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# Global investments and regional development trajectories: the missing links

Riccardo Crescenzi<sup>a</sup> and Simona Iammarino<sup>b</sup>

## ABSTRACT

Global investments and regional development trajectories: the missing links. *Regional Studies*. Regional economic development has been long conceptualized as a non-linear, interactive and socially embedded process: these features were traditionally regarded as spatially mediated and highly localized. However, unprecedentedly fast technological change coupled with the intensification of global economic integration has spurred the need to place regional development in a truly open and interdependent framework. Despite substantial progress in the academic literature, rethinking regional development in this perspective still presents a number of challenges in terms of concepts, empirical evidence and policy approaches. Following an interdisciplinary assessment of how openness and connectivity – proxied by one of the many cross-border flows, i.e., global investments – interact with regional economic development trajectories, this paper presents a picture of the geography of foreign investments from and to the European regions and its change after the financial and economic crisis in 2008. This simple exercise sheds some initial light on how the operationalization of regional connectivity can improve one's empirical understanding of the evolution of regional economies and the policy approach needed to support their reaction to change.

## KEYWORDS

foreign direct investment (FDI); regions; local–global connectivity; regional development; Europe

## 摘要

全球投资与区域发展轨迹: 遗失的连结。 *Regional Studies*。区域经济发展长期以来被概念化为非线性、互动且镶嵌于社会的过程: 这些特征传统上被认为受到空间中中介且高度在地化。但前所未有的快速科技变迁, 伴随着全球经济整合的加剧, 刺激了将区域发展置于真正开放且相互?依赖的架构之需求。尽管学术文献已有了实质的进展, 但透过上述观点再思考区域发展, 仍然在概念、经验证据与政策方法上呈现诸多挑战。本文追随开放性与连结性 – 由诸多全球投资的跨界流动之一进行代理 – 如何与区域经济发展轨迹互动的跨领域评估, 呈现一个来自欧洲区域与进入欧洲区域的外国投资地理图像, 及其在2008年金融与经济危机之?后的改变。此一简易的操作, 对区域连结的操作化如何能够促进我们对区域经济的演化之经验性理解, 以及支持其回应变迁所需的政策方法, 提供若干的初步说明。


## 关键词

外国直接投资 (FDI); 区域; 地方—全球连结; 区域发展; 欧洲


## RÉSUMÉ

Les investissements mondiaux et les trajectoires de l'aménagement du territoire: les chaînons manquants. *Regional Studies*. Depuis longtemps le développement économique régional a été conceptualisé comme un processus interactif non-linéaire qui est bien intégré sur le plan social: par le passé ces caractéristiques-là étaient considérées très influencées par l'espace et par la localisation. Cependant, l'évolution technologique à un rythme sans précédent conjointement avec l'intensification de l'intégration économique mondiale a stimulé la nécessité de mettre l'aménagement du territoire au sein d'un cadre vraiment ouvert et interdépendant. En dépit du progrès significatif évident dans la littérature spécialisée, repenser l'aménagement du territoire de ce point de vue pose un nombre de défis en termes des notions, des preuves

## CONTACT

<sup>a</sup>  [r.crescenzi@lse.ac.uk](mailto:r.crescenzi@lse.ac.uk)

Department of Geography and Environment, London School of Economics, London, UK.

<sup>b</sup> **(Corresponding author)**  [s.iammarino@lse.ac.uk](mailto:s.iammarino@lse.ac.uk)

Department of Geography and Environment, London School of Economics, London, UK.

empiriques, et des approches politiques. Suite à une évaluation interdisciplinaire de comment l'ouverture et la connectivité -représentées par l'un des nombreux flux transfrontaliers – interagissent avec les trajectoires du développement économique régional, cet article présente une image de la géographie des investissements étrangers en provenance et à destination des régions européennes, et de son évolution depuis la crise financière et économique de 2008. Cette simple analyse éclaircit dans un premier temps comment l'opérationnalisation de la connectivité régionale permet de mieux comprendre empiriquement le développement des économies régionales et de l'approche politique qu'il faut pour soutenir leur réaction au changement.

#### MOTS-CLÉS

investissement direct étranger (IDE); régions; connectivité localo-mondiale; aménagement du territoire; Europe

#### ZUSAMMENFASSUNG

Abläufe von globalen Investitionen und regionaler Entwicklung: die fehlenden Verbindungsglieder. *Regional Studies*. Die regionale Wirtschaftsentwicklung wurde lange als nichtlinearer, interaktiver und gesellschaftlich eingebetteter Prozess aufgefasst: diese Merkmale galten traditionell als räumlich vermittelt und hochgradig lokalisiert. Aufgrund des sich schneller denn je vollziehenden technischen Wandels – gekoppelt mit der Intensivierung der weltweiten wirtschaftlichen Integrationsprozesse – ist es jedoch notwendig geworden, die Regionalentwicklung in einen wirklich offenen Rahmen von Wechselbeziehungen zu stellen. Trotz erheblicher Fortschritte in der akademischen Literatur ist eine Neuorientierung der Regionalentwicklung an dieser Perspektive nach wie vor mit einer Reihe von Herausforderungen verbunden, was Konzepte, empirische Belege und politische Ansätze anbelangt. Im Anschluss an eine interdisziplinäre Bewertung der Frage, wie Offenheit und Verbundenheit – vertreten durch einen von zahlreichen grenzüberschreitenden Strömen, nämlich weltweiten Investitionen – mit den Abläufen der regionalen Wirtschaftsentwicklung zusammenwirken, wird in diesem Beitrag ein Abbild der Geografie ausländischer Investitionen von und in europäische Regionen sowie ihrer Veränderungen nach der Finanz- und Wirtschaftskrise von 2008 vorgestellt. Diese einfache Aufgabe ermöglicht eine erste Klärung der Frage, wie die Operationalisierung der regionalen Verknüpfungen das empirische Verständnis der Evolution regionaler Ökonomien und des erforderlichen politischen Ansatzes zur Unterstützung ihrer Reaktionen auf Veränderungen verbessern kann.

#### SCHLÜSSELWÖRTER

ausländische Direktinvestitionen (ADI); Regionen; lokal-globale Verknüpfungen; Regionalentwicklung; Europa

#### RESUMEN

Trayectorias de inversiones globales y desarrollo regional: los eslabones perdidos. *Regional Studies*. El desarrollo económico regional suele ser conceptualizado como un proceso no lineal, interactivo y socialmente integrado: estas características se solían considerar como espacialmente mediadas y altamente localizadas. Sin embargo, debido al rápido cambio técnico sin precedentes junto con la intensificación de la integración económica global, ha surgido la necesidad de colocar el desarrollo regional en un marco realmente abierto e interdependiente. Aunque en la bibliografía académica se han realizado grandes avances, el replanteamiento del desarrollo regional a este respecto todavía presenta una serie de retos en términos de conceptos, evidencia empírica y enfoques políticos. Tras una valoración interdisciplinaria sobre cómo la transparencia y la conectividad -representadas por uno de los muchos flujos transfronterizos, es decir, las inversiones globales - interactúan con las trayectorias regionales de desarrollo económico, en este artículo presentamos una imagen de la geografía de las inversiones extranjeras desde y hacia las regiones europeas, así como de los cambios después de la crisis financiera y económica en 2008. Este simple ejercicio nos permite una primera aclaración de la cuestión de cómo la operacionalización de la conectividad regional puede mejorar el entendimiento empírico de la evolución de las economías regionales y el enfoque político necesario para apoyar su reacción al cambio.

#### PALABRAS CLAVES

inversión extranjera directa (IED); regiones; conectividad local y global; desarrollo regional; Europa

JEL F2, O3, O19, O52, R11, R12

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## INTRODUCTION

The recent literature on regional economic development has reached a consensus on the idea that spatial proximity, density and localized processes should be placed in the wider context of economic globalization by accounting

for other forms of proximity between local and non-local agents (e.g., Crescenzi, Nathan, & Rodríguez-Pose, 2016b; Huber, 2012; Uyerra, 2011). Regional economic and innovation trajectories do not depend exclusively on localized productive and knowledge assets, but need to combine 'local buzz' (Storper & Venables, 2004) and

'global pipelines' (Bathelt, Malmberg, & Maskell, 2004). The latter are non-spatially bounded linkages and networks that channel and diffuse new and valuable knowledge across space. For the development of these links geographical proximity constitutes 'neither a necessary nor a sufficient condition' (Boschma, 2005, p. 62), while other non-spatial relations – i.e., cognitive, organizational, social and institutional – play a crucial role as complements and/or substitutes of physical closeness (e.g., Crescenzi et al., 2016b; D'Este, Guy, & Iammarino, 2013).

A significant role in the establishment and governance of such pipelines is attributed to multinational enterprises (MNEs) as major 'flagships', or connectors, in global production networks (GPNs) (e.g., Coe, Hess, Yeung, Dicken, & Henderson, 2004, 2008; Dicken, 1994, 2003, 2007; Dicken & Henderson, 2003; Ernst & Kim, 2002; Henderson, Dicken, Hess, Coe, & Yeung, 2002; Hess & Yeung, 2006; Hobday, Davies, & Prencipe, 2005; Wrigley, Coe, & Currah, 2005; Yeung, 2009). The GPN approach combines the insights of various similar perspectives that capture the spread of value-added creation and distribution across firm boundaries and geographical borders, such as those of global commodity chains (GCCs) and global value chains (GVCs) (e.g., Gereffi, 2005; Gereffi & Kaplinsky, 2001; Gereffi & Korzeniewicz, 1994; Gereffi, Humphrey, & Sturgeon, 2005).<sup>1</sup>

Despite considerable academic advances in reconciling firms' cross-border organizational networks with space-specific assets and institutional structures – i.e., the 'strategic coupling' process that ultimately drives contemporary regional economic development (e.g., Coe et al., 2004, 2008; Yeung, 2009, 2016) – still substantial gaps are left in the literature, particularly when looking for global-local frameworks for the 'diagnosis' of local economic conditions and the design of public policies. This paper contributes to filling this gap by conceptually and critically discussing the heterogeneity of regional openness and connectivity – here intended in terms of global investment flows – through the lenses of an 'integrated framework' for the analysis of local economic development (Crescenzi & Rodríguez-Pose, 2011) that systematically links localized regional assets and socio-institutional features with global connectivity. As an empirical example of how global investment flows are connected to regional trajectories and their change, the paper describes the relative position of the sub-national regions of the European Union (EU) in the inflows and outflows of greenfield foreign direct investment (FDI) to and from the area. By using information from the fDi Markets-*Financial Times* database for 2003–14, the paper follows up on previous work and classifies regions in a dynamic perspective, looking in particular at different stages of the value chain, or functions (e.g., Crescenzi, Pietrobello, & Rabellotti, 2014; Sturgeon, 2008), before and after the 2008 financial crisis. The heterogeneity of (short-term) regional development trajectories and global connectivity patterns can offer some initial insights towards a more critical and nuanced interpretation of how regions react to shocks, and sheds some initial light on the importance of a more careful

coordination of bottom-up and top-down place-based development policies.

