REGIONAL INEQUALITIES: KNOWLEDGE FRONTIERS AND DEBATES

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Abstract
Regions are coherent spatial units (i.e., sub-national level) that share common (natural or artificial) features and consist of actors that share common goals. The regional problem exists when there are marked inequalities in the standard of living enjoyed by people in different regions. Regional science, the interdisciplinary scientific locus that is concerned with regional phenomena, aims, precisely, at dealing with the regional problem, and provides insight not only into science *per se* but also into policy making. The paper provides a comprehensive review of the literature on regional inequalities aiming at identifying current knowledge frontiers and debates. The study of regional inequalities is, apparently, at the heart of regional science.

Keywords: regional inequalities, literature review, knowledge frontiers and debates

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1. Introduction

Space – together with time – supports the existence of the world (Massey, 2005). Regions are coherent spatial units (i.e., sub-national level) that share common (natural or artificial) features and consist of actors that share common goals (Paasi, 1998). The regional problem exists when there are marked disparities in the standard of living enjoyed by people in different regions (Le Grand and Robinson, 1976). Regional science, the interdisciplinary scientific locus that is concerned with regional phenomena, aims, precisely, at dealing with the regional problem, and provides insight not only into science *per se* but also into policy making.

Fueling the relative academic debate and providing insight to the evaluation of the relative policies, the evolution of regional inequalities is an issue of utmost importance. This applies even to the smallest spatial entities in terms of population (Petrakos et al., 2005a; Kallioras, 2010). Hence, the study of regional inequalities – in particular, the study of regional convergence / divergence – is at the heart of regional science. From the policy viewpoint, the study of regional convergence / divergence may interpret as a sign with respect to the evaluation of the effectiveness and the efficiency of the implemented regional policy mix. Regional policy aims, precisely, at reducing the level of regional inequalities in a growth-enhancing environment. From the theory viewpoint, the study of regional convergence / divergence may serve as an empirical exercise with respect to the affirmation of regional development theories. Questioning the position of the neoclassical theory (Heckscher, 1919/1991; Ohlin, 1933/1966; Solow, 1956; Swan, 1956; Greenwood, 1975; Borjas, 1991; *inter alia*) that inequalities are bound to diminish with growth through the activation of market-emanating convergence mechanisms in a policy-free environment, theories with sharply different policy implications (Myrdal, 1957; Romer, 1986; Lucas, 1988; Krugman, 1991; Fujita, 1993; Rebelo, 1991; Venables, 1996; *inter alia*) stress the argument that growth is a spatially selective and cumulative process.

Nevertheless, achieving convergence is not a sufficient – even though it is a necessary – condition for achieving economic, social, and territorial cohesion (Barca, 2009). Encapsulated in the homonymous EU policy (i.e., Cohesion Policy), cohesion is a topmost EU political priority. Cohesion is not an easy notion to define, and, although there is often a tacit understanding of what it means, it is open to a variety of interpretations (Hooghe and Keating, 1994; Begg, 2003). Largely, economic cohesion is related to economic performance indicators (Cappelen et al., 2003; Bradley, 2006), social cohesion is related to shared values and equal opportunities (Beauvais and Jenson, 2002; Jeannotte, 2003), and territorial cohesion is related to regions' distinctive potentials for development (Jouen, 2008; Waterhout, 2008). Territorial cohesion has been added next to the 'traditional' pillars of economic and social cohesion as the result of a long-lasting process of intergovernmental cooperation in the sphere of spatial planning.

The focus on territorial cohesion stresses out the fact that regional inequalities have an intrinsic territorial dimension and accentuates the pivotal role of territorial capital in the growth process (Camagni, 2007; Camagni, 2008; Camagni and Cappello, 2013; Capello, 2018). Territorial capital consists of the bundle of features that shape the particular territorial identity of regions (Herrschel and Newman, 2002) and emphasize on the role of regions as sources of critical development assets in the form of increasing returns effects and positive externalities (Scott and Storper, 2003). This is so considering that territorial capital confers added value and multiplicative benefits to the structural characteristics of regions (Fratesi and Perucca, 2019). The so-called 'third Italy' (Brusco, 1982) and the concept of 'innovative milieu' (Aydalot, 1986; Camagni, 1991) are reminders of the significance of territorial capital in regional growth process.

