper by Del Gatto and Mastinu (2018, in this issue), who deal with the Huff model, a well-known approach taken from the marketing literature in which retail trade areas are quantified by modelling the probability that consumers patronize different competing stores within the same area. The paper empirically examines whether Italian retailers satisfy the Huff model and, relatedly, if a higher market potential results in higher average productivity and lower productivity dispersion. It fits into an expanding literature dealing with competition effects associated with accessibility at the local level, and the establishment of the Spatial Productivity Lab in Trento, Italy, by the Organisation for Economic Co-operation and Development (OECD) to stimulate more research on how regional, rural and urban policy can help find a more inclusive and dynamic system for economic growth in relation to productivity (OECD, 2018). The authors find evidence in favour of their two tested hypotheses for retailers in the south of Italy, but not elsewhere. Short explanations for this remarkable divide between the south and the rest of the country are also provided. Readers who, in addition, want to convince themselves that the distance between regional science, spatial economics and economic geography, on the one hand, and the marketing literature, on the other, is becoming smaller should consult the recent book *Advanced Methods for Modelling Markets* edited by Leeflang, Wieringa, Bijmolt, and Pauwels (2017).

The fifth paper by Storm and Heckelei (2018, in this issue) is part of a growing literature dealing with more than one spatial weight matrix ($\mathbf{W}$) multiplied by the dependent or the independent variables in the model. Whereas most studies focus on multiple $\mathbf{W}$ matrices in the dependent variable, that is, within the spatial autoregressive (SAR) model (Debarsy & LeSage, 2018), this paper extends the standard linear regression model along the independent variables, known as the spatial lag of X (SLX) model. The authors demonstrate that this approach can be used as a tool to correct for an omitted variable bias, especially if variables omitted from the model operate at a different scale than the units of observations. This may occur if the behaviour of micro-units, such as individuals or firms, is affected by local variables which these micro-units have in common, but which the researcher cannot observe or is not aware of. A similar situation occurs when analyzing regions located in different countries, such as NUTS-2 or -3 regions within European Union member states. Using Monte Carlo simulation experiments, the authors show by how much the omitted variable bias may fall when following their proposed approach.

The last paper by Sun and Wu (2018, in this issue) offers a mix of an econometric–theoretical paper, a Monte Carlo simulation experiment and an empirical application to the average selling price of residential houses in 285 Chinese cities. The authors develop an F-test to investigate if the traditional linear relationship between the dependent variable and the covariates can be relaxed for some but not all of the covariates. This intermediate between a fully parametric and fully non-parametric specification avoids the problem that some covariates in the first model are not significant since their coefficients are not homogenous, and the curse of dimensionality in fitting multivariate non-parametric regression functions in the second model. Clearly, this paper fits within a growing literature dealing with spatial heterogeneity, such as the study by Zhu (2018, in this issue) and by Beenstock et al. (2018, in the previous issue) if N is large relative to T.

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