The paper is organized as follows. The following section provides a snapshot of the academic debate on the interdependence of corporate and geographical connections and linkages, and highlights similarities in governance issues that both firms and regions are confronting. It focuses on three dimensions of connectivity – spatial extent, nature and directionality – and relates the concept with regional economic development. The third section presents some descriptive evidence of the geography of foreign investment flows in and from the EU over 2003–14, attempts a dynamic classification of EU regions in terms of connectivity measured by these flows before and after the recent financial and economic crisis, and tentatively links these regional typologies to regional development trajectories. The fourth section concludes, highlighting some possible implications for public policies and the challenges ahead in the analysis of global-local interdependence.

## GLOBAL FIRMS' NETWORKS AND REGIONAL CONNECTIVITY

### Connectivity and global investment flows: spatial extent, nature and directionality

Three key features of the current phase of economic globalization have direct geographical implications (Iammarino & McCann, 2013). First, the share of developing and emerging economies on global FDI flows has grown steadily and, for the first time in history, accounted for more than half the world's total inflows in 2012 (55% in 2014), and more than one-third of total outflows in 2014, confirming a massive transformation in the geography of foreign investment worldwide (United Nations Conference on Trade and Development (UNCTAD), 2015), and in European regions in particular (Crescenzi, Pietrobello, & Rabellotti, 2016c). Second, the majority of these cross-border flows span neighbouring economies, rather than being genuinely global transactions. This global regionalism is also characterized by the slicing up and recombination of GVCs in which establishments and groups of activities are 'unbundled' (Baldwin, 2011) primarily across groups of neighbouring economic systems (e.g., Guy, 2009, 2015; Rugman, 2005). Third, around two-thirds of global FDI stocks are now in service industries (63% in 2012), with the remaining one-third involving manufacturing. Services liberalization, their increasing tradability due to information and communication technology (ICT) technologies, and the steady rise of GPNs/GVCs spurring the internationalization of services related to manufacturing, have all implied a substantial redistribution of comparative advantages across countries and regions, mirroring that of global gross domestic product (GDP) (UNCTAD, 2015).

Vertical disintegration, international outsourcing and offshoring have emerged as predominant modes of control and coordination of MNE activities, giving rise to what has been labelled the 'concentrated dispersion' of geographical



production and knowledge networks (Ernst, 1997, 1998; Ernst & Kim, 2002; Ernst, Guerrieri, Iammarino, & Pietrobelli, 2001). GPNs integrate the dispersed supply and customer bases of MNEs, that is their subsidiaries, affiliates and joint ventures, suppliers and subcontractors, distribution channels and value-added resellers, as well as their research and development (R&D) collaborations and different kinds of cooperative agreements. MNEs break down the value chain into a variety of discrete functions, operations and transactions, and locate them where they can be carried out most effectively, improving firms' access to new intangible assets, and facilitating entry into new markets. The main purpose is to tap into location-specific resources and capabilities that are complementary to the firm's own, at the same time broadening its capacity of knowledge transfer to individual nodes of the GPN (Coe et al., 2004; Ernst et al., 2001; Ernst & Kim, 2002). Such linkages open up new development and upgrading opportunities for the regions and firms involved. Indeed, GPNs in particular industries – such as electronics – have actually shifted to global innovation networks (GINs), with the integration of functions such as engineering, product development, design and research within inter-firm networks situated for the most part in emerging locations in newcomer economies (Ernst, 2010).

Corporate networks have dramatically altered regional connectivity and interdependence around the world. MNE networks have spurred spikier geographies and uneven regional development, depending on the variation across urban and regional innovative and institutional capabilities to cash in on the presence of global 'gatekeepers' to build new absolute and comparative advantages. When competitive advantages are seen through the lenses of a fine-grained economic geography and perceived as simultaneously firm- and place-specific (Iammarino & McCann, 2017; Ietto-Gillies, 2012; Young, Hood, & Peters, 1994), the balance between endogenous and exogenous (to the region) knowledge sources and the overall degree of *connectivity* become far more relevant issues. It is not the simple regional *connectedness* – i.e., the architecture of transport and communication infrastructure – but rather the broader connectivity that matters: the capability of individuals, firms, organizations and institutions to interact and engage across geographical space and within networks (Iammarino & McCann, 2017). Regional connectivity is the degree of two-way (inward and outward) openness that shapes the regional churn of skills, talent, competences and business functions/value chain stages (Crescenzi et al., 2014). Even when inflows and outflows are balanced, suggesting that an 'equilibrium' has been reached by the regional economy, the dynamic recombination of key cognitive and productive local assets leads to the enduring capability of cities and regions to adapt, react and develop in an ever-changing global environment.

The literature on the impacts of foreign investment flows – just one, albeit very important, of the many cross-border flows associated with the new international division of labour – has emphasized the importance of the spillovers from global firms to their host locations (e.g., Blomström

& Kokko, 1998; Blomström & Persson, 1983; Javorcik, 2004; Javorcik & Spatareanu, 2008; Kokko, 1996). Conversely, the influence of region-specific advantages on the growth and evolution of the 'hosted' MNEs as well as of the 'sending' regions has remained underexplored. An emerging body of literature indicates that while domestic outsourcing of value-added services such as R&D and design is relatively less diffused than that of production, the externalization of such innovation-intensive functions is more likely to span internationally, suggesting that firms' concerns about local competition are compensated by new streams of knowledge sourced in more distant regional systems (e.g., Cusmano, Morrison, & Rabellotti, 2010; Malecki, 2010). The impressive surge of both inward and outward FDI to and from developing and emerging locations – until recently characterized by very low or even null connectivity (UNCTAD, 2015) – supports the idea that economic development requires increasing and simultaneous two-way connectivity.

Following this line of argument, regional economic development is shaped by the co-existence and co-evolution – in the same functionally integrated spatial unit – of flows diversified in terms of their *spatial extent*, *nature* and *directionality*. First, not only do spatially bounded (intra- and inter-firm) regional flows matter to regional development trajectories: alternative non-spatial proximities make the geographical extent of these flows extra-local, international and global (*spatial extent*). Second, the *nature* of the flows is highly diverse: capital, skills and knowledge are bundled in the intra- and inter-firm connections that form GPNs/GVCs. The actual combination of their constituent elements and their sophistication/complexity depend on the function (or value chain stage) pursued by the agents 'connected' by each flow (e.g., the networks generated in order to pursue R&D activities in different locations might be more intensive in skills and knowledge than those driven by capital-intensive production activities). Third, local economies can be simultaneously origin and/or destination of the flows of investment by MNEs. If openness has been extensively associated to economic development and growth (e.g., Baldwin, 2006; Fagerberg & Srholec, 2008), it is the simultaneous exposure to inflows and outflows (*bi-directionality*) in places – like most of the EU – where the concepts of 'host' and 'home' overlap and blur that identifies the capability of cities and regions constantly to renew their competitive advantage and to react to shocks, shaping their long-term socio-economic performance, welfare and resilience.

### Connectivity and regional economic development

Following the above line of argument, regional economic development trajectories can be reconceptualized and analysed in terms of the degree of local connectivity through global investment flows (among a variety of other channels) of varying spatial extent, nature and directionality. Connectivity does not operate (and is not formed) in a territorial vacuum; it is part of a set of geographical, economic and

socio-institutional features that interactively shape both innovation and regional development. Networks (and the corresponding flows) based on alternative, non-spatial proximities interact with four other 'keystones' of regional development in an integrated framework (Crescenzi & Rodríguez-Pose, 2011, 2012): (1) the link between local innovative efforts and knowledge generation; (2) the geographical diffusion of knowledge spillovers and the region's industrial specialization; (3) the genesis and structure of local and regional policies; and (4) the existence and efficiency of regional innovation systems and supportive socio-institutional environments. The interaction of these five pillars determines the evolutionary trajectories of countries and regions by: (1) shaping the capability of local actors to establish relations based on both spatial and non-spatial forms of proximity and defining the connectivity of each region and its position in global networks; and (2) influencing how global knowledge and resources made available by regional connectivity are decoded and put into productive use in the regional economy, as well as how local resources and the results of local innovative efforts are 'channelled' into global markets (Crescenzi, 2014).

How does connectivity – here intended as linkages provided by global investment flows – change consolidated views of local economic development? The existing literature has mainly compared MNE subsidiaries with domestic firms in order to identify the potential advantages of the former: MNEs tend to be more productive, invest more in R&D and generate more knowledge than other firms (e.g., Castellani & Zanfei, 2007; Criscuolo, Haskel, & Slaughter, 2010; Dicken, 2007). On the other hand, the attention has been focused on the identification of the channels of spillovers from MNEs to domestic firms with a net separation between inter- and intra-industry effects. Intra-industry channels include demonstration, competition and labour market effects. Demonstration effects rely on the benefits coming from the exposure to the superior technology of MNEs subsidiaries (e.g., Girma, Greenaway, & Wakelin, 2001); competition effects build on the idea that the competitive pressure caused by the entry of foreign firms may act as an incentive for domestic firms to use available resources and existing technology more efficiently (e.g., Blomström & Lipsey, 1989); finally, labour market effects are mainly mediated by labour mobility (e.g., Driffield & Taylor, 2000). Inter-industry knowledge diffusion is based on backward and forward linkages and/or technological complementarity: firms operating in different industrial segments that are vertically connected and/or share technological bases with each other are in fact more likely to benefit from positive externalities (Boschma, 2005; Ernst & Kim, 2002; Javorcik, 2004).