Given the extremely unfavorable economic environment in recent years (i.e., post-2010), the concept of regional resilience has attracted academic attention, mainly because of the generalized sense of uncertainty and insecurity, which has necessitated a search for formulas for adaptation and survival (Lagravinese, 2015). The intensity, geographical coverage and multidimensional expression of the consecutive crises (i.e., economic crisis, pandemic crisis, refugee crisis, energy crisis) provide an arena for new research related to the evolution of regional inequalities (Artelaris et al., 2024). Regional resilience is interwoven with the ability to withstand external pressures, the capacity to respond positively to external changes, the longer-term adaptability (or learning capabilities), and the capacities of governmental authorities to engage in the appropriate kinds of planning, action and social learning (Bristow, 2010; Pendall et al., 2010; Simmie and Martin, 2010; Cuadrado-Roura and Maroto, 2016; Eraydin, 2016; Fratesi and Rodriguez-Pose, 2016; Tsiapa et al., 2018).

Regional resilience highlights that regional economies should possess pre-existing resources and capabilities encompassing diversified economic activities and institutions, the capacity to adapt to changing conditions, the capacity to reorganize in the event of a shock, an emphasis on small-scale, localized activities embedded in the capacities of the local environment, and a healthy core or supporting economy of family, neighborhood, community and civil society that is strong in reciprocity, cooperation, sharing and

collaboration in the delivery of essential activities (Martin and Sunley, 2007; Psycharis et al., 2014; Fromhold-Eisebith, 2015; Giannakis and Bruggeman, 2017). Such an ascertainment necessitates the territorialization of EU Cohesion Policy towards strengthening the territorial capital of regions. Formulating and implementing territorial policies means, on the one hand, enhancing a just spatial distribution of opportunities and outcomes and, on the other hand, alleviating the (generalized) climate of discontent. Both objectives represent important milestones in the course of European integration and showcase (re-)emerging topics in regional science literature.

The need for the enhancement of a just spatial distribution of opportunities and outcomes and the need for the alleviation of the climate of discontent stem from the post-crises emergence of territorial discontinuities that complement the pre-crises-entrenched territorial divisions. Indeed, in the, otherwise, integrated EU space, there are regions that are disconnected from their physical, social, and economic networks (Pérez Soba et al., 2013), experiencing relative or, even, absolute decline. Evidently, space matters and shapes the potential for development not only of territories but also of the individuals who live in them and, consequently, development policies should be imbued with the place-based approach (Barca et al., 2012).

The paper provides a comprehensive review of the literature on regional inequalities aiming at identifying current knowledge frontiers and debates. The study of regional inequalities is, apparently, at the heart of regional science. The current section of the paper is introductory. The next section provides the state of the art. The third section highlights the issues that remain open. The last section of the paper offers the conclusions.

2. Regional inequalities: Knowledge frontiers

The dominant approaches for evaluating regional inequalities are β-convergence and σ-convergence (Baumol, 1986; Barro, 1991; Barro and Sala-i-Martin, 1992; Sala-i-Martin, 1996). Usually, β-convergence and σ-convergence are examined together. The former is a necessary, though not sufficient, condition for the latter (Barro and Sala-i-Martin, 1995). The concept of β-convergence refers to the relation between the levels of a (regional) dataset at a given date and the consequent corresponding growth rates for a given period, either in an unconditional (i.e., absolute) or in a conditional (i.e., *ceteris paribus*) fashion. Positive values of β coefficient imply that regions with higher initial values tend to experience higher growth (i.e., divergence). Negative values of β coefficient imply that regions with higher initial values tend to experience lower growth (i.e., convergence). The concept of σ-convergence may express as the ratio of the standard deviation of a (regional) dataset to the corresponding mean, at a given date. High(er) values of σ coefficient indicate high(er) levels of inequality, whereas low(er) values of σ coefficient indicate low(er) levels of inequality. Increasing values of σ coefficient indicate increasing levels of inequality (i.e., divergence), whereas decreasing values of σ coefficient indicate decreasing levels of inequality (i.e., convergence).

