

## **Special Issue\_**

# **Regional Perspectives in Economic Complexity: The Role of Scale in Models and Theories**

### **Guest editors**

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The development of Economic Complexity (EC) methods has given new impetus to the study of regional capabilities. This Call aims to stimulate insights from a regional perspective regarding the relationship between EC tools, different types of capabilities, and their respective scales of operation (geographical, temporal, organizational, cognitive, etc.). Economic complexity provides methods that latently measure the extent of local productive capabilities through the spatial distribution of economic activities. In recent years, a vast literature has emerged that applies EC tools to the study of regional systems and, more recently, to cities (Balland & Rigby 2017; Gao & Zhou 2018; Balland et al. 2020; Di Clemente et al. 2021), and even to amenities (Juhász et al. 2023) and firms (Laudati et al. 2023; Zhang & Rigby 2022). Economic complexity offers a potentially powerful paradigm to understand key societal issues and challenges of our time (Balland et al. 2022), such as the green transition (Mealy and Teytelboym, 2022; Sbardella et al., 2018; Barbieri et al. 2023), development and technological change (Mewes & Broekel 2022), income inequality (Hartmann et al. 2017; Sbardella et al. 2017; Froy et al. 2022), productivity polarization (Basile & Cicerone 2022), and also fertility changes (Innocenti et al. 2021).

The study of economic complexity has accelerated in the last decade thanks to two key contributions. The first involved the introduction of Relatedness metrics (Hidalgo et al. 2007; Tacchella et al. 2023), which measure the overall affinity between a specific activity and a place, explain path dependency, and predict which activities will grow or decline in a place (Neffke et al. 2011). The second contribution was the development of Complexity and Fitness metrics (Hidalgo & Hausmann 2009; Tacchella et al. 2012). These metrics use data on the geography of activities to estimate the local availability of capabilities, their diversity and sophistication, and finally to predict future economic dynamics (Cristelli et al. 2015).

Since its introduction, economic complexity has been applied to various dimensions of economic activities such as product exports, value-added exports, patents, employment, and research articles (Hidalgo, 2021; Pugliese et al., 2019). Recent efforts seek to combine multiple dimensions, revealing complementarities between different measures in exploring economic outcomes (Pugliese et al., 2019; Patelli et al., 2023; Stojkoski et al., 2023) and interdependencies between geographical and technological scales in the space of innovation (de Cunzio et al., 2023; Pugliese et al., 2019). Given the effectiveness of complexity measures at the national level, a natural extension is to apply them to the regional and metropolitan levels, which are the fundamental units of economic geography and the focal points of the global economy (Jacobs 1969; Storper 1992) and global networks. In fact, economic geography is strongly scale-based, as there is no basis for assuming that associations existing at one scale will also exist at another (Stone 1968). The scale perspective is also necessary to reconcile the process of diversification with that of specialization (Balland et al., 2022). Both theoretically and empirically, the literature has not yet reached a consensus on how to operationalize EC indicators at different scales. The relationship between specialization and diversification at different scales and for different types of capabilities is still relatively unexplored (with some notable exceptions such as Pugliese et al., 2019; O’Clery & Kinsella, 2022; Sbardella et al., 2017). Moreover, a growing body of literature, such as Evolutionary Economic Geography (EEG), is using the principle of relatedness (PoR) (Hidalgo et al. 2018) to open the black box of the mechanisms that facilitate the transmission of knowledge. This literature empirically investigates, through various indicators (Tacchella et al. 2023, Schetter et al., 2024), the importance of different forms of relatedness (Farinha et al. 2018; Jara-Figueroa et al. 2018), their evolution over time (Diodato et al. 2018), the role of agents of structural change (Neffke et al. 2018; Elekes et al. 2019; Landman et al. 2023), labor markets (Farinha et al. 2019; Neffke and Henning 2013; Aufiero et al. 2024), and policy implications (Hidalgo 2023; Balland & Boschma 2022, Li & Neffke 2024; Pugliese and Tacchella 2020).

These tools have also been used to build regional development policy frameworks—such as the European smart specialization strategy or the Green Deal (Balland et al. 2018; Diodato et al 2023; Pugliese and Tacchella 2021; Sbardella et al. 2022). The debate on the usefulness of the PoR is very lively (Deegan et al. 2021; Hassink & Gong 2021; Rigby et al. 2022; Li & Neffke 2022). In particular, on the policy front, there are still open questions on the "normative" interpretation of related diversification and the potential risks of low-complexity lock-ins when capitalizing only on existing strengths, as opposed to historical cases of economic success aimed at diversifying and “complexifying” output through targeted industrial strategies. This is linked to the call for greater attention to path creation and unrelated diversification, as

well as the factors that promote them (MacKinnon et al. 2019; Coniglio et al. 2021; Boschma et al., 2023). However, it is key to stress that Economic Complexity analysis provides a snapshot of an economy's specialization profile and can offer valuable forecasts into future diversification opportunities that lead to complexity gains. Still, it does not preclude the role of industrial policy in selecting strategic development directions.

Specifically, we are interested in papers that address and respond to the following questions:

- What is the role of local and regional economic complexity in relation to different economic and non-economic outcomes? Are there differences compared to the country-level literature?
- What is the relationship between the principle of relatedness and spatial scale across different domains of knowledge? Are there substantial differences in the mechanisms of knowledge transmission at different spatial or temporal scales?
- How can micro-level information, such as occupations, skills (Turco & Maggioni 2022), and organizational structure, help us better understand groups, synergies, and skill complementarity within firms?
- At which scales do the processes of diversification and specialization occur? This includes, but is not limited to, spatial, temporal, and cognitive scales (McNerney et al., 2021).
- What are the challenges in building sound EC indicators at different geographical scales with different underlying patterns of specialization/diversification?
- Who are the agents of regional structural change, and what factors promote path creation?
- What factors explain economic complexity, and what is their geography?
- What are the economic mechanisms linking complexity, inequality, and socio-economic sustainability?
- What are the intersections between EC tools and various literatures such as the regional capabilities framework (and EEG) (Frenken et al., 2023; Kogler et al., 2023), the resource-based view (RBV) of the firm (Lawson, 1999; Neffke, 2018), the territorial capital approach (Camagni and Capello, 2012), industrial clusters (Delgado et al., 2014, 2016; Becattini et al., 2014), urban economics (Ellison & Glaeser, 1997, 1999), Evolutionary economics (Dosi & Nelson 1994) and complex adaptive systems (CAS) (Batty, 2009; Martin & Sunley, 2007)?
- What are the major policy implications from a regional perspective? How do these connect to the strategies of related and unrelated diversification?

## Deadline

1. **Call for papers:** September 2024
2. **Deadline submission:** February 2025 (working paper) max 6.000 words?
3. **Selection:** March 2025
4. **Submission full paper:** July 2025
5. **Publication of the special Issue:** 2026

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