The analysis of these mechanisms has not led to a consensus in the literature on the overall balance between these forces. Various studies have highlighted significant barriers to the absorption of new technologies by domestic firm (e.g., Castellani & Zanfei, 2002), 'market stealing effects' at the expenses of domestic firms (e.g., Aitken & Harrison, 1999), and limited labour mobility due to higher wages

paid by foreign enterprises. As also highlighted by Coe et al. (2004, p. 481) 'the developmental impact of the coupling process is highly variable and contingent, and by no means automatically beneficial for the region'.<sup>2</sup>

On the other hand, outward investment may have both direct and indirect effects on domestic firms and the home economy (for a review, see Barba Navaretti & Venables, 2006). The direct benefits of firms' engagement in production activities abroad are those intrinsic in multinationality, i.e., higher efficiency, productivity and innovativeness of domestic MNEs. Similarly, indirect effects are related to both forward/backward linkages and knowledge spillovers of domestic MNEs on the rest of the home economy. However, the overall impact on the home country (region) remains ambiguous: it depends on the net balance between delocalized activities and reconfiguration of home production (Castellani & Zanfei, 2007; Castellani & Pieri, 2016). The theoretical literature has emphasized the crucial relevance of the *nature* of FDI: domestic firms may gain from the relocation of production towards relatively less advanced economies by triggering specialization by function within each industry, rather than by sector (Baldwin & Robert-Nicoud, 2007; Robert-Nicoud, 2008). Consistently, existing evidence shows that more intense outward FDI are associated, at least in the short run, with lower productivity and employment destruction – especially unskilled – at home. However, compensation effects of higher value-added productions and job creation in the home economy are also likely to emerge, particularly in the case of FDI towards regions and countries with a relatively lower level of development (e.g., Barba Navaretti, Castellani, & Disdier, 2010; Castellani & Pieri, 2016; Driffield, Love, & Taylor, 2009; Gagliardi, Iammarino, & Rodríguez-Pose, 2015; Grossman & Rossi-Hansberg, 2006). Positive effects may be strengthened over time thanks to efficiency gains linked to the geographical rationalization of production along the value chain, and to the dynamic benefits stemming from tapping into new sources of innovation and technical knowledge elsewhere (Cantwell & Iammarino, 2003; Castellani & Pieri, 2013; Crescenzi, Gagliardi, & Iammarino, 2015).

However, as pointed out by Castellani and Pieri (2016), the impact on the home economy of internationalization through investment abroad by domestic firms has until recently been rarely considered as a factor affecting regional development and growth, due to the lack of both strong conceptual frameworks and accurate information on the *spatial scale and extent* of outward FDI (see also Mudambi, 2007). Adjustment costs associated with the transition towards models of internationalization based on *bi-directional* global investment flows may be particularly relevant for less resilient peripheral regions, raising important questions about the spatial distribution of the benefits from the globalization of production in advanced economies (e.g., Elia, Mariotti, & Piscitello, 2009; Kemeny & Rigby, 2012).

The bulk of innovation studies posits that corporate dynamic capabilities, and therefore firm growth, are associated with both the openness of firms to their external

knowledge environments, and with their internal knowledge-generating capacity (e.g., Fontana, Geuna, & Matt, 2006). The increasing empirical evidence on firm heterogeneity has also been acknowledged by the New Economic Geography (Ottaviano, 2011), casting doubt on the overarching power of the ‘comparative advantage’ concept, strictly reliant on a broad and static sectoral view of gains and losses in the competitive contest (Bailey & Driffield, 2007; Camagni, 2002; Kitson, Martin, & Tyler, 2004). Firm heterogeneous performance, even in the same industry and national economy, shows that advantages can be absolute, i.e., based on innovation and social capabilities, institutional capacity, and rooted in open and well-connected locations.

Thus, an interesting parallel can be drawn between the micro-level of the firm and the meso-level of the region with respect to dynamic capabilities. The main advantage of today’s MNEs is to master system integration – i.e., complex coordination of activities combining different products, services, technologies and knowledge across spatial and functional boundaries (Malecki, 2010). Similarly, ‘systemic integration’ at the regional level involves coordinating and balancing a diverse structure of ‘value networks’ – which refers to trade flows, human capital and skills mobility, innovation linkages, foreign and domestic multinational presence, etc. – some of which rely on geographical proximity, whilst others are based on other forms of vicinity.

Openness and interrelatedness, as manifested in the global corporate organization network, have been largely considered at the national system level, often proxied by involvement in international trade, but still fail to be recognized as an essential engine of development in the case of regions (Gambardella, Mariani, & Torrisi, 2009). Complementarity and relatedness between old and new knowledge, and between local and extra-local capabilities and networks, are all necessary conditions for ensuring ‘diversity for growth’ (Jacobs, 1961, p. 194) in economic systems at different levels of geography (e.g., Boschma & Iammarino, 2009; Fagerberg & Srholec, 2008). The local institutional capacity to blend internal and external sources of knowledge and assets – thus, to master ‘systemic integration’, building absolute advantages and resilience – underlie interregional inequality and the formation of new spatial hierarchies, particularly visible in a context such as that of the EU, leading to ‘more similar but less equal’ (Paci, 1997) patterns of regional development.

The relative importance of the embeddedness of foreign firms into the local fabric (e.g., Turok, 1999) – traditionally seen as crucial for their positive impact on the regional economy – becomes a second-order concern relative to the effective coordination of different ‘value networks’ by local firms, organizations and institutions. In fact, vertical disintegration through outsourcing and offshoring may indeed threaten the thickness of localized networks and relational density, strengthening the asymmetric effects of openness across space (e.g., Cusmano et al., 2010).

A more complete, critical and nuanced consideration of global connectivity would enhance one’s understanding of

local economic development trajectories, including the response of regions to shocks, which has prompted lively debates in scholarly and policy circles in the aftermath of the financial and economic crisis of the end of the 2000s. Evolutionary economic geography has interpreted resilience in terms of the historical capacity of regions to reconfigure their socio-economic and institutional structures, enabling new development paths (for all, see Boschma, 2015; Martin & Sunley, 2014). Although a few attempts have been made in order to incorporate the role of knowledge (Boschma, 2005) and trade networks into the concept (Thissen, van Oort, Diodato, & Ruijs, 2013), there is currently neither conceptual integration nor systematic evidence on the link between regional connectivity via global investment flows and regional resilience. The assessment of the balance between inward and outward flows, in terms of creation/destruction of economic activities, sectors and functions, employment, skills and innovation, is all the more urgent to advance one’s understanding of regional development trajectories and resilience and the ways to enhance them.

## REGIONS ON THE MOVE: A BROAD-BRUSH PICTURE OF REGIONAL CONNECTIVITY THROUGH GLOBAL INVESTMENT FLOWS IN EUROPE

### Direction and change of FDI in and from the European regions

Regional connectivity is key to local and regional economic trajectories. As argued above, the *spatial extent*, *nature* and *directionality* of the flows connecting each region to the rest of the global economy are fundamental, although often overlooked, diagnostic tools for local economic development analysis. In order to provide an initial and evocative hint on this dimension, this section looks into FDI in and from the European regions. As already mentioned, FDI by no means can capture the complexity of flows and exchanges that form the multiscalar web of global interregional connectivity neither can it fully proxy the complexity of GPNs/GVCs. However, MNEs do play a leading role in the development and control of GPNs/GVCs, with FDI being a significant (and in some sectors predominant) mode of governance of such organizational and governance structures. And – even more relevant for practical purposes – FDI leaves ‘paper trails’ that can be more easily followed and analysed across large samples of cities and regions than other components of GPNs/GVCs. Detailed and comparable data on other (more flexible) forms of networking between firms (e.g., subcontracting, outsourcing, joint ventures, trade, knowledge and skills exchange) would be ideal for present purposes but, unfortunately, they are not available at the sub-national level for multiple countries.

Therefore, in order to grasp at least *prima facie* the connectivity of European regions, this paper relies on fDi Markets-*Financial Times* data, comprising records of individual greenfield foreign investment ‘projects’ in all European regions across all sectors and classified by main

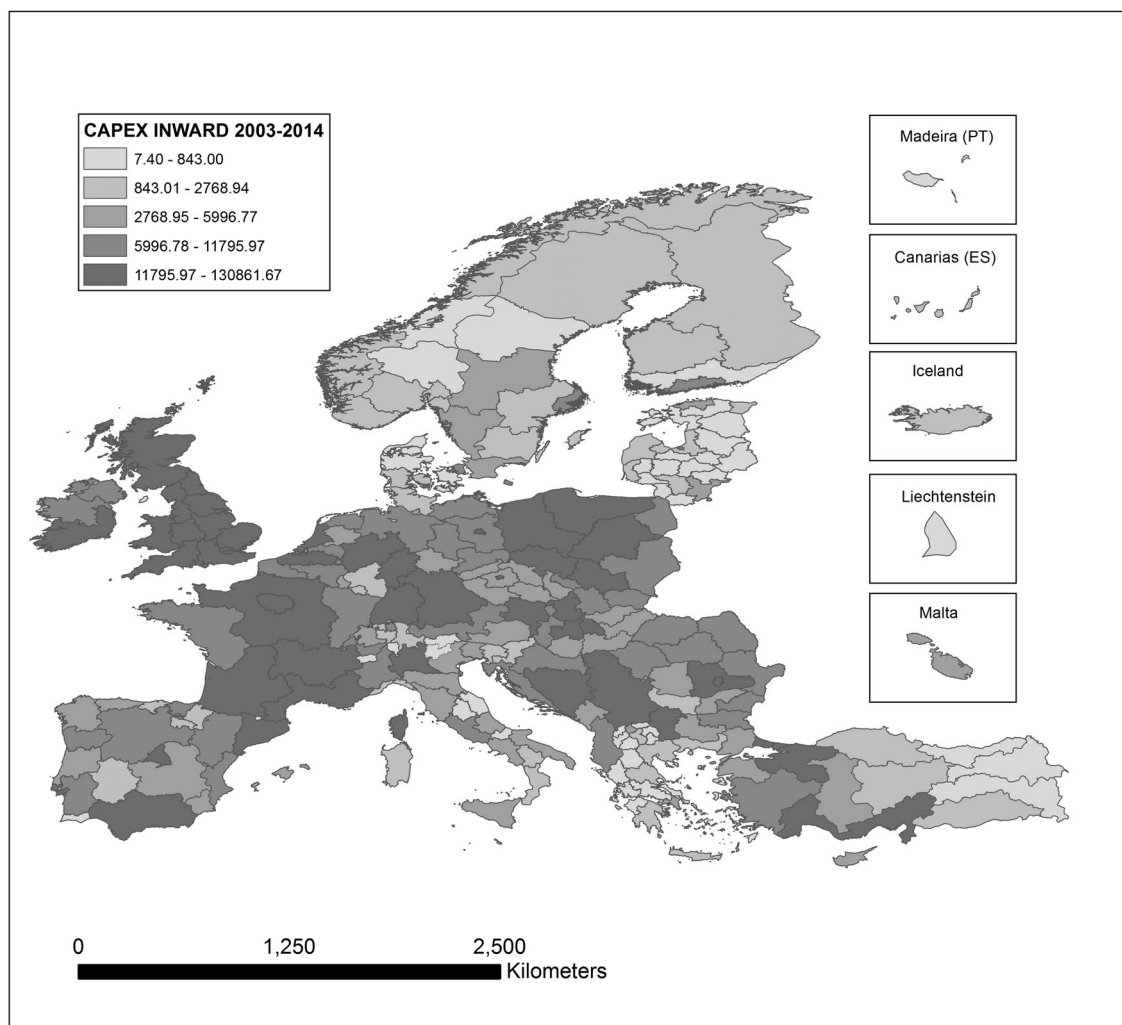
business function. The dataset includes city-level information on the origin of the investment (or 'sending city/region') and its destination (or 'receiving city/region'). The analysis covers the period between 2003 (the starting year of data collection) and 2014 (the most recent post-crisis year with complete data), and includes all cross-border green- and brownfield investment<sup>3</sup> inward and outward between Europe and the rest of the world (including intra-Europe flows). In what follows 'Europe' is defined as: EU-28,<sup>4</sup> European Free Trade Association (EFTA) countries,<sup>5</sup> and candidate countries (CCs).<sup>6</sup>