Focusing exclusively on the approaches of β-convergence and σ-convergence runs the danger to provide a misleading picture as regards the evolution of regional inequalities. This is so as both concepts follow the rationale of linearity and thus, unavoidably, rule out the possibility that the regional economies considered may form convergence clubs. In the middle of an imaginable theoretical spectrum, from the neoclassical school to its critics, the concept of convergence clubs lays on theoretical models that yield multiple steady-state equilibria and classify the regional economies considered into different groups with different convergence characteristics (Azariadis and Drazen, 1990; Durlauf, 1993; Galor, 1996; Quah, 1996). In particular, the concept of convergence clubs points out that it is quite natural to expect that regional economies may form convergence clubs that are themselves diverging from each other. In other words, it is quite natural to expect that there is convergence within each convergence club but there is not convergence across convergence clubs. This means that convergence and divergence trends may coexist, although in different proportions and at different strengths. Empirically, notable approaches for investigating for the emergence of convergence clubs are the gaps approach (Chatterji, 1992; Chatterji and Dewhurst, 1996), the regression trees (Durlauf and Johnson, 1995, Postiglione et al., 2010), the stochastic convergence approach (Bernard and Durlauf, 1995; Hobijn and Franses; 2000), and the asymptotic cointegration (Phillips and Sul, 2007; Phillips and Sul, 2009).

Overall, the well-established regional convergence / divergence empirical literature, utilizing a variety of methodological approaches, offers a plethora of studies testing for regional convergence in the EU. Following the tradition of neoclassical thinking, the underlying research hypothesis refers, explicitly or implicitly, to the ability of market forces to generate faster growth in less advanced areas, and thus to allow them to catch-up with their more advanced counterparts. Yet, it seems that the EU experience does not support the neoclassical claim. This is so as core EU regions generate advantages, leading to differential growth performance, through the entrenchment of agglomeration economies and operate as hubs for

economic activities associated with increasing returns to scale. Conversely, peripheral EU regions mainly host activities associated with constant returns to scale. Engaged in an integration process with more advanced partners, peripheral EU regions tend to develop the inter-industry type of trade relations. The latter imposes specialization, typically, in labor- and / or resource-intensive economic activities. This is the outcome of the inability of the peripheral, less advanced, EU regions to be competitive in the markets of capital- and knowledge-intensive economic activities (Brülhart and Elliott, 1998). Even though it provides an alternative – and perhaps the only feasible alternative – route for the exploitation of the available skills, it is doubtful whether such a structural differentiation can produce convergence in the long-run (Kallioras and Petrakos, 2010; Petrakos et al., 2012).

The vast majority of the empirical regional convergence / divergence studies is conducted in terms of per capita GDP. This is the case, despite the fact that the necessity for constructing 'beyond GDP' composite indicators has been, extensively, highlighted (Costanza et al., 2009; Stiglitz et al., 2009; Stiglitz et al., 2018; *inter alia*). Such a necessity reflects the recognition that development is based on the 'economy-society-environment' triptych, and it cannot be seen as a mere economic concept (Meadows et al., 1972; Brundtland, 1987; Sen, 2001; *inter alia*). The rationale for the construction of composite indicators for the measurement of regional development, and consequently for the assessment of regional inequalities, is that composite indicators are the 'appropriate' tools for evaluating multidimensional phenomena. Composite indicators lie in the algebraic combination of individual variables, each of which can assess a single dimension of the relevant multidimensional phenomenon (Nardo et al., 2005; Saisana et al., 2005). Therefore, composite indicators are more understandable, as they provide the general picture, and possibly more interesting, as they 'compress' the information. Even though, in principle, there is unanimity about the indisputable importance of composite indicators (Becker et al., 2017; Dialga and Giang, 2017), there is, still, a lack of unanimity regarding the acceptance of the 'appropriate' composite indicators (due to subjective choices that are made for the compilation).

Against the backdrop of the 'beyond GDP' discussion, studies conducted at the country level (Martin and Sanz, 2003; Yin et al., 2003; Crespo Cuaresma et al., 2008; Böwer and Turini, 2010; Halmai and Vásáry, 2010; Cavenaile and Dubois, 2011, *inter alia*) confirm that, prior to the eruption of the economic crisis, the EU has experienced a persistent convergence process. However, such a process may mask a pattern of divergence inside each country. This is because convergence at the European level has been partly driven by the dynamism of the metropolitan centers, causing dualistic phenomena at the national level (Dunford, 1994; Abraham and van Rompuy, 1995; Puga, 2002; Barrios and Strobl, 2005; Petrakos et al., 2005b; Mora, 2008; *inter alia*). These seemingly conflicting results may simply indicate that, in reality, there is a concomitance of regional convergence and regional divergence trends (Giannetti, 2002; Ezcurra and Rapún, 2006; Artelaris and Petrakos, 2016). After the eruption of the economic crisis, empirical studies indicate that the EU started to experience either trends of reverse convergence or trends of divergence (Pina and Sicari, 2021; Capello and Cerisola, 2023). Particularly, it has been unveiled that the process of convergence that took place among the EU countries prior to the economic crisis was driven primarily by public policies and not by market forces (as the neoclassical doctrines suggest) (Petrakos et al., 2021).

