

DEVELOPMENT, TERRITORY, SUSTAINABILITY: SOME REFLECTIONS ON THE ROLE OF URBANIZATION AND DEMOGRAPHIC DYNAMICS¹

Federico Benassi, Luca Salvati

Abstract. Urban concentration played an important role in economic growth over the whole 20th century, being more recently less and less associated with the rate of population growth, suggesting the growing importance of other forces acting on a local scale. Large metropolitan regions, however, seem to escape from this general model, adhering to even more individual growth paths. Regional peculiarities also impact this framework, suggesting how cities growth is mostly unpredictable and largely volatile. Building models of urban growth means to take seriously into account the active constraints – basically land availability and spatial planning. These factors have the indirect objective of envisaging more sustainable urban models, allowing cities to approach sustainability objectives, and reducing environmental, economic, and social risks for the resident population. Moving from a sort of a structural crisis – characteristic of Southern Europe since decades – the present work reflects on a vast portfolio of theoretical approaches and empirical examples contributing to shift toward a resilience discourse in urban affairs. Focusing on both morphological and functional issues, these approaches may provide the appropriate vision to interpret metropolitan complexity in an upcoming urban world. Within this context, resilience of metropolitan regions can be understood as the ability to adapt to economic, technological, and political changes, affecting evolutionary dynamics and trajectories pursued by regional economies.

1. Introduction

A comprehensive understanding of (apparent and latent) mechanism underlying metropolitan growth, provides a more general contribution to the clarification of economic and social development processes on a local and regional scale, placing the territory at the centre of the debate on sustainable, spatially balanced, socially cohesive, and environmentally friendly model of urbanization (Drake and Vafeidis, 2004). Within this framework, cities are no longer places of tradition and history; over time, they have become regions of increasing complexity in all the pillars of sustainability (James, 2014).

¹ The Authors have equally contributed to the conceptualization and to the realization of the article.

Rapidly expanding cities have been seen as internally articulated and fragmented units, difficult to manage and plan, with a dominant position with respect to the surrounding territories, also due to the continuous extraction of natural resources from the nearest rural district. The most recent international reports on urban growth highlighted the crucial role of cities in the increasingly pervasive global transformations persistently observed on our planet – from climate change to water scarcity, from poverty to environmental migration (Iosifides and Politidis, 2005).

The inherent difficulty in analysing how urban systems are articulated, and consolidate, gradually growing or declining, highlights the complexity of this issue. Research tools should, therefore, adhere to a multidisciplinary vision that integrates different methodologies and empirical approaches. Quantitative analysis, exploiting the power of ‘big data’ available free of charge on a large scale, allows to draw increasingly updated maps of urban growth at an individual level, also through a retrospective analysis of sufficiently long periods, to capture the different socioeconomic dynamics that have shaped metropolitan evolution in the last century (Balk *et al.*, 2006; Quaas *et al.*, 2007; Balsa-Barreiro *et al.*, 2022).

Based on a large collection of indicators, statistical analysis allows for the investigation of integrated dynamics of growth and development at different observation scales, highlighting common growth paths and peculiar individual behaviours (Pisani-Ferry, 2005). These can be traced back to specific historical phases, regional social contexts, and economic cycles, thus contributing to the understanding of how urban development can adhere to long-term sustainability principles. The contribution presents some reflections, theoretically and empirically framed, about the role played by urbanization processes and demographic dynamics on sustainability considering development needs and environmental constraints. Empirical data are referred to the context of Europe and in particular to the Southern (or Mediterranean) Europe an area of extreme interest given its peculiarity in terms of demographic growth, urban structure, and socio-economic fragility (Heidenreich, 2022).

The structure of the paper is as follows: next section provides an overview of urbanization process as the engine of socio-economic change; section 3 describes the nexus between settlement models and population change; section 4 is devoted to the southern European urban contexts; section 5 holds some reflections on the future city and legacy of the (recent) crises; last section, 6, is devoted to summary considerations and conclusions.