The figures that follow offer a broad-brush picture of the connectivity of the European regions through global investment flows, its directionality and evolution over time.

Figures 1 and 2 map the spatial distribution of inward (Figure 1) and outward (Figure 2) FDI cumulative capital expenditure (CapEx)<sup>7</sup> in the EU regions (at territorial level (TL) 2 of the Organisation for Economic Co-operation and Development (OECD) regional classification<sup>8</sup>) over 2003–14. The spatial distribution of the non-normalized value of FDI inflows (Figure 1) highlights a consolidated geography of foreign presence in Europe. The well-

established core–periphery patterns in the distribution of overall economic activity overlap only in part with the location of inward of FDI. 'Core' EU-15 regions are large recipients of FDI together with the most developed regions in Central and Eastern European members. However, a number of more peripheral regions in Poland, Romania, Bulgaria and the CCs are also relevant hotspots for the attraction of FDI. The geography of regional outward FDI (Figure 2) is concentrated in the 'Blue Banana' of Europe and in capital cities, confirming the spatial selectivity of active internationalization processes. A simple descriptive analysis of the change in the spatial extent, nature and directionality of these flows offers relevant insights on these multilayered geographies and links with regional trajectories.

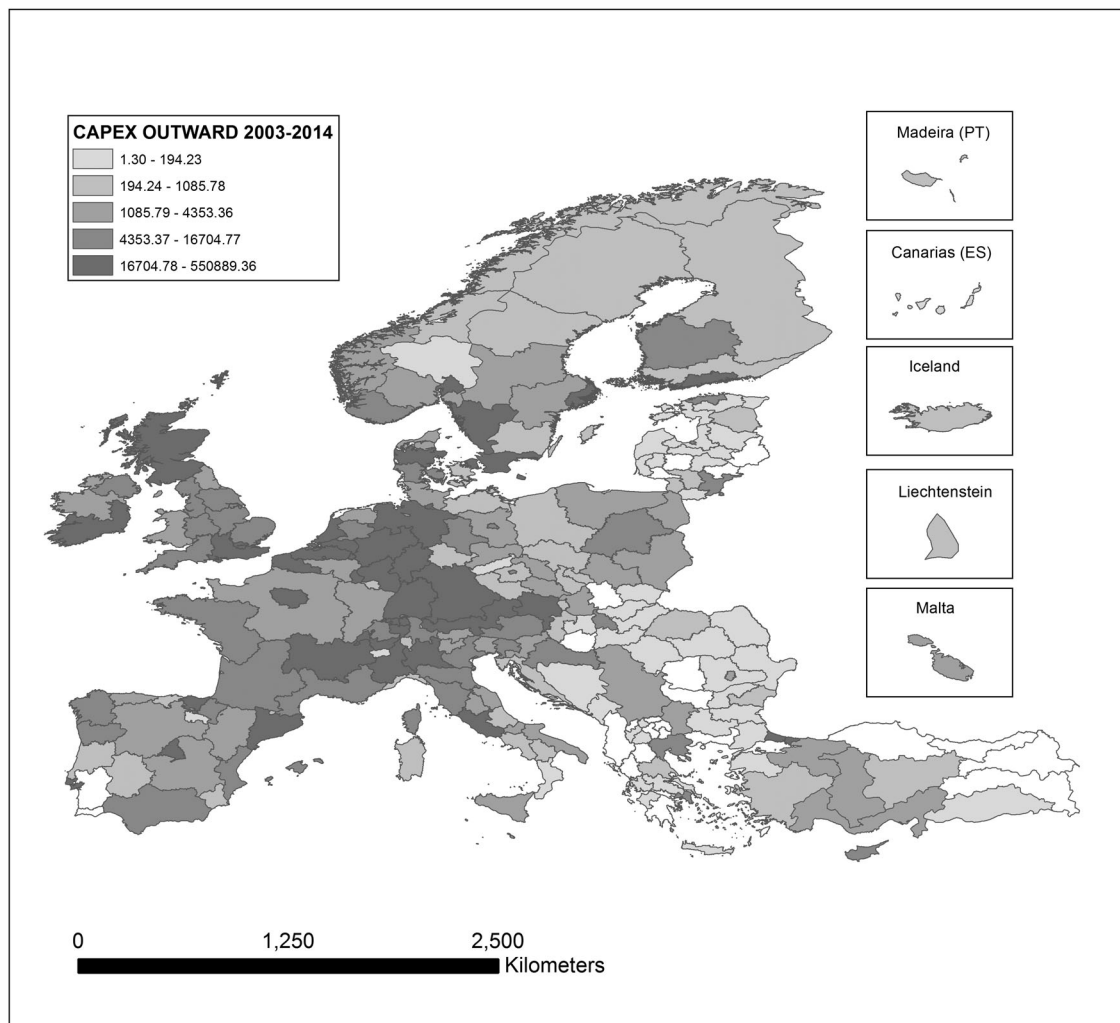
In order to capture the (short-term) evolution of the connectivity of the EU regions – as a preliminary indication of their capacity to reconfigure their position in global investment flows in response to shocks – Figures 3 and 4 look respectively at the relative variation of FDI cumulative capital expenditure inflows and outflows between the pre-crisis (2003–08) and the post-crisis (2009–14) periods.



**Figure 1.** Foreign direct investment towards the regions of Europe (cumulative inward capital expenditure, 2003–14, US\$ millions).

Source: Authors' elaboration of fDi Markets data.





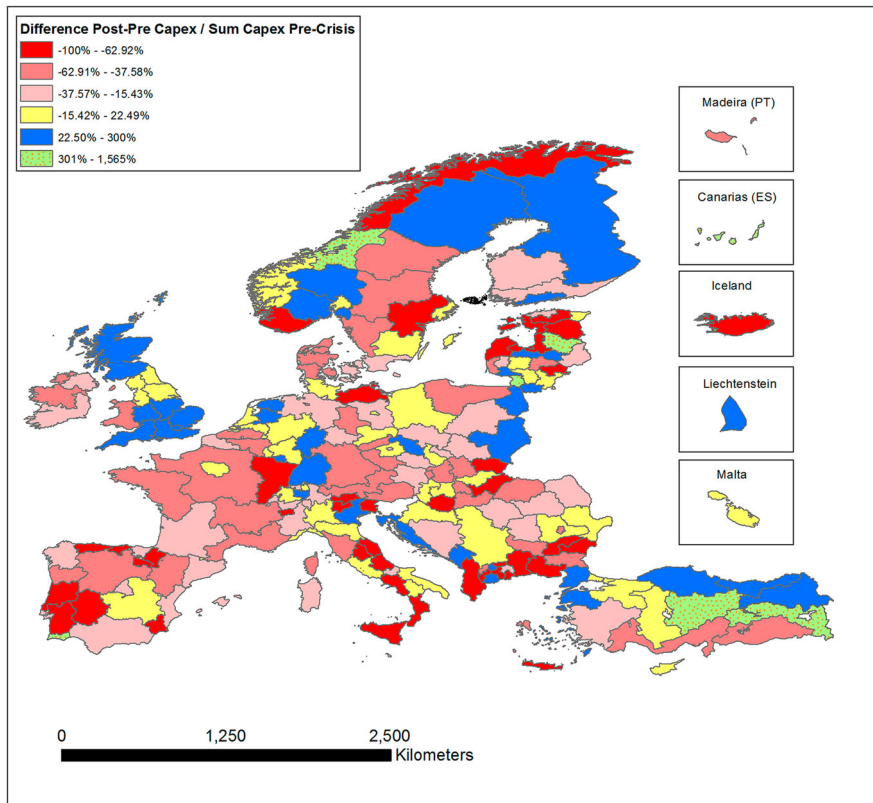
**Figure 2.** Foreign direct investment originating from the regions of Europe (cumulative outward capital expenditure, 2003–14, US\$ millions).

Source: Authors' elaboration of fDi Markets data.