The body of empirical literature on the evolution of regional inequalities reveals facts that are relevant for explaining the emergence of the so-called 'places that don't matter' and the geography of discontent in the EU (Dijkstra et al., 2019; McCann, 2020). The discontent stems, mainly, from the feeling of left-behind. Such a feeling is stronger in regions that during the economic crisis have experienced income decline, job losses, and brain-drain both because of inherent structural weaknesses and because of the implemented austerity policies. In the ballot-box, discontent is expressed as 'the revenge of places that don't matter' (Rodriguez-Pose, 2018), with the vast majority of people voting in favour of populist and nationalistic parties. Brexit is, apparently, the most evident case of discontent (Becker et al., 2017; Schimmelfenig, 2018; Petrakos and Sotiriou, 2021) and represents a historically unprecedented fact that is associated with the withdrawal of a country from a deep integration area. Given the central place of the UK in the commercial and financial relations through its complex cross-border supply chains and its intense trade relations with the EU, Brexit is associated with an unexpected, unique, and large trade shock, and a capability to bring serious disruptions to trade, to dense production networks and to the global value chains (McCann, 2018; Casadei and Iammarino, 2021).

Place-based (or place-sensitive) policies may be the best response to effectively address the adverse effects of the geography of discontent (Iammarino et al., 2017; Iammarino et al., 2019). Place-based policies go beyond mere compensatory measures, concentrating on the turning to good account of the untapped potential of the left-behind places. Instead of designing and implementing isomorphic policies (Chien, 2008), place-based policies, recognizing the territorial approach to development, take into consideration that both

the geographical context (i.e., in terms of social, cultural, and institutional characteristics) and knowledge matter in policy intervention. Place-based development policies open the door to development policy models with open-ended spatial boundaries, as a response to the criticism of the supply-side, top-down ('one-size-fits-all') policy paradigm (Abdulai, 2017; Constantin, 2021). The latter that, mostly, represents policies aiming at the provision of infrastructure and at state-aid industrialization have struggled to cope with the more heterogeneous economic reality emerging from globalization (Roberts, 1993), often ending as 'strategies of waste' (Rodriguez-Pose and Arbix, 2001). At the backdrop of the territorialization of EU Cohesion Policy, inequalities are to be arranged so that 'they are to be of the greatest benefit to the least-advantaged members of society' (Rawls, 1971).

The turn to place-based policies accentuates the importance of multi-level governance (Hooghe and Marks, 2001; Hooghe and Marks, 2003; Hooghe and Marks, 2010). The latter may encapsulate the coordination of actions by the different tiers of government (i.e., the EU, the EU member-states, and the regional authorities) in order to create and implement the (place-based) EU policies. Multi-level governance may mediate the effects of Cohesion Policy in ways that affect its performance and impact (Surubaru, 2017). A couple of major trends in the evolution of the governance systems of European states can be highlighted (Vedrine, 2018). On the one hand, the EU member-states create supranational organizations and bodies aiming at their economic and political integration (within the EU). On the other hand, the EU member-states seek to improve public sector efficiency by locating decision-making power as close as possible to citizens. Literature suggests that the quality of governance (i.e., administrative capacity) at the regional level support effective delivery in Cohesion Policy (Bachtrögler et al., 2020; Mendez and Bachtler, 2024). Administrative capacity results from the combinations of skills and resources, while the interplay between different competencies, at each administrative level, can explain cases of policy failure or success (El-Taliawi and van der Wal, 2019).

