Extended abtract

EXTENDED ABSTRACT

Title: Urban spillovers: the Portuguese municipalities

Authors and e-mail of all:

(1) Alamá-Sabater, Luisa: alama@uji.es
Cravo, Julia: julia.cravo@ine.pt
(2) Márquez, M. A.: mmarquez@unex.es
(1) Tortosa-Ausina, E.: tortosa@uji.es

(1)Department: Economy, University Jaume I

(2)Department: Economy, University of Extremadura

Subject area: *(please, indicate the subject area which corresponds to the paper)*

Abstract: *(minimum1500 words)*

Extended abstract

In recent years, depopulation has reemerged strongly in the field of regional economic research, (Han, Hakansson and Ronnegard, 2016; Collantes, Pinilla, Sáez and Silvestre, 2014, among others) and economic researchers have incorporated this topic to their studies. At the same time, policy makers have integrated depopulation as one of the main policy lines (LaFrombois, Park and Yurcaba, 2019; Alvarez-Diaz, et al., 2018). In the last European horizon 2014-2020, only countries included in the specific program Northern Peripheric and Arctic received funds for this topic[1]. However, Europe Union is being aware of the importance of this problem. Thus, European Union has included depopulation features[2] in the European structural and investment funds of Agenda 2021-2027 (through the European Regional Development Fund -ERDF).

[1] Finland, Sweden and United Kingdom.

[2] Specifically, the target regions are clusters of local administrative units with a population density of less than 12,5 inhabitants per square kilometer (in sparsely populated areas), or less than 8 inhabitants per square kilometer (in very sparsely populated areas) in https://www.europarl.europa.eu/RegData/etudes/BRIE/2020/651939/EPRS_BRI(2020)651939_EN.pdf.

Considering these elements, development strategies of European Union are identifying the shrinking rural regions with the main purpose of establishing a planning to define some policy responses and recommendations at national and sub-national level. Thus, different emerging policies are being contemplated in response to rural shrinkage. These policies emphasize the importance of local economy; access to basic services and territorial advantages; and mainly underline the importance of support information and communication technology, digitalization and knowledge-intensive activities, since there seems to be consensus on the fact that the opportunities derived from new technologies could open new initiatives (ESPON, 2017).

In general, European rural strategies are still being based on rural endogenous development programs on reinforce economic activity, accessibility and public equipment. These policies are aiming to promote local economy as the main approach to develop rural areas[3]. Nevertheless, the consideration of the spatial interaction among rural areas and their corresponding nearest urban and intermediate areas has not been provided solid economic policy recommendations. The absence of guidelines in this regard could be explained by the lack of empirical evidence about to what extent linkages among rural, intermediate and urban areas could contribute to stimulate the development of those areas affected by depopulation. So, this paper tries to show empirical evidence about the type of spatial interactions between rural areas and their neighboring areas.

Following authors as, among others, Henry, Barkley and Bao (1997), Bao, Henry and Barkley (2004), and Bosworth and Venhorst (2018), we propose to study depopulation and rural development following a strategy based on the interconnection of territories. According to Hedberg and Carmo (2012), nowadays, rural areas are interconnected by daily flows, and technology could make that people change the criterion to choose their household. LeSage and Thomas-Agnan (2015) analyzed commuting flows of a certain

[3] This is the case, among others, of the so-called Local Action Groups for the rural development financed by the EU through LEADER founds.

French region, demonstrating the connection structure between surrounding areas, in terms of origin, destination and interregional effects[4].

Carlino and Mills (1987) specified a traditional system of simultaneous equations to analyze if population determines jobs or jobs determine population growth. The question is: "*Does the choice of residence precede or follow the choice of employment location?*". In other words: People fix residence and then look for employment? Or people find employment and then fix residence? In the first case (jobs follow people), employment is the endogenous variable, while in the second case (people follow jobs), the endogenous variable is people (Hoogstra, 2012).

Hoogstra, Florax, and van Dijk (2017), carry out a meta-analysis to check the results obtained by different authors that based their research on the Carlino and Mills' model. They conclude that the empirical evidence for "jobs follow people" is much stronger than for "people follow jobs", although they also argue that these results may be associated with the choose of territorial unit level. In a previous work, Hoogstra, van Dijk, and Florax (2011) underline that to analyze the causal relation between jobs and population is essential to control for time, space, region type and employment groups[5]. An important extension of this methodology has been the spatial relation between areas: local employment growth and local population growth not only depends on characteristics of own area; in some cases, surroundings define a labor market area that allows that persons might commute across municipal boundaries. Population in a municipality depends on jobs opportunities in a surrounding labor market, and municipal employment depends on the population of labor market area. Boarnet (1994) demonstrated the relevance of these spatial linkages, emphasizing the connections between employment and population of neighboring areas through the role of the market labor area (defined in terms of distances).

After that, spatial relations have been an important consideration of these models, and scholars have extended the Carlino-Mills model introducing spatial links, as well as

[4] These authors based their study on the so-called spatial origin-destination models (LeSage and Fisher, 2010).
[5] It would be necessary to introduce in the analysis elements related with the employment economic sector and/or to distinguish between different levels of development of geographic areas.

sectorial employment groups. It is the case of de Graaff, van Oort and Florax (2012) who focused their attention on intra-industry linkages, inter-industry linkages, and linkages among the population and the economic sectors.