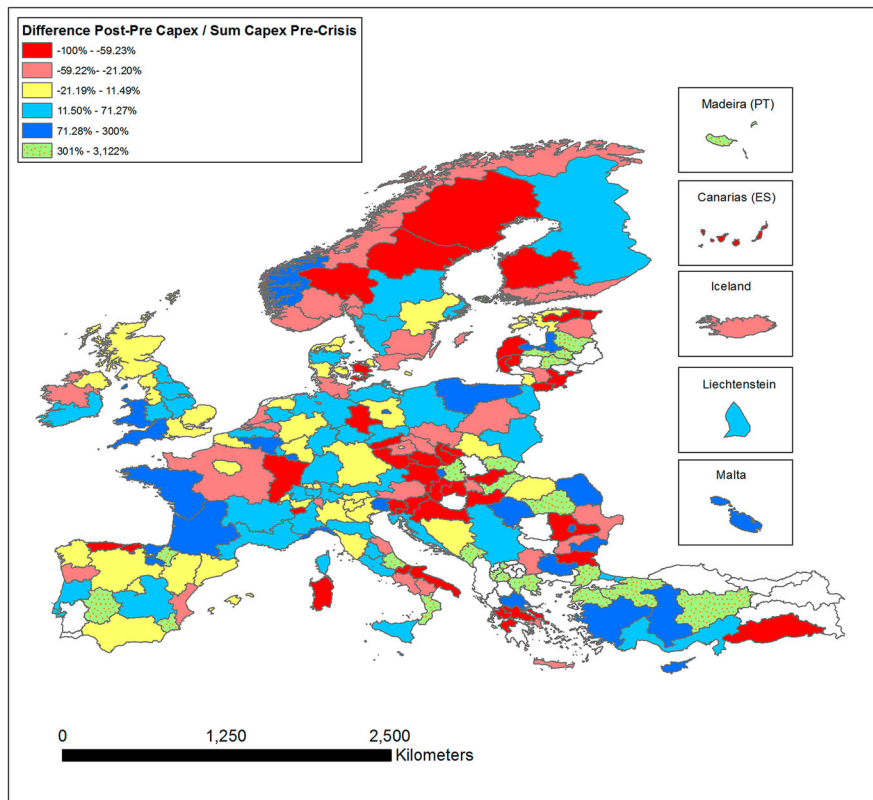
Different colours mark different positions of the regions in the distribution of the possible reactions to the 2008 crisis in terms of inward and outward FDI flows. The classification is based on the distribution of the normalized change in the capital invested between the two periods: each colour-coded category identifies a quintile of the distribution.<sup>9</sup> A sixth category – the green colour with orange dots – is included in the maps to identify outliers. The latter are regions characterized by a relative variation of FDI in the post-crisis period larger than 300%: this is mostly associated with regions with pre-crisis investment values close to zero that inflate the percentage change even with modest increases in the following period. Whilst focusing on the individual maps can shed light on the evolution of investment flows over time (changes in connectivity across space), a comparison of the two maps offers a first description of the directionality of the flows and their relative balance.

Both maps mark in yellow the regions that can be classified as *stayers*, i.e., those that maintained a similar magnitude of FDI inflows and/or outflows before and after the crisis (percentage change close to zero). Figure 3 shows

that, in terms of inflows, the *stayers* are localized: (1) around the central axis of Europe from the North (Yorkshire and the Humber, North East, and North West England), to the Centre (the regions of Île-de-France, Southern and Western Netherlands, those in north-west Germany, and Lombardia, Liguria and Emilia-Romagna in Northern Italy), and the South (Apulia and Basilicata in the Italian Mezzogiorno); and (2) in Eastern Europe, with regions in Hungary (Central and Western Transdanubia, Northern Hungary), Lithuania (Kaunas, Šiauliai and Vilnius counties), Romania (Sud-Muntenia and Sud-Est) and in the CCs of the Balkans (Albania and Kosovo) and Turkey (East Marmara, Istanbul, West Anatolia). Turning to FDI outflows in Figure 4, the *stayers* are concentrated in the north (Scotland, Northern Ireland, North West England) and south (South East and East of England) of the UK; north of Italy (Lombardy, Veneto, Trentino-Alto Adige); and a large part of Spain (e.g., Galicia, Madrid, Castile and León, Aragon, Catalonia, Andalusia). The regions of Paris (Île-de-France), Milan (Lombardy) and those in north-west Germany are the most noticeable *stayers* in terms of both inflows and



**Figure 3.** Changes in foreign direct investment towards the regions of Europe after the crisis (differences in capital expenditure between 2003–08 and 2009–14). Source: Authors’ elaboration of fDi Markets data.



**Figure 4.** Changes in foreign direct investment originating from the regions of Europe after the crisis (differences in capital expenditure between 2003–08 and 2009–14). Source: Authors’ elaboration of fDi Markets data.

outflows, suggesting a fundamental resistance to external shocks in terms of inward attractiveness and outward reach. Different is the pattern of regions such as Scotland, South East and East England, Northern Netherlands, or Friuli-Venezia Giulia in Italy: they retain their position in terms of outflows but improve their capacity to attract foreign investments. Other regions, such as Północno-Zachodni in north-west Poland, Castilla-La Mancha in Spain, Lazio, Emilia-Romagna and Liguria in Italy, Yorkshire and the Humber and North East England in the UK, and Central Greece, manifest the opposite pattern, i.e., being *stayer* in attractiveness toward foreign capital but experiencing increases in outflows.

While in fact some regions are *stayers* in terms of their FDI connectivity, others are *climbers*, improving their position in terms of inflows and/or outflows after the crisis. *Climbers* are marked in different shades of blue in the two figures depending on their position in the distribution of the relative change of their in/out flows before and after the crisis. If one focuses on the dark blue areas, one can identify those regions that gained the most after the 2008 shock. Figure 3 presents a rather disappointing picture: very few EU regions have been able to exceed their pre-crisis performance and – considering the fast growth of developing and emerging economies in the same period – it is clear that the shock has so far taken a conspicuous toll in terms of attractiveness of foreign capital. *Climbers* are some of the historically most attractive regions of Europe – South East and South West England, Scotland, Baden-Württemberg and the south of Norway – but also ‘new entries’ in the East of Europe that started from very low levels before the crisis, e.g., the eastern regions of Poland, some regions in Romania and Bulgaria, in the Baltic States, and in part of Turkey. Figure 4 shows instead a very different picture: many more regions have increased their outward investment projects after the crisis, possibly due to concurrent technological and organizational forces spurring the rationalization of MNE operations and boosting the offshoring of an increasing number of functions. Indeed, in almost all EU ‘old’ member state regions are investing more abroad than they did before the crisis: South West and Wales in the UK, West and South West in France, some Italian regions in the north and the centre of the peninsula. However, outward *climbers* are to be found also in Eastern Europe, e.g., the northern regions in Poland, and in CCs such as Serbia and Turkey.

*Climbers* with respect to both outward and inward flows are harder to find, with a few notable exceptions such as Baden-Württemberg and Hessen in Germany, the South of England and the Midlands in the UK, traditionally regarded as European regional *winner*s; emerging *winner*s may be found in Adriatic Croatia and in the region Wschodni in Poland. In line with the conceptual discussion developed above, the *winner*s show a remarkable increase in the magnitude of their flows that is coupled with bi-directionality, providing local actors with unparalleled connectivity and, as a result, with growing opportunities for the renewal of local and regional industrial structures.

The regions that experienced a contraction in their connectivity after the crisis – here labelled *slippers* – are depicted in shades of red in both figures. Figure 3 confirms that large part of the European regions have still not recovered from the crisis: *slippers* are located in the entire periphery of Europe – Portugal, Spain, Southern Italy and Greece<sup>10</sup> – although with different intensities, but also in France (East France), Sweden (East Middle Sweden) and Central (Mecklenburg-Western Pomerania in Germany) and Eastern EU members (especially in some regions of Bulgaria, Estonia, Hungary, Latvia, Lithuania and Slovakia). Figure 4 indicates that the reduction in outward investment has remained confined to the eastern part of France (East France), Southern Italy (Apulia, Molise and Sardinia), Sweden (Middle and Upper Norrland), Eastern Austria, and many of the eastern EU members.

Overall, the combined picture provided by both maps for *slippers* indicates that many peripheral European regions can be classified as *losers*, having lost their overall connectivity (inward and outward) through MNE investment flows.

### Spatial extent and nature of FDI flows in and from the European regions

A balanced connectivity – albeit only partially captured with FDI data – may be considered a first indicator of the relative trajectory of the regional economies and their long-term resilience. However, *magnitude* and *directionality* of FDI flows need to be assessed jointly with their *spatial extent* and *nature* in order to develop a full diagnosis of local economic development trajectories and potential. Table 1 provides some relevant insights on the *spatial extent* of the FDI connectivity of the EU regions by showing the share of investment targeting and originating from three different categories of regions: the economic ‘core’, the ‘periphery’ of Europe<sup>11</sup> and the rest of the world.

Table 1 shows that the spatial extent of intra-EU FDI flows has remained largely unchanged after the crisis and that significant new emerging trends concern, instead, the position of EU regions with reference to extra-EU flows. An increasing share of investment from the core of Europe – that was previously targeting the periphery – has been diverted towards locations outside the EU boundaries. The periphery is not only losing ground in terms of intra-EU (and even intra-periphery) flows, but also investment from outside Europe is more concentrated in the core regions after the financial crisis. When looking at changes in the total magnitude of flows to and from these groups of regions, it becomes apparent that the ‘core’ of Europe is able to gain in relative terms from the increase of the spatial extent of its connectivity, which has evolved targeting locations in the rest of the world in order to compensate for the relative economic decline experienced by the European periphery during and after the crisis (Crescenzi, Luca, & Milio, 2016a).

The nature – in terms of business activities – of these FDI flows for *stayers*, *climbers* and *slippers* is captured by Tables 2 (pre-crisis) and 3 (post-crisis) for inward FDI, and Tables 4 (pre-crisis) and 5 (post-crisis) for outward FDI. The tables show the business function composition

of investment into/from regions in different positions with respect to the distribution of the post-crisis change in FDI (where class 1 is the bottom quintile of the distribution and class 5 is the top quintile: these classes correspond to the colour-coding in Figures 3 and 4). For investments targeting the regions of Europe the comparison of Tables 2 and 3 shows that regions in the *slippers* category (classes 1–3 in the tables) are those experiencing the most significant change in the nature of their incoming FDI, with a marked reduction in ‘production’ activities in favour of ‘services, sales and logistics’ and ‘headquarters’: Brandenburg, Bratislavský kraj and Południowo-Zachodni are some examples of such trends.<sup>12</sup> In a context of shrinking connectivity these regions remain relevant targets for market-seeking investment and managerial functions. Conversely, the *climbers* (class 5 in Tables 2 and 3) lose in ‘services’ but gain in ‘production’ FDI, unveiling some capacity to attract production investment projects notwithstanding their relative

cost disadvantage. The asset-seeking nature of these investment projects is more likely to produce development-enhancing effects in the local economy reinforcing the intrinsic advantages of an improved overall connectivity. Northern Holland, Eastern Holland and East England are all *climbers* that record a substantial increase in ‘production’ FDI with a corresponding decrease in ‘services, sales and logistics’.