Evidently, inequalities are first and foremost a lack of fair equality of opportunities and a just democracy is a society where all individuals have similar access to the resources which will allow them to be better off (Drozdz, 2014). To this end, the concept of spatial justice (re-)emerges. While spatial inequalities focus on the existing disparities across different spatial units, spatial justice is concerned with addressing these disparities and promoting fairness and equity in spatial distribution. The concept of spatial justice challenges the notion that access to resources and opportunities is evenly distributed, and, instead, focuses on how space influences social and economic outcomes. Spatial justice lies on the premise that the organization of space is a crucial dimension of human societies and reflects social facts and influences social relations (Lefebvre, 1968; Lefebvre, 1972; Lefebvre, 1974; Soja, 2010). In essence, tackling social injustices through formulating territorial policies means tacking the feeling of being 'trapped in space' (Harvey, 1989) or being 'chained to a place' (Bourdieu, 1999), together with avoiding the risk of 'lost territories' throughout Europe, despite their untapped economic and social potential. Spatial justice is thus a crucial challenge and an imperative; an end in itself as well as a catalyst for enhancing the process of European integration. Indeed, emerging from the recognition that the shift towards sustainability should not leave certain groups or regions behind or exacerbate existing inequalities (Sovacool et al., 2018; Jänicke, 2018; Green and Gambhir, 2020), the concept of just transition is at the forefront. Just transition represents a place-based set of principles, processes, and practices that build economic and political power to shift from an extractive economy to a regenerative economy and emphasizes the need to develop strategies in order to ensure that vulnerable groups and places are not disproportionately burdened (Giannakopoulos et al., 2022; Petrakos et al., 2022).

Although economic integration has greatly enhanced the mobility of products, people, and money this does not imply the ubiquity of economic activity (Scott et al., 2001). In the course of time, the EU has managed, in a series of enlargements, to expand, first southwards and then eastwards, integrating economies less and less (technologically) developed. Europe is gradually moving from a 'space of States' to a 'State of spaces' (Karanika and Kallioras, 2018) and from a 'space of places' to a 'space of flows' (Castells, 2020). In a nutshell, the pure essence of the European economic integration process is the gradual 'thinning' of (the artificial) border impediments. Thus, as the process of European economic integration is in full swing, European territories have been experiencing a period of unprecedented change (Brülhart et al., 2004; Crescenzi et al., 2014), being transformed into integral parts of the European economic space. Yet, the latter, instead of getting 'flat', is getting more 'curved', as it appears to be, simultaneously, characterized both by European 'flattening' and local 'steepening', and thus more 'sticky' (McCann, 2008). Such 'stickiness' may even reinforce spatial externalities (Harvey, 2011; Kemeny, 2011; Piketty, 2014), and thus it becomes apparent why geography 'matters' so much (Gertler, 2003). Technological change – a (or the) main force 'behind perpetually rising standards of living' (Grossman and Helpman, 1994) – becomes endogenous and changes 'differently in different territories' (Rodriguez-Pose and Crescenzi, 2008; Faggian and McCann 2006; Kallioras et al., 2021). Thus, the unique aspects of a locality and the ability to create and strengthen a

comparative advantage are at the heart of economic development and success (Storper, 1997; Acemoglu and Robinson, 2000; Rodrik et al., 2004; Boschma, 2005; Ertur and Koch, 2007; Storper, 2011; Lu and Wang, 2015; Caragliu and Nijkamp, 2016). This is especially so taking into consideration the enormous impacts that modern globalization trends (or global mega-trends) (Bhandari and Heshmati, 2005; Ferguson, et al., 2010) are playing in shaping regional economic geography.

During the recent years, a wave of novel concepts, such as the related variety (Frenken et al., 2007; Hassink et al., 2014; Aarstad et al., 2016; Boschma et al., 2023; *inter alia*), the innovation systems (Lundvall, 2007; Asheim, 2012; McCann and Ortega-Argilés, 2013; Tsvetkova et al., 2020, *inter alia*), the entrepreneurial ecosystems (Stam, 2015; Acs et al., 2017; Spigel, 2017; Stam and van de Ven, 2021; *inter alia*) and the economic complexity (Hidalgo and Hausmann, 2009; Tacchella et al., 2013; Hausmann et al., 2014; Balland et al., 2022; *inter alia*), has emerged aiming at offering a (more) sophisticated understanding of the regional growth processes. The concept of related variety indicates that not only the stock of inputs affects growth but also the precise composition in a qualitative sense. Thus, regions specializing in a particular composition of complementary sectors experience higher growth rates than regions specializing in sectors that do not complement each other. Innovation systems refer to the wider organizations and institutions affecting and supporting learning and innovation. The concept of innovation systems focuses on learning, knowledge, networks and institutions as central elements in enabling (or hindering) innovation. The concept of entrepreneurial ecosystems is used for understanding the context for entrepreneurship in particular territories. The entrepreneurial ecosystem comprises a set of interdependent actors and factors that are governed in such a way that they enable productive entrepreneurship. The concept of economic complexity supports the idea that growth, development, technological change, income inequality, spatial disparities, and resilience are the visible outcomes of hidden systemic interactions. Thus, the thorough understanding of economic phenomena presupposes the thorough understanding of the systemic interactions that produce them. The aforementioned concepts – even though different *inter se* – may shed light on the growth paths of both more advanced and less advanced regions taking into consideration the fundamental growth mechanisms that refer to the uniqueness of knowledge and to the diversity at the individual, organizational and system levels.