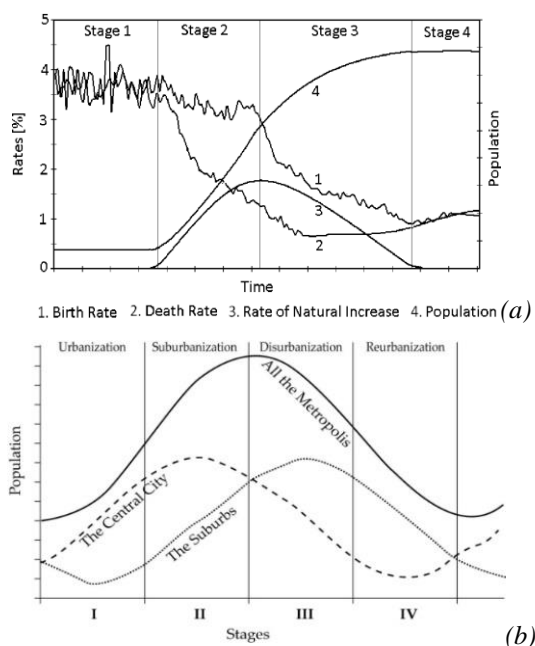
2. Urbanization: the engine of socio-economic change

The joint analysis of specific exploratory approaches, enables to derive an interpretative model of the life cycle of a city (Figure 1), based on progressive phases responding to different local contexts (Zuindeau, 2007). Currently, in Europe, we

have reached the end of a cycle, approaching a new urban experience, likely to be very different from the one experienced in the last century. To better prefigure this new development path, an empirical modelling of the individual growth paths can be proposed, following three interpretative axes:

- (i) the temporal one (identifying active change factors on medium-short time scales and longer times),
- (ii) the spatial one (identifying active change factors on local, regional, and wider spatial scales), and
- (iii) the sectoral one (highlighting the most significant dimensions of analysis).

Figure 1 – A summary representation of the first demographic transition in Europe representing the evolution over time of basic population indicators (a); a graphical illustration of the City Life Cycle, distinguishing four development waves in metropolitan regions of Southern Europe (b).



Sources: our elaboration on Kirk (1996) and Roberts (1991).

Despite the wealth of information, the issue of what future metropolitan models will be in Europe remains and requires further investigation. In consideration of the increasing consumption of land and natural resources, a combined study of the progressive demographic decline in many urban areas and the slower but still sustained settlement growth compared to the past, leads to potentially less sustainable urban models from an environmental perspective. Results should be,

then, more clearly demonstrated, from an economic and social viewpoint. Indeed, at the level of individual cities, there is a great heterogeneity in growth paths.

At the same time, the factors of urban concentration - which have played a crucial role in the last century - are less and less connected to the rate of urban growth, leading to an increasing importance of other forces acting at a local scale. Capital cities also seem to deviate from this general model, adhering to even more individualistic growth paths. The knowledge acquired so far, will contribute to building (deterministic and stochastic) models of urban growth, considering the active constraints – basically land availability and spatial planning. All these factors have the indirect objective of envisaging more sustainable urban models, allowing cities to approach those sustainability objectives long pursued by international organizations and local governments, and reducing environmental, economic, and social risks for the resident population (Samways 2022). Regional growth, and the consequent urban expansion, are considered as expression of cultural and intellectual characteristics of human society.

Within this context, the complex issue of quality of life was considered a pillar of urban sustainability and metropolitan resilience. The practical implementation of quality of life as a basic dimension of sustainable development allows to focus on the importance of composite dimensions of change when describing complex social, economic, and demographic phenomena underlying the regional sustainable development. Assuming quality of life as a relevant dimension of a truly sustainable development path, the empirical findings of future studies may support specific policies in both wealthy and economically depressed regions.