Similar changes in the functional composition of FDI can be observed for outward FDI in Tables 4 and 5. The *slippers* (in these tables corresponding to classes 1 and 2) tend to delocalize abroad relatively more of their ‘headquarters’ and ‘services, sales and logistic’ and less of their ‘production’, suggesting that the latter tends to become progressively more local/less connected for these regions. Examples here include the North West in the UK, Bassin Parisien in France, Asturias and Comunidad Valenciana in Spain, Attica in Greece, and Sardinia in Italy. The opposite trend

**Table 1.** Spatial extent of foreign direct investment (FDI) in the regions of the European Union (EU) (changes in FDI to/from different groups of regions).

	Capital expenditure (CapEx) (core–periphery–extra Europe) shares								
	From the core			From the periphery			From extra-EU		
	Pre-crisis	Post-crisis	Growth rate	Pre-crisis	Post-crisis	Growth rate	Pre-crisis	Post-crisis	Growth rate
To the core	20%	18%	–16%	19%	13%	–32%	72%	79%	1%
To the periphery	12%	9%	–31%	28%	16%	–43%	28%	21%	–34%
To extra-EU	68%	74%	2%	53%	71%	34%			

Source: Authors’ elaboration of fDi Markets data.

**Table 2.** Nature of foreign direct investment (FDI) inflows in the regions of Europe before the crisis (shares of business activities by class of change in capital expenditure (CapEx)).

Quintile of change in CapEx	Europe destination – business activities only pre-crisis (2003–08) – shares			
	Headquarters	Innovative activities	Production	Services, sales and logistics
1	2%	2%	78%	18%
2	4%	4%	74%	18%
3	8%	4%	64%	24%
4	11%	2%	60%	27%
5	14%	4%	58%	24%

Source: Authors’ elaboration of fDi Markets data.

**Table 3.** Nature of foreign direct investment (FDI) inflows in the regions of Europe after the crisis (shares of business activities by class of change in capital expenditure (CapEx)).

Quintile of change in CapEx	Europe destination – business activities only post crisis (2009–14) – shares			
	Headquarters	Innovative activities	Production	Services, sales and logistics
1	6%	3%	65%	26%
2	7%	4%	61%	28%
3	12%	5%	55%	28%
4	12%	3%	56%	29%
5	14%	3%	64%	20%

Source: Authors’ elaboration of fDi Markets data.



**Table 4.** Nature of outward foreign direct investment (FDI) originating from the regions of Europe before the crisis (shares of business activities by class of change in capital expenditure (CapEx)).

Europe source – business activities only pre crisis (2003–08) – shares				
Quintile of change in CapEx	Headquarters	Innovative activities	Production	Services, sales and logistics
1	6%	0%	76%	17%
2	5%	2%	74%	19%
3	7%	3%	71%	19%
4	6%	2%	76%	16%
5	8%	2%	64%	26%

Source: Authors' elaboration of fDi Markets data.

**Table 5.** Nature of outward foreign direct investment (FDI) originating from the regions of Europe after the crisis (shares of business activities by class of change in capital expenditure (CapEx)).

Europe source – business activities only post-crisis (2009–14) – shares				
Quintile of change in CapEx	Headquarters	Innovative activities	Production	Services, sales and logistics
1	11%	1%	63%	25%
2	9%	3%	62%	26%
3	9%	3%	62%	25%
4	8%	3%	68%	21%
5	8%	1%	73%	18%

Source: Authors' elaboration of fDi Markets data.

is instead in place for the top *climbers* (class 5) in outward FDI: the composition of FDI flows from these regions is becoming more oriented towards 'production' activities. This trend – visible in regions such as Bratislavský kraj in Slovakia, Castilla-La Mancha and Extremadura in Spain, West and South West of France, and Friuli-Venezia Giulia in Italy – might correspond to very diverse underlying economic forces. On the one hand, it may be linked to the offshoring of existing local production with potentially negative effects on local employment and economic activity. On the other, this may be an indicator of a stronger internationalization capacity of local firms that, by expanding abroad, might be able to gain in terms of productivity and upgrading along the value chain. The actual combination of these opposite outcomes depends on how outflows are matched by inflows as well as on other local competitiveness factors that would need to be assessed jointly with connectivity in an integrated diagnostic framework.

### Connectivity and regional development trajectories: some initial insights

An in-depth analysis of the association between the spatial extent, nature and directionality of FDI flows and regional development trajectories would require the availability of regional indicators on a variety of social and economic dimensions, as well as the use of advanced statistical methods. While this approach is beyond the scope of this paper (and of the special issue in which it is hosted) some initial descriptive statistics offer preliminary insights on the link between connectivity and regional economic

trajectories. Tables 6 and 7 show the levels and changes of regional GDP per capita (purchasing power standards – PPS) and unemployment rates – crude proxies for regional development – for *slipper* and *climber* regions identified in the third section, focusing on the first and fifth quintiles in the distribution of the changes in inward/outward flows before and after the crisis. Table 6 (looking at inward FDI) suggests that *climbers* have generally higher levels of GDP per capita; interestingly, both *climbers* and *slippers* in the attraction of FDI show similar reactions to the crisis with comparable positive changes in GDP following the shock. The key difference between the two groups of regions is in their highly differentiated capacity to reabsorb unemployed workers: after the crisis, unemployment increased substantially more in the *slippers* than in the *climbers*. Whilst in the former group unemployment increased by 3.94 percentage points, against an average increase in the EU-28 regions by 1.49 percentage points over the same period, the climber group experienced a rise in unemployment by 1.1 percentage points, outperforming the EU-28 average. When regions are categorized looking at changes in their FDI outflows (Table 7), *climbers* show slightly higher levels of GDP per capita but also more favourable GDP adjustment patterns (6.65%) when compared with *slippers* (4.84%) and to the EU-28 average (4.71% over the same period). Conversely, changes in unemployment rates are more homogenous between the two groups (and in line with the EU-28 average), confirming the potentially ambiguous link between active internationalization and domestic employment.

**Table 6.** Changes in inward foreign direct investment (FDI) flows and short-term regional economic trajectories.

Quintile of change in CapEx	Number of regions	Category	Europe destination					
			GDP pc PPS, 2005–08	GDP pc PPS, 2009–14	Δ GDP PPS pc	Unemployment rate, 1999–2008	Unemployment rate, 2009–15	Δ Unemployment rate
			Average GDP pc, €, PPS	Average GDP pc, €, PPS	Rate of growth, 1999–2008 versus 2009–15, %	Unemployment rate, 15 years or over, %	Unemployment rate, 15 years or over, %	Difference 1999–2008 versus 2009–15, %
(1)	24	Slippers	24,158.33	24,327.08	0.70	8.48	12.42	3.94
(5)	16	Climbers	27,975.00	28,153.13	0.64	6.36	7.47	1.11

Notes: The number of regions in each class is lower than in previous tables due to the exclusion of outliers and missing data for gross domestic product (GDP) and/or unemployment. The Slippers category only includes the regions in the bottom quintile of the change in capital expenditure (CapEx) distribution as discussed in the text.

PPS, purchasing power standards; pc, per capita.

Source: Authors' elaboration of EUROSTAT data.

**Table 7.** Changes in outward foreign direct investment (FDI) flows and short-term regional economic trajectories.

Quintile of change in CapEx	Number of regions	Categories	Europe source					
			GDP pc 2005–08	GDP pc 2009–14	Δ GDP pc	Unemployment rate, 1999–2008	Unemployment rate, 2009–15	Δ Unemployment rate
			Average GDP pc, €, PPS	Average GDP pc, €, PPS	Rate of growth, 1999–2008 versus 2009–15, %	Unemployment rate, 15 years or over, %	Unemployment rate, 15 years or over, %	Difference 1999–2008 versus 2009–15, %
(1)	25	Slippers	19,516.00	20,460.00	4.84	9.20	11.08	1.89
(5)	28	Climbers	21,189.29	22,597.62	6.65	8.77	10.51	1.74

Notes: The number of regions in each class is lower than in previous tables due to the exclusion of outliers and missing data for gross domestic product (GDP) and/or unemployment. The Slippers category only includes the regions in the first quintile of the change in capital expenditure (CapEx) distribution, while the Climbers category only includes the regions in the fifth quintile of the change CapEx distribution as discussed in the text.

PPS, purchasing power standards; pc, per capita.

Source: Authors' elaboration of EUROSTAT data.

Finally, Table 8 explores the bi-directionality of FDI flows by looking at GDP and unemployment for *winners* and *losers* (i.e., climbers/slippers simultaneously for both inward and outward FDI). The key difference between *winners* and *losers* is not in GDP per capita levels (both groups are in line with the EU-28 average), confirming that the suggested classification does not reflect ‘simple’ disparities in income levels. Conversely, notwithstanding the similarity in initial conditions, *winners* benefit from more favourable post-crisis trajectories (at least in the short-run) both in terms of GDP and unemployment. Favourable changes in two-way connectivity are generally associated with higher positive changes in GDP per capita and – in particular – to very modest increases in unemployment rates. The *winners* suffered an increase in their unemployment rate by 0.41 percentage points against an average increase by 1.79 percentage points in the *losers* and 1.49 in the EU-28. This provides tentative support to the initial intuition that two-way connectivity and its nature are fundamental elements for the understanding of regional trajectories, and should be carefully assessed in their interactions with other ‘keystones’ of regional development in an integrated (analytical and policy) framework.