The experience of the EU regions highlights that regional inequalities are the outcome of the interaction of economy-wide forces and regional characteristics. On the one hand, there is technological progress that – together with the process of globalization – has inverted the geography of jobs. The inversion concerns the fact that many rural areas and middle-to-small metropolitan areas that were once quite prosperous have been characterized by a combination of job loss, declining labor-force participation or declining per capita income relative to the national average. This is so as output is, now, based on cutting-edge technologies and finance services that favor large metropolitan areas and draw from pools of skilled workers in high-turnover labor markets. On the other hand, there are the place-specific endowments of people and firms, the formal and informal institutions, the capacities for innovation, and the reaction to changes. Overall, regional development theories suggest that regions benefiting from internal or external economies of scale and a favorable geography, having significant endowments of natural resources or high-quality human resources, large market size and a favorable structure, or simply enjoying favorable initial conditions are able to compete in the new integrated economic environment and do well in terms of growth performance.

3. Regional inequalities: Debates

The theoretical debate on regional inequalities is driven by the competition between the so-called convergence (i.e., the proponents of the neoclassical theory) and divergence (i.e., the critics of the neoclassical theory) schools of thought. The major divide between the two schools of thought is the relation of regional inequality to national development. The convergence school predicts that higher levels of development are eventually associated with lower levels of inequality, while the divergence group claims the opposite. Particularly, proponents of the neoclassical theory argue that development eventually (i.e., in the long run) leads to a reduction of regional inequalities, through the activation of three equilibrating mechanisms: declining marginal productivity of capital, interregional trade, and interregional factor movement. In contrast, critics of the neoclassical theory claim that growth is a spatially selective and cumulative process, stressing the role of policies in balancing development patterns. Concerning the necessity for the implementation of regional development policies (i.e., Cohesion Policy), the regional convergence / divergence literature presupposes the ability of market forces to generate growth. Thus, the salient (though neglected) issue is that convergence models have been tested in a way that does not make

clear whether (or to what extent) convergence occurs because of market dynamics or / and because of public policies. Yet, such an issue is critical for economic policy. To the extent that market economies have, indeed, embodied mechanisms of convergence, social peace and political stability can be maintained without the need for large-scale public interventions.

Undoubtedly, there is a complex interaction between international and intranational inequalities as the level of regional inequalities may relate to the process of national (European) development. On the one hand, it is argued (Williamson, 1965) that regional inequalities widen in the early stages of development (i.e., low-income levels), but as soon as the national economy enters the mature stage of economic development (i.e., high-income levels), inequalities tend to diminish. This overall process results in an inverted U-shaped curve. Particularly, in the earlier stages of development, factors of production are concentrated into relatively few growth poles. Labor and capital migration is extremely selective, flowing from poor to rich areas. In parallel, there is absence of interregional linkages resulting in minimization of spread effects. The central government's policy is focused on strengthening aggregate national growth, supporting growth poles, and thus increasing regional inequality. However, this situation is unlikely to persist indefinitely. In the latter stages of development, both capital and labor migration become less selective, as the national labor and capital markets become more sophisticated. Furthermore, interregional linkages are reinforced, strengthening spread effects, whereas central government pursues a redistributive policy transferring resources from richer to poorer regions. On the other hand, it is supported (Petrakos et al., 2011) that regional inequalities tend to diminish in the early stages of development (i.e., low-income levels), but as soon as the national economy enters the mature stage of economic development (i.e., high-income levels), inequalities tend to increase. This overall process results in a mirror-image J-shaped curve. Particularly, regions at earlier stages of development are more likely to be characterized by a productive system in which resource-intensive activities dominate, markets are relatively shallow or fragmented, and quality, diversity and factor-augmenting technology are limited. These characteristics possibly describe constant returns to scale environments, where capital productivity is declining. The productive system in advanced regions is more likely to be characterized by economies of scale, positive externalities and agglomeration, higher levels of research and development, a higher quality of human resources, a more advanced market structure, a better mix of activities and larger size. The combination of these characteristics may generate a favorable environment in which increasing returns to scale and home-market effects yield higher growth rates over time.