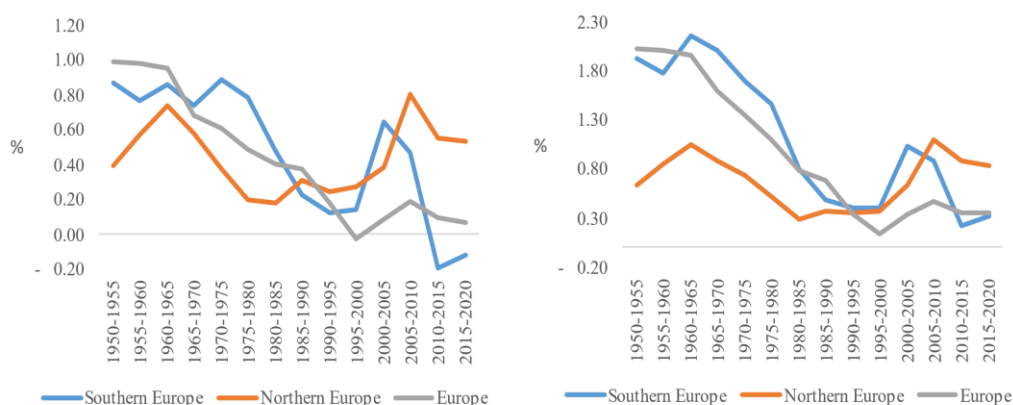
3. Settlement models and regional population change

Settlement models and urban growth were considered strictly interconnected issues since long time. These are two dimensions of regional development that have strong implications for a sustainable land management. Spatial planning, integrated with multifaceted policy dimensions characterizing Mediterranean regions (e.g. social, economic, demographic, cultural, financial, and institutional issues) seems to be an appropriate approach to urban sustainability. Permanent assessment of these factors allows for the implementation of different development scenarios and contributes to systemic and multi-scale strategies of metropolitan growth. The pursuit for comprehensive urban policies achieving an integrated management of human landscapes is finally discussed in the present context of urban crisis in Southern Europe (Figure 2). As a result of social transformations, investigating processes of change in regional spatial structures represents a relevant issue in the identification of monocentric, polycentric, and scattered urban models.

Recent literature has broadly documented how the shift from monocentric spatial organizations to more dispersed structures has determined an increase of

morphological entropy and fractal dimension of land parcels, with a declining importance of the distance from downtown as a factor of urbanization (Polinesi *et al.*, 2020; Benassi and Salvati, 2020; Salvati, 2022). Changes in urban population is a key indicator for understanding settlement models of a given socio-economic system especially if we consider together with the changes in total population. To this aim we can consider Southern Europe and Northern Europe as two regional contexts belong to the same socio-economic and even demographic system (i.e., the European one). These two regional contexts are very different in terms of demographic profiles and dynamics, socio-economic structures and labour market, urban hierarchy so that they represent an interesting case of study (Rees *et al.*, 2012; Potančoková *et al.*, 2021).

Figure 2 – Average annual rate of change of the total population (left panel) and of the urban population (right panel), 1950-205 (per cent). Southern Europe, Northern Europe, and Europe as a whole.



Author's elaboration on United Nations, Department of Economic and Social Affairs, Population Division (2018). *World Urbanization Prospects: The 2018 Revision, Online Edition*.

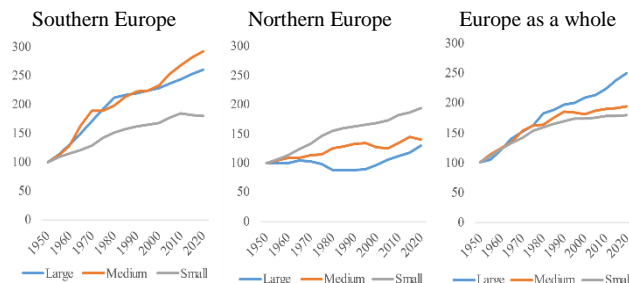
Empirical evidence about long period trends of the annual rate of change for total and urban population tell us a crispy tale. It is quite clear that the trend of urban population rate of change is divergent between Northern and Southern Europe with and inverse tendencies. Staring from 2000-2005 this path is even more clear. The idea is that in Northern Europe the population growth pass by the growth of urban population. While the opposite holds for Southern Europe. This pattern can be linked, in a certain way, to the better life conditions that normally characterise norther cities that are greener, smarter and with a higher level of well-being compared to the ones of the Southern Europe. An indicator of that is the growing level of spatial segregation of foreign population residing in Southern cities,

compared to the Northern European ones, and the growing level of spatial inequalities (Benassi *et al.*, 2020, 2023). Processes that act as detrimental to social cohesion and that have strongly negative effects on the social sustainability of the host societies (Cassiers and Kesteloot, 2012).