## GLOBAL AND REGIONAL INTERDEPENDENCY: RETHINKING POLICY TARGETS AND STRATEGIES

Connectivity is an essential dimension of regional economic development and is key to the diagnosis of development bottlenecks and untapped potential. In order to capture the way in which each region balances the costs of and benefits from connectivity, one needs to consider not only its intensity/magnitude but also its spatial extent, directionality and nature in terms of business functions.

The consequences of global connectivity crucially depend on the capacity of the regions to actually implement and govern systemic integration, involving the coordination of a diverse structure of ‘value networks’, both localized and non-spatial: this in turn requires capacity to manage institutional change (Rodríguez-Pose, 2013; Rodríguez-Pose & Di Cataldo, 2015). A more accurate understanding of the consequences of regional attractiveness towards inward flows – and the long-term processes of specialization and diversification able to reconfigure local economic and institutional advantages – must be coupled with the study of regional outward reaching, from both domestic MNEs and small and medium-sized enterprises (SMEs), which can provide new knowledge links and a reorientation of the local industry structure and economic functionality. Indeed, European regional *winners* seem to benefit from their balanced connectivity in terms of inward and outward FDI flows – possibly managing in a more effective way systemic integration between intra- and extra-region networks – and show more favourable post-shock adjustment trajectories both in terms of GDP and unemployment.

The empirical evidence based on the growing availability (though still inadequate in terms of range and

**Table 8.** ‘Winners’ and ‘losers’ in bi-directional connectivity and short-term changes in regional economic trajectories.

Number of regions	Category	Europe source and destination					
		GDP pc, 2005–08 Average GDP pc, €, PPS	GDP pc, 2009–14 Average GDP pc, €, PPS	Δ GDP pc Rate of growth 1999– 2008 versus 2009–15, %	Unemployment rate, 2000–08 Unemployment rate, 15 years or over, %	Unemployment rate, 2009–15 Unemployment rate, 15 years or over, %	Δ Unemployment rate Difference 2000–08 versus 2009–15, %
10	Winners						
	Average	23,785	24,451.67	2.80	7.35	7.76	0.41
35	Losers						
	Average	22,515	22,797.86	1.26	9.15	10.88	1.73

Note: PPS, purchasing power standards; pc, per capita. Source: Authors’ elaboration of EUROSTAT data.

comparability of indicators to capture openness) of micro- and territorial statistical data shows a wide heterogeneity of firm and place trajectories. At the same time, the complexity of global flows and their dynamics highlights polarization processes at both individual and spatial level: while the channels for knowledge diffusion are more than ever diversified and tend to produce convergence effects, the creation of new knowledge and technology is highly concentrated, spurring divergence. The cross-border network-based organization of economic activities leads to connectivity as well as isolation, strengthening or disrupting the path dependency of regional development trajectories with ambivalent winner–loser impacts for spatial (and individual) equity (e.g., Mudambi & Santangelo, 2015).

Heterogeneity and complexity require composite, diversified and tailored development policies, based on modular combinations of public and private actions, from both local and global sources. The modularity concept has been recently proposed as a base for ‘regional integrated policy platforms’ (Cooke, 2007, 2013). The Schumpeterian ‘recombinative’ innovation process needs to focus not only on ‘old’ and ‘new’ knowledge, but also on ‘local’ and ‘global’. In the same way as for individual firms, what is new to one region might not be to others: new (re)combinations (and their cognitive building blocks) can be attracted or tapped into by ensuring connectivity at the micro and meso levels. Modularity implies integrated intervention, i.e., micro-level support to individuals and firms – as, for example, in skills provision, training, innovativeness and openness encouragement – designed in conjunction with place-sensitive policies through the assessment of meso-level characteristics of industries/functions within regions, looking at economic, technological, social and institutional structures. Conversely, the national and international macro-levels should provide the broad framework conditions for the regulation of global flows – with respect, for example, to sustainability, social responsibility, tax regimes and human rights, and the integration with other forms of public intervention, e.g., social policy.

As highlighted in recent contributions (e.g., Bannò, Piscitello, & Varum, 2015), there is still scant appreciation of both region-specific factors and policy measures that influence local firms’ and other agents’ propensity to internationalize, offshore and outsource, or to overcome the ‘liability of foreignness’ (Zaheer, 1995; see also Massini & Miozzo, 2012). As noted above, for example, on the side of outward flows most attention has been devoted to trade, manufacturing and the building of territorial comparative advantages, with limited consideration of how to promote general openness, stimulating individual and organizational risk propensity for ‘going global’, and spurring regional connectivity as a whole. Financial incentives and access to capital are necessary but not anymore sufficient to support connectivity: institutional capacity-building, technical, legal, fiscal and administrative assistance, targeted and timely information, provision of specialized skills, all support individuals’ and firms’ decisions to invest abroad, helping regions creating absolute advantages – or

‘knowledge monopolies’ (Malecki, 2010) – and offsetting growing territorial inequality (Bannò et al., 2015).

The acknowledgement and evaluation of openness and heterogeneity across geographical space (Gambardella et al., 2009), especially in the case of European regions, is likely to improve the rather modest achievements of traditional economic development policies still firmly grounded on the maximization of ‘inward FDI no matter what’. New actions aimed at making a region less ‘provincial’ (Gambardella et al., 2009) – therefore increasing its overall international integration – have become pressing. More generally, any ‘new’ industrial or regional strategy in Europe should be framed as both vertically and horizontally integrated platforms of place-sensitive development policies to aim simultaneously at different targets, including individual and social isolation across geographical space, following ‘a coherent industrial strategy at various levels of governance, whether regional and/or national’ (Bailey & Driffield, 2007, p. 189). Interdependence and connectivity make public policy particularly important (see also Neilson, 2014; Phelps, 2008) both by ‘looking up’ – i.e., lobbying to address global negative externalities that need be corrected through international regulation – and by ‘looking down’ – i.e., supporting regional systemic integration and institutional capacity building for development and equity. In this context, successful interventions are premised on the availability of meso-level integrated frameworks and diagnostic tools that fully account for the relevance of connectivity and its multifaceted nature, transmission mechanisms and (asymmetrical) impacts.

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## NOTES

1. Although there is substantial similarity among the concepts (GPNs, GVCs, GCCs), there are also important



differences. The distinction is, however, not bounding for present purposes, as the argument does not relate to any particular structures and governance of such networks; for an insightful discussion, see Coe, Dicken, and Hess (2008).

2. See also Narula and Dunning (2010, p. 283): 'Quite apart from the dangers of crowding-out and the problems of stage-inappropriate MNE activities, it is not clear that increased MNE activity in terms of stock or flows necessarily implies a proportional increase in spillovers and linkages.'

3. In the database, joint ventures are tracked only when they lead to new operations, whereas mergers and acquisitions as well as other equity investment are not included. Foreign firms' operations are identified by *Financial Times* analysts through a wide variety of sources, including nearly 9000 media sources, project data from over 1000 industry organizations and investment agencies, and data purchased from market research and publication companies. Furthermore, each project is cross-referenced across multiple sources and more than 90% of investment projects are validated with company sources. In addition, Crescenzi et al. (2014) and Ascani, Crescenzi, and Iammarino (2016) show that investment projects recorded in fDi Markets are highly correlated with other macro-level data on FDI from UNCTAD, the International Monetary Fund (IMF) and the World Bank.

4. The EU-28 includes Austria, Belgium, Bulgaria, Croatia, Cyprus, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden and the UK. Andorra, Greenland, Monaco and San Marino are also included.

5. EFTA includes Iceland, Liechtenstein, Norway and Switzerland.

6. Candidate countries include Albania, Bosnia-Herzegovina, Kosovo, Macedonia, Montenegro, Serbia and Turkey.

7. The relative variation of FDI cumulative inflows and outflows between the pre- and post-crisis periods could also be expressed in terms of the number of projects and/or employment. However, capital expenditure (i.e., the capital invested) offers a more accurate picture of the evolution of FDI flows. On the one hand, the distribution of the number of projects is strongly skewed (for Europe both as a source and as a destination). On the other hand, the relative variation of estimated employment generated by the new FDI projects could be misleading. For many investment projects, particularly in outflows from Europe, the number of jobs created is an estimate of the 'expected' number of employees who will be hired in the new subsidiary: as a result, this information is often missing in the database.

8. This classification has a direct correspondence to the EUROSTAT Regional Classification based on the Nomenclature des Unités Territoriales Statistiques (NUTS) regions, but has the advantage of better capturing regional units with institutional and functional coherence. OECD TL2 regions correspond to EUROSTAT

NUTS-1 regions in the following countries: Austria, Belgium, Cyprus, France, Germany, Luxembourg, Malta, the Netherlands, Poland, Turkey and the UK. Conversely, TL2 regions correspond to NUTS-2 regions in Bulgaria, Croatia, the Czech Republic, Denmark, Finland, Greece, Hungary, Ireland, Italy, Norway, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden and Switzerland. NUTS-3 regions are instead the relevant units in Estonia, Iceland, Latvia, Lithuania and Macedonia. No relevant sub-national classification is defined in Albania, Andorra, Bosnia-Herzegovina, Greenland, Kosovo, Liechtenstein, Monaco, Montenegro, San Marino and Serbia. For those countries with no sub-national classification provided by the EUROSTAT 2013 NUTS shapefile (e.g., Albania), the data have been allocated at the national level (the shapefile can be downloaded from: [http://www.baruch.cuny.edu/geoportals/data/esri/esri\\_intl.htm](http://www.baruch.cuny.edu/geoportals/data/esri/esri_intl.htm)).

9. The distributions for inward and outward FDI are skewed in different directions and the classification of the regions across quintiles reflects these differences, resulting in a different colour coding in the two maps catered around zero. Moreover, when a region did not receive/made any investment in 2003–14 it is white coloured.

10. Most regions in Greece seem not to be hit by the crisis as they are not coloured in shades of red. However, this is the outcome of the limited number of investment targeting these regions already before 2008. Looking only at regions with at least 10 FDI projects before the crisis, it can be seen that both of them – Attica and Central Macedonia – experienced a strong decrease in the amount of FDI received.

11. The core-periphery distinction is based on the Structural Funds – European Regional Development Fund (ERDF) and European Social Fund (ESF) – eligibility 2014–2020 adopted by the European Commission. Regions classified as less developed (GDP/head <75% of the EU-27 average) are labelled as peripheral areas, while regions above that threshold are instead defined as core areas. For regions in countries excluded from the Structural Funds classification the following applied: Core: Andorra, Greenland, Iceland, Liechtenstein, Monaco, Norway, San Marino and Switzerland; and Periphery: Albania, Bosnia-Herzegovina, Kosovo, Macedonia, Montenegro, Serbia and Turkey.