Another strand of literature associates regional inequalities with business cycles. Considering that the aggregate business cycle creates the economic environment for an individual region, the most important aspect in understanding the connection between aggregate and regional cycles is the economic, or industrial, structure of national and regional economies (Isard, 1982). Indeed, regions are affected by aggregate cycles differently because their industrial structures differ from each other. This means that all regions do not necessarily grow at times when the aggregate economy is growing, or contract during national recessions (Fischer and Nijkamp, 1987; Temple, 1994). On the one hand, from a theoretical viewpoint, a pro-cyclical behaviour can be explained by the fact that expansion cycles begin at the poles of economic activity, where the interaction of agglomeration effects and market size provides a lead over other regions; on the contrary, during a recession period, these poles are more exposed to demand and supply contractions and, therefore, are more likely to be negatively affected than the rest of the regions, resulting in decreasing regional inequality (Berry, 1988). Under an alternative perspective, regions that are less developed, more isolated, and more dependent on factors such as public investment and employment (i.e., the so-called 'sheltered regions') are unable to catch up with the more advanced regions in periods of expansion, mainly because they are less exposed to changes in market conditions; the opposite was true for a period of contraction (Rodriguez-Pose and Fratesi, 2007). On the other hand, a counter-cyclical behaviour can be explained by the facts that the mobility of labor is higher and regional policies are more efficient in the periods of expansion, thus resulting in a more spatially balanced distribution (Pekkala, 2000; Kangasharju and Pekkala, 2004).

Although there is still a high level of complexity in spatial processes to be dealt with, it is clear in terms of observable outcomes that leading regions are performing better, while weaker regions are still struggling to catch up. Yet, regional development theories still cannot provide a convincing response to the fact that some regions are, in growth terms, persistently underperforming (i.e., the laggards of the past tend to be the laggards of today). Persistency in underperformance seems to take the form of a path-dependent process largely driven by some unspecified, but certainly interacting, internal forces and dynamics and it seems that it does not respond to typical policy prescriptions (Polese and Shearmur, 2006). Is this the result of a regional market failure, policy failure, geography, institutional and cultural rigidities, some type of a 'missing factor' in the regional base, a combination of all these, or something else? Why persistently underperforming regions cannot learn and benefit from 'good practices' examples and from the 'success

stories' of other regions? This is mostly associated with the fact that regional development theories, and the consequent policy prescriptions, are rarely informed by the experience of the persistently underperforming regions (Petrakos, 2008; Freeman and Soete, 2009).

Apparently, without unique knowledge resources and diverse contexts, it is unlikely to generate growth (Trippl et al., 2016; Marques and Morgan, 2021). Yet, unique knowledge resources and diverse contexts cannot exist everywhere because their ubiquity would deny their uniqueness. Given this, it behoves regional scientists to carry on the responsibility of dealing with regional inequalities, especially if regional convergence is no longer seen as the ultimate goal. Considering that the causal mechanisms behind inequalities are institutions and policies (Milanovic, 2019), the evolution of regional inequalities reflects the effectiveness of regional policies to enhance the efficiency of regional institutions.

4. Conclusions and Thoughts

The study of regional inequalities has been gaining (inter-)disciplinary status since the end of WW II (Isard, 2003; Boyce, 2004; Pike et al., 2016). The discipline has, mostly, focused on understanding the dynamics of growth centers assuming that the lessons learnt can be used to assist poor(er) regions to converge with the rich(er) ones (Hadjimichalis, 2006; Peck et al., 2022). The argument is that if a set of policies have contributed to the success of the rich(er) regions, then they should be capable to do the same in the poor(er) ones. This line of thought is based on two salient assumptions that are rarely made explicit: on the one hand, that poor(er) regions are in the same trajectory (though in an earlier phase of development) with the rich(er) ones; on the other hand, that success and failure are symmetric processes (i.e., if the presence of a factor contributes to success in one place, its absence from another place would explain failure).