4. ‘Southern urbanities’ from global to local

Recent impulses toward sprawl have increased economic inequality and socio-spatial disparities contributing to a spatially unbalanced distribution of natural amenities with higher consumption of high-quality land. Urban settlements have globally expanded into rural land. Considering conservation of peri-urban biodiversity and local traditions at the fringe of mega-city regions, the role of a typical Mediterranean landscape dominated by olive groves was crucial in urban containment. Having a great cultural, culinary, and aesthetic importance, olive groves characterized Mediterranean peri-urban landscapes in a distinctive way. This contribution identifies individual processes of urban expansion and changes, proposing a new vision for sustainable land management in metropolitan contexts under quick socioeconomic transformations.

Figure 3 – Population in cities classified by size class of urban settlement, 1950-2020. Index number to a fixed base (1950 = 100). Southern Europe, Northern Europe, and Europe^(a).



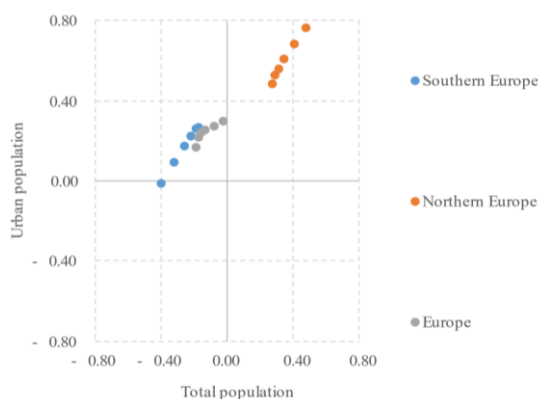
Author's elaboration on United Nations, Department of Economic and Social Affairs, Population Division (2018). *World Urbanization Prospects: The 2018 Revision, Online Edition*. ^(a)Small = less than 300,000 residents; Medium = from 300,000 to 1 million residents; Large = major than 1 million and more residents.

We report here follows some features about Southern Europe, Northern Europe, and Europe (Figure 3). In particular, we consider the variation over the last 70 years of the population in cities classified by size of urban settlement.

The different paths of long-time evolution (in terms of relative variations relating to the initial year) of the “urban” populations are clear. In Southern Europe

urban population residing in medium and large urban settlement recorded the major variation and are more intense in the first type of urban settlement starting from the 2000s. In the Northern Europe the paths is the opposite: here the most intense variations are recorded by population resident in small urban settlement. So, it seems that here a process of population redistribution is happened (and still happening). On the contrary in Southern Europe a process of relative concentration seems to emerge. The causes of these processes can lead to the different level of accessibility and spatial interconnections that characterize the urban settlements of the North and the South of Europe (Figure 4). Finally, if we look to Europe as a whole, we can clearly appreciate how the most intense variations are the ones of the population that reside in Large urban settlements, indicating a process of spatial concentration (Martí-Henneberg, 2005).

Figure 4 – Scatterplot, average annual rate of change (%) of total and urban population. Southern Europe, Northern Europe, and Europe. 2020-2050.



Author's elaboration on United Nations, Department of Economic and Social Affairs, Population Division (2018). *World Urbanization Prospects: The 2018 Revision, Online Edition*.

Within this framework, the specific location of Mediterranean urban regions in-between North-Western affluent cities and developing agglomerations of the world 'South', usually prevents scholars to identify such agglomerations as 'global city regions'. Their characteristics, including hyper-compact forms, dense settlements, poorly organized public services, and limited infrastructural networks, differ from those of the traditional global city regions, and hinder the achievement of a relevant position among the wealthiest European cities. Further discussion is needed on how recent transformations in Mediterranean cities are determined by the diffusion of sparse, low-density settlements thanks to population deconcentration affecting both rural and urban areas. Nevertheless, these regions appear as suitable to understand long-term dynamics of discontinuous and dispersed urban expansion for three main

reasons, as clearly recognized and discussed throughout the book. The first reason refers to urban growth policies depending on Mediterranean deregulation and informality, at least for a long-time window between the 1950s and the 1980s. Second, homogeneous demographic dynamics over space and time – as described by distinct phases of fast and slow population increase – has recently emerged. Lastly, at present, a complex system of interacting agents with local peculiarities, independently from land prices and zoning processes, characterized ‘Southern’ urban expansion.