12. There are also several other regions following similar patterns, but to a lesser extent, especially in Spain (País Vasco, Galicia, Andalusia, Isles Balears, Castilla y León and La Rioja), Italy (Abruzzo and Toscana), Portugal (Centro and Lisbon), Germany and some regions in the Eastern Countries.

## REFERENCES

- Aitken, B. J., & Harrison, A. E. (1999). Do domestic firms benefit from direct foreign investment? Evidence from Venezuela. *American Economic Review*, 89(3), 605–618. doi:10.1257/aer.89.3.605

- Ascani, A., Crescenzi, R., & Iammarino, S. (2016). What drives European multinationals to the European Union neighbouring countries? A mixed-methods analysis of Italian investment strategies. *Environment and Planning C: Government and Policy*, 34, 656–675. doi:10.1177/0263774X16628180
- Bailey, D., & Driffeld, N. (2007). Industrial policy, FDI and employment: Still 'missing a strategy'. *Journal of Industry, Competition and Trade*, 7(3–4), 189–211. doi:10.1007/s10842-006-7185-8
- Baldwin, R. E. (2006). Multilateralising regionalism: Spaghetti bowls as building blocs on the path to global free trade. *World Economy*, 29(11), 1451–1518. doi:10.1111/j.1467-9701.2006.00852.x
- Baldwin, R. E. (2011). *Trade and industrialisation after globalisation's 2nd unbundling: How building and joining a supply chain are different and why it matters* (Working Paper No. w17716). Cambridge, MA: National Bureau of Economic Research (NBER).
- Baldwin, R., & Robert-Nicoud, F. (2007). *Offshoring: General equilibrium effects on wages, production and trade* (No. w12991). Cambridge, MA: National Bureau of Economic Research (NBER).
- Bannò, M., Piscitello, L., & Varum, C. (2015). Determinants of the internationalization of regions: The role and effectiveness of public policy measures. *Regional Studies*, 49(7), 1208–1222. doi:10.1080/00343404.2013.821570
- Barba Navaretti, G., Castellani, D., & Disdier, A. C. (2010). How does investing in cheap labour countries affect performance at home? Firm-level evidence from France and Italy. *Oxford Economic Papers*, 62(2), 234–260.
- Barba Navaretti, G., & Venables, A. (2006). *Multinational firms in the world economy*. Princeton: Princeton University Press.
- Bathelt, H., Malmberg, A., & Maskell, P. (2004). Clusters and knowledge: Local buzz, global pipelines and the process of knowledge creation. *Progress in Human Geography*, 28(1), 31–56. doi:10.1191/0309132504ph469oa
- Blomström, M., & Kokko, A. (1998). Multinational corporations and spillovers. *Journal of Economic Surveys*, 12(3), 247–277. doi:10.1111/1467-6419.00056
- Blomström, M., & Lipsey, R. E. (1989). The export performance of US and Swedish multinationals. *Review of Income and Wealth*, 35(3), 245–264. doi:10.1111/j.1475-4991.1989.tb00592.x
- Blomström, M., & Persson, H. (1983). Foreign investment and spillover efficiency in an underdeveloped economy: Evidence from the Mexican manufacturing industry. *World Development*, 11(6), 493–501. doi:10.1016/0305-750X(83)90016-5
- Boschma, R. (2005). Proximity and innovation: A critical assessment. *Regional Studies*, 39(1), 61–74. doi:10.1080/0034340052000320887
- Boschma, R. (2015). Towards an evolutionary perspective on regional resilience. *Regional Studies*, 49(5), 733–751. doi:10.1080/00343404.2014.959481
- Boschma, R., & Iammarino, S. (2009). Related variety, trade linkages, and regional growth in Italy. *Economic Geography*, 85(3), 289–311. doi:10.1111/j.1944-8287.2009.01034.x
- Camagni, R. (2002). On the concept of territorial competitiveness: Sound or misleading? *Urban studies*, 39(13), 2395–2411. doi:10.1080/0042098022000027022
- Cantwell, J. A., & Iammarino, S. (2003). *Multinational corporations and European regional systems of innovation*. London: Routledge.
- Castellani, D., & Pieri, F. (2013). R&D offshoring and the productivity growth of European regions. *Research Policy*, 42(9), 1581–1594. doi:10.1016/j.respol.2013.05.009
- Castellani, D., & Pieri, F. (2016). Outward investments and productivity: Evidence from European regions. *Regional Studies*, 50(12), 1945–1964. doi:10.1080/00343404.2014.981149
- Castellani, D., & Zanfei, A. (2002). Multinational experience and the creation of linkages with local firms: Evidence from the electronics industry. *Cambridge Journal of Economics*, 26(1), 1–25. doi:10.1093/cje/26.1.1
- Castellani, D., & Zanfei, A. (2007). Internationalisation innovation and productivity: How do firms differ in Italy? *World Economy*, 30(1), 156–176. doi:10.1111/j.1467-9701.2007.00875.x
- Coe, N. M., Dicken, P., & Hess, M. (2008). Global production networks: Realizing the potential. *Journal of Economic Geography*, 8(3), 271–295. doi:10.1093/jeg/lbn002
- Coe, N. M., Hess, M., Yeung, H. W. C., Dicken, P., & Henderson, J. (2004). 'Globalizing' regional development: A global production networks perspective. *Transactions of the Institute of British geographers*, 29(4), 468–484. doi:10.1111/j.0020-2754.2004.00142.x
- Cooke, P. (2007). To construct regional advantage from innovation systems first build policy platforms. *European Planning Studies*, 15(2), 179–194. doi:10.1080/09654310601078671
- Cooke, P. (2013). *Complex adaptive innovation systems: Relatedness and transversality in the evolving region* (Vol. 55). Abingdon: Routledge.
- Crescenzi, R. (2014). Changes in economic geography theory and the dynamics of technological change. In M. M. Fisher, & P. Nijkamp (Eds.), *Handbook of regional science* (pp. 649–666). Berlin: Springer. doi:10.1007/978-3-642-23430-9\_35
- Crescenzi, R., Gagliardi, L., & Iammarino, S. (2015). Foreign multinationals and domestic innovation: Intra-industry effects and firm heterogeneity. *Research Policy*, 44(3), 596–609. doi:10.1016/j.respol.2014.12.009
- Crescenzi, R., Luca, D., & Milio, S. (2016a). The geography of the economic crisis in Europe: National macroeconomic conditions, regional structural factors and short-term economic performance. *Cambridge Journal of Regions, Economy and Society*, 9, 13–32. doi:10.1093/cjres/rsv031
- Crescenzi, R., Nathan, M., & Rodríguez-Pose, A. (2016b). Do inventors talk to strangers? On proximity and collaborative knowledge creation. *Research Policy*, 45(1), 177–194. doi:10.1016/j.respol.2015.07.003
- Crescenzi, R., Pietrobelli, C., & Rabelotti, R. (2014). Innovation drivers, value chains and the geography of multinational corporations in Europe. *Journal of Economic Geography*, 14(6), 1053–1086. doi:10.1093/jeg/lbt018
- Crescenzi, R., Pietrobelli, P., Rabelotti, R. (2016c). Regional strategic assets and the location strategies of emerging countries' multinationals in Europe. *European Planning Studies*, 24(4), 645–667. doi:10.1080/09654313.2015.1129395
- Crescenzi, R., & Rodríguez-Pose, A. (2011). *Innovation and regional growth in the European Union*. Berlin: Springer Science & Business Media.
- Crescenzi, R., & Rodríguez-Pose, A. (2012). An 'integrated' framework for the comparative analysis of the territorial innovation dynamics of developed and emerging countries. *Journal of Economic Surveys*, 26(3), 517–533.
- Criscuolo, C., Haskel, J. E., & Slaughter, M. J. (2010). Global engagement and the innovation activities of firms. *International Journal of Industrial Organization*, 28(2), 191–202. doi:10.1016/j.ijindorg.2009.07.012
- Cusmano, L., Morrison, A., & Rabelotti, R. (2010). Catching up trajectories in the wine sector: A comparative study of Chile, Italy, and South Africa. *World Development*, 38(11), 1588–1602. doi:10.1016/j.worlddev.2010.05.002
- D'Este, P., Guy, F., & Iammarino, S. (2013). Shaping the formation of university–industry research collaborations: What type of proximity does really matter? *Journal of Economic Geography*, 13(4), 537–558. doi:10.1093/jeg/lbs010
- Dicken, P. (1994). Roepke Lecture in Economic Geography: Global–local tensions: Firms and states in the global space-economy. *Economic Geography*, 70, 101–128. doi:10.2307/143650

- Dicken, P. (2003). *Global shift: Reshaping the global economic map in the 21st century*. London: SAGE.
- Dicken, P. (2007). *Global shift: Mapping the changing contours of the world economy*. London: SAGE.
- Dicken, P., & Henderson, J. (2003). *Making the connections: Global production networks in Britain, East Asia and Eastern Europe* (Final Report on ESRC Research Project R000238535).
- Driffield, N. L., Love, J. H., & Taylor, K. (2009). Productivity and labour demand effects of inward and outward foreign direct investment on UK industry. *Manchester School*, 77(2), 171–203. doi:10.1111/j.1467-9957.2008.02093.x
- Driffield, N., & Taylor, K. (2000). FDI and the labour market: A review of the evidence and policy implications. *Oxford Review of Economic Policy*, 16(3), 90–103. doi:10.1093/oxrep/16.3.90
- Elia, S., Mariotti, I., & Piscitello, L. (2009). The impact of outward FDI on the home country's labour demand and skill composition. *International Business Review*, 18, 357–372. doi:10.1016/j.ibusrev.2009.04.001
- Ernst, D. (1997). *From partial to systemic globalization: International production networks in the electronics industry* (Working Paper No. 98). Berkeley Roundtable on the International Economy.
- Ernst, D. (1998). High-tech competition puzzles – How globalization affects firm behavior and market structure in the electronics industry. *Revue d'Économie Industrielle*, 85(1), 9–30. doi:10.3406/rei.1998