The pre-crisis EU experience, in particular, indicates the entrenchment of an unbalanced territorial pattern of development. On average, core, western and northern, EU regions are more advanced than peripheral, eastern and southern, EU regions, respectively. The economic crisis and the consequent pandemic crisis have affected the productive bases of places and the income levels of households and enterprises. The EU economy experienced full-scale recession – the most dramatic after WW II – as a consequence of the meltdown of financial markets, the credit crunch and the, overall, deterioration of confidence. Entering into a post-crisis environment – and as a complex set of theoretical propositions, ideological preoccupations, policy options and institutional arrangements are confronted with the hard evidence of the market and policy failures (Petrakos and Psycharis, 2016; Niavis et al., 2021) – understanding the drivers of EU regional growth is an important task not only to theory but also to policy. The persistence of regional inequalities has transformed the crisis in Europe into a – far more alarming – crisis of Europe. The loss of trust in the EU project seems to be particularly prominent in the no-prospect young generation and the socially excluded parts of population, in general. Trends of disintegration start to emerge, and Europeanism loses strength (instead, Euroscepticism has gained prevalence). The European project has, in fact, reached a critical point, where a discussion on the fundamental objectives of the European Union has entered public debate (Hartleb, 2012). It seems that Europe needs to rediscover its roots so as to reinvent itself in the foreseeable future. To this end, the role of regional science is extremely important.

The emerging European reality necessitates the thorough understanding (re-examination) of the spatial dynamics that are generated and / or reproduced within the framework of the European economic integration process. Apparently, access to (high-quality) data is a necessary condition for undertaking the required analyses and deriving the corresponding conclusions on the interrelations among European regions. Interregional spillovers usually exceed contiguity relations, since they are also linked to the upward/downward sectoral linkages driving the regional economies (Perez et al., 2009). Unfortunately, data on flows (i.e., trade, investments, remittances, migration, commuting flows, *inter alia*) is scarce and available only at the national level. With a handful of exceptions (Manetos et al., 2022; Kapitsinis et al., 2023; Adamakou et al., 2024; Tsiapa et al., 2025), data on interregional flows, practically, do not exist. Thus, due to this limitation, important issues regarding the success and the impact of the European economic integration process and policies remain, rather, unexplored and unsolved, for both scholars and policy makers. This is an important drawback, especially in the light of the global mega-trends that are currently taking place.

The emerging European reality necessitates, also, the adoption of a revised Cohesion Policy. The EU launched the NGEU (Next Generation EU) recovery instrument. The objective is to address the economic and social damage caused by the pandemic and facilitate the transition toward a modern and sustainable Europe, with a particular emphasis on digital and green economic growth (Celi et al., 2020; Christie et al., 2021; de la Porte and Jensen, 2021; McCann et al., 2021). At the core of the NGEU is the RFF (Recovery

and Resilience Facility), which provides grants and loans to support reforms and investments in EU member states. The process of mitigating regional inequalities, if and when it happens, happens at an extremely slow pace, despite the long-term implementation of the EU Cohesion Policy and the allocation of a significant amount of funds. This fact raises concerns for the effectiveness of the Cohesion Policy. These concerns are magnified in an environment in which achieving efficiency seems to prevail over achieving equality (Avdikos and Chardas, 2016). Reasonably, the question arises as to whether and under what conditions the RFF can contribute towards the revision of the Cohesion Policy. It is, indeed, the first time in which a policy with redistributive, developmental, and stabilizing characteristics includes, symmetrically, the entire territory of all EU member-states. It is, therefore, also the first time that the conditions are created for the EU Cohesion Policy to acquire its full scope, which goes beyond the mitigation of regional inequalities and extends to the approach of cohesion as *affectio societatis* (i.e., the consolidation of a bond which will connect EU member-states and EU citizens on the basis of sharing common values, common goals, common effort and common benefit) (Kallioras and Kritikos, 2023). In this view, the RFF can be considered a harbinger of a revised Cohesion Policy. In any case, it is clear that the dialogue for the adoption of a revised Cohesion Policy has already started.

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