5. Future cities and the legacy with socioeconomic crises and environmental challenges

The Lisbon strategy has put the need for sustainable growth at the heart of policy agenda in Europe. The new EU objective of territorial cohesion was added as a third dimension to the old objectives of economic and social cohesion (e.g. Pisani-Ferry 2005). In fact, the main demographic, economic, social, and environmental trends shaping Europe’s spatial development represent a challenge for a balanced and sustainable development in the whole Union (Tumpel-Gugerell and Mooslechner 2003). It was recognised that challenges such as regional socio-economic disparities and pressures on the natural heritage require an integrated and multidisciplinary approach in order to correctly monitor their impact as well as a common European-wide policy response (e.g. Drake and Vafeidis 2004). This is particularly true in a context of climate change and increased demand for mitigation and adaptation policies to global transformations, spanning from land-use and demography to socioeconomic structures, hitting distinctively urban and rural areas in Europe.

In this perspective, environmental quality and uncertainty as well as ecological risk in vulnerable regions in Europe, such as the Mediterranean countries, are becoming key words of the knowledge processes, which focus on economic/social dynamics and political actions (e.g. Quaas et al. 2007). Sustainable development has intended, for a long time, how to reconcile growth with environmental quality. In fact, sustainable development involves much more complex aspects of social, economic, and ecological relevance. However, the complexity of the environmental phenomena and their interaction with social and economic processes represents an important challenge for the scientific approach and requires the development of both advanced analytical procedures and adequate policy strategies (Steer 1998).

Problems related to unbalanced resources, economic polarisation, and territorial dichotomy along the Mediterranean basin are clearly the most significant to consider (e.g. Zuindeau, 2007). Their assessment requires an integrated, multidisciplinary approach. In fact, a territory prone to socio-ecological vulnerability represents a critical issue, which is not generally restricted to the resident population, but spreads to other parts of the country (Onate and Peco, 2005). The process often accelerates

territorial unbalances, which may ultimately lead to social conflicts countrywide (Iosifides and Politidis, 2005). Such conflicts may enhance migration movements, representing in the near future a serious obstacle to the achievement of sustainable development in many dry areas of southern Europe.

We assume urbanization as one of the crucial issues of global change. Nowadays, we are increasingly observing a remarkable correlation between socioeconomic changes, urban land use and landscape modifications. Urban expansion pattern is becoming gradually more dispersed and fragmented. Topography and natural amenities seem to contribute to shaping the territorial development in suburban districts, in particular the expansion of urban settlement into high-quality landscapes. These are, in turn, strictly associated with preference for environmental landscape expressed by citizens characterized by uneven socio-economic status, primarily income inequalities. The socio-spatial polarization has been typically observed in Mediterranean cities under structural crises. It results from intense recessions and continuous economic stagnation and may represent a risk in term of sustainability and liveability of modern urban areas. Therefore, it requires a punctual spatial planning activity to restore the image of inclusivity and equality that the “European city” once had.

Official UN forecasts draw future scenarios with differential growth rates for urban and total population. Even more marked will be the difference between the Southern European and Northern European contexts. In the former case, the intensity of the contraction of the total population will increase over time, but the urban population will also experience a slowdown in growth rates, which will nevertheless remain positive until the last period of observation, 2045-2050, when both urban and total population will have a negative growth rate. In the case of Northern Europe, the demographic growth pattern is significantly different. In fact, even though in this case growth rates will be decreasing over time, they will still remain positive in relation to both total and urban population.

Based on these premises, we require more flexible and generalized notions to evaluate urban expansion modes aimed at envisaging well informed socio-territorial policies to contrast unbalanced trajectories of regional development. In recent times, this trend of land development is becoming a common feature of a growing number of cities in advanced economies. Therefore, providing instruments of evaluation of the ongoing situation is a useful and scientific support in the decision-making process to improve the quality and equity of future urbanization in metropolitan areas around the world. Socially cohesive and spatially equitable cities seem to be the necessary antidote to urban crisis in Mediterranean regions. A robust alternative to ‘competitive models’ of local development seems to be imperative in a context reflective of a sort of ‘triple crunch’ (austerity policies, climate changes, and increases in oil prices). Going back to the local scale, abandoning interpretative

paradigms oriented toward the logic of ‘global networks’ paralleled the idea of socioeconomic resilience. While resilience appears as a permanent issue in socioeconomic thought, institutions and policy makers have properly considered the notion of ‘resilience’ in strategic planning and landscape design only in some cases. Dealing with resilience clearly requires a deep analysis of societies, institutions, and local contexts, understanding the resilient nature beyond the system. This ‘holistic’ concept further complicated research on local factors of urban resilience and should be imperatively associated with the sustainability challenge. Under this viewpoint, however, resilience theory provides the appropriate knowledge and informs local development built on local-based concepts, rather than focusing only on economic competitiveness factors. These policy perspectives are aimed at envisaging robust economic and social spaces, empowering producers, and consumers to interact locally, to reduce dependency upon distant and larger scale agents, and, in turn, shape the interplay between non-local (large) corporations and the nation state.

6. Concluding remarks

A territorially unbalanced demographic development is an obstacle to social cohesion, economic competitiveness, and socioeconomic development of territories. In this regard, the European Commission wrote in 1999 that "...a polycentric settlement structure across the whole territory of the EU with a graduated city-ranking must be the goal. This is an essential prerequisite for the balanced and sustainable development of local entities and regions and for developing the real location advantage of the EU vis-à-vis other large economic regions in the world" (European Commission 1999: pp. 21). In addition, that kind of models are not compatible with the idea of a sustainable growth model which need to be based upon network of smart and greener cities of medium dimension well interconnected and suited for boost processes of spatial (re)distribution of populations (AISP 2021).

Resilient systems rely upon peculiarities and resources to restart in case of sudden changes. In other words, resilience can be defined as a sort of regional ability to experience positive and socially inclusive economic success, which respects environmental limits and rides global economic purchase. Resilience of metropolitan regions can be further understood as the ability to adapt to economic, technological, and political changes, affecting evolutionary dynamics and trajectories pursued by regional economies. Moving from the structural crisis typical of Mediterranean cities since decades, the present work provides a wide collection of empirical examples and theoretical approaches to shift toward a resilience discourse in urban affairs – focusing on both morphological and functional issues, thus reaching the appropriate vision to interpret metropolitan complexity in an upcoming urban world.

Acknowledgements

Authors would like to thank the organizers of the LIX Scientific Meeting of the Italian Society of Economics, Demography and Statistics and the anonymous reviewers for their excellent work in revising a first version of the paper.

References

- AISP. 2021. *Rapporto sulla popolazione. L'Italia e le sfide della demografia*. Bologna: Il Mulino.
- BALK D.L., DEICHMANN U., YETMAN G., POZZI F., HAY S.I., NELSON A. 2006. Determining global population distribution: methods, applications and data. *Advances in parasitology*, Vol. 62, pp. 119-156.
- BALSA-BARREIRO J., MENDEZ M., MORALES A.J. 2022. Scale, context, and heterogeneity: the complexity of the social space. *Scientific Reports*, Vol.12, 9037
- BENASSI F., BONIFAZI C., HEINS F., LIPIZZI F., STROZZA S. 2020. Comparing residential segregation of migrant populations in selected European urban and metropolitan areas, *Spatial Demography*, Vol. 8, pp. 269-290.
- BENASSI F., NACCARATO A., IGLESIAS-PASCUAL R., SALVATI L., STROZZA S. 2023. Measuring residential in multi-ethnic and unequal European cities, *International Migration*, Vo. 61, No.2, pp. 341-361.
- BENASSI F., SALVATI L. 2020. Urban cycles and long-term population trends in a Southern European City: A demographic outlook, *Applied Spatial Analysis and Policy*, Vol. 13, No.1, pp. 777-803.
- CASSIERS T., KESTELOOT C. 2012. Socio-spatial inequalities and social cohesion in European cities. *Urban Studies*, 49(9), pp. 1909-1924.
- DRAKE N.A., VAFEIDIS, A., 2004, A review of European Union funded research into the monitoring and mapping of Mediterranean desertification, *Adv. Env. Monit. Mod.*, Vol. 1, pp. 1-51.
- EUROPEAN COMMISSION. 1999. *European Spatial Development Perspective: Towards Balanced and Sustainable Development of the Territory of EU*. Luxembourg: Publications Office of EU.
- HEIDENREICH M. 2022. Social cohesion in Europe. Between Europe wide-convergence and social and territorial inequalities. In HEIDENREICH M. *Territorial and Social Inequalities in Europe. Challenges of European Integration*, Springer, Cham., pp. 313-339.
- IOSIFIDES T., POLITIDIS T., 2005, Socio-economic dynamics, local development and desertification in western Lesvos, Greece. *Local Environment*, Vol. 10, pp. 487-499.
- JAMES P. 2014. *Urban sustainability in theory and practice: circles of sustainability*. London: Routledge.

- KIRK, D. 1996. Demographic transition theory. *Population Studies*, Vol. 50, No. 3, pp. 361-387.
- MARTÍ-HENBERG J. 2005. Empirical evidence of regional population concentration in Europe, 1870-200. *Population, Space and Place*, Vol. 11, No.4, pp. 269-281.
- ONATE J.J., PECO B., 2005, Policy impact on desertification: stakeholders' perceptions in southeast Spain, *Land Use Policy*, Vol. 22, pp. 103-114.
- PISANI-FERRY J. 2005, *An agenda for a growing Europe*. Oxford: Oxford University Press.
- POLINESI F., RECCHIONI M., TURCO R., RONTOS K., RODRIGO-COMINO J., BENASSI F. 2020. Population trends and urbanization: simulating density effects using a local regression approach, *ISPRS International Journal of Geo-Information*, Vol. 9, No.7, 454.
- POTANCOKOVÁ M., STONAWSKI M., GAILEY N. (2021). Migration and demographic disparities in macro-regions of the European Union, a view to 2060. *Demographic Research*, 45, pp. 1317-1354.
- QUAAS, M.F., BAUMGARTNER, S., BAKER, C., FRANK, K., MULLER, B. 2007, Uncertainty and sustainability in the management of rangelands, *Ecol. Econ.*, Vol. 62, pp. 251-266.
- REES P., VAN DER GAAG N., DE BEER J., HEINS F. (2012). European regional populations: Current trends, future pathways, and policy options, *European Journal of Population*, 28(4), pp. 385-416.
- ROBERTS, S. (1991). A critical evaluation of the city life cycle idea. *Urban Geography*, Vol. 12, No. 5, pp. 431-449.
- SALVATI L. 2022. Endogenous population dynamics and metropolitan cycles: long-term evidence from Athens, and eternally Mediterranean city, *European Journal of Population*, Vol. 38, No. 5, pp. 835-886.
- SAMWAYS D. 2022. Population and Sustainability: reviewing the relationship between population growth and environmental change, *Journal of Population and Sustainability*, Vol. 6, No. 1, pp. 15-41.
- TUMPEL-GUGERELL, G., MOOSLECHNER, P. 2003, *Economic convergence and divergence in Europe. Growth and regional development in an enlarged European Union*, UK: Edward Elgar.
- ZUINDEAU, B. (2007), Territorial equity and sustainable development, *Environmental Values*, Vol. 16, pp. 253-268.

Federico BENASSI, Department of Political Sciences, University of Naples Federico II, federico.benassi@unina.it

Luca SALVATI, Department of Methods and Models for Economics, Territory and Finance, Sapienza University of Rome, luca.salvati@uniroma1.it