In relation to region characteristics, certain scholars have considered rural-urban division, evidencing the spreads or backwash effects[6] from urban toward rural areas, (Ganning, Baylis and Lee, 2013), underlining the importance of this effects on policy decisions (especially if conditions for working and living are not the same everywhere). Thereby, Henry, Barkley and Bao (1997) where among the first authors extending the spatial model defined by Boarnet (1994). They classified geographic units (counties) according to the degree of urbanization in urban, intermediate and rural areas, analyzing urban-rural linkages.

Following Carlino and Mills (2007) and Boarnet (1994) methodology, in this paper it is studied to what extent linkages among rural, intermediate and urban areas could contribute to stimulate the development of those areas affected by depopulation. To do this we develop a spatial econometric model, based on simultaneous system techniques where both population and employment are endogenous variables. We applied the model to 278 continental municipalities in Portugal, to detect how the spread or backwash effects among urban, intermediate and rural regions could enhance the local development of Portuguese municipalities. The results obtained suggest policies aimed to promote urban-rural diffusion in order to revert one of the main problems of certain European regions: the depopulation.

The hypothesis to be tested is that, spillovers generated by employment change in urban or intermediate areas have an impact on population growth to surroundings rural municipalities, promoting local market area and, as consequence influencing population change. We focus our attention mainly on the way that different levels of development areas impact on rural areas, investigating the influence of economic activity of urban areas on population dynamics of rural areas.

[6] Concepts introduced by Hirschman (1958) and Myrdal (1957).

References

- Advances in spatial econometrics. Bao, S., Henry, M. and Barkley, D. (2004). Identifying urban-rural linkages: test for spatial effects in the Carlino-Mills model, pp. 321-334. Ed. Springer.
- Alvarez-Diaz, M. D'Hombres, B., Ghisetti, C., Pontarollo, N. and Dijkstra, L. (2018). The determinants of population growth. JRC technical reports. Working papers in economics and finance, 2018/10. European Comission.
- Boarnet, M. G. (1994). The monocentric model and employment location. Journal of urban economics, 36, pp. 79-97
- Bosworth, G. and Venhorst, V. (2018). Economic linkages between urban and rural regions – what's in it for the rural? Journal of regional studies, 52, pp. 1075-1085.
- Carlino, G.A., and Mills, E. M. (1987). The determinants of county growth. Journal of regional science, 27 (1), pp. 39-54
- Collantes, F., Pinilla, V., Sáez, L.A. and Silvestre, J. (2014). Reducing depopulation in rural Spain: the impact of innmigration. Population, space and place 20, pp. 606-621
- ESPON (2017): "Shrinking Rural Region in Europe", ESPON, European Union, (Available in https://www.espon.eu/rural-shrinking).
- Ganning, J.P.; Baylis, K. and Lee, B. (2013). Spread and backwash effects for nonmetropolitan communities in the U.S. Journal of regional research, 53 (3), pp. 464-480
- Graaff, T., Oort F. and Florax, R. (2012). Regional population-employment Dynamics across different sectors of the economy, Journal of regional science, 52 (1), pp. 60-84.
- Han M., Hakansson, J. and Ronnegard, l. (2016). To what extent do neighbouring population affect local population growth over time? 22, pp. 68-83
- Hedberg, C., & Do Carmo, R. M. (2012). Translocal ruralism: Mobility and connectivity in European rural spaces. In Translocal ruralism (pp. 1-9). Springer, Dordrecht.
- Henry, M. S., Barkley, D.L. and Bao, S. (1997). The hinterland's stake in metropolitan growth: evidence from selected southern regions. Journal of regional science, 37 (3), pp. 479-501
- Henry, M. S., Barkley, D.L. and Bao, S. (1997). The hinterland's stake in metropolitan growth: evidence from selected southern regions. Journal of regional science, 37 (3), pp. 479-501
- Hoogstra, G. J. (2012). Gender, space, and the location changes of jobs and people: a spatial simultaneous equation analysis. Geographical analysis, 44, pp. 47-64.
- Hoogstra, G. J. van Dijk, J. and Florax, R. (2011). Determinants of variation in population-employment findings: a quasi-experimental meta-analysis. Geographical analysis, 43, pp. 14-37
- Hoogstra, G. J. van Dijk, J. and Florax, R. (2017). Do jobs follow people or people follow jobs? A meta-analysis of Carlino-Mills studies. Spatial economic analysis, 12 (4), pp.
- LaFrombois, M., Park, Y. and Yurcaba, D. (2019). How U.S. shrinking cities plan for change: comparing population projection and planning strategies in depopulating U.S. cities. Journal of planning education and research, pp. 1-19
- LeSage, J. and Thomas-Agnan, C. (2015). Interpreting spatial econometric origin-destination flow models. Journal of regional research, 55 (2), pp. 188-208.

Keywords: *(spillovers,* neighbours, population dynamics, sectoral employment, spatial effects, territorial development*)*

JEL codes: (C3, R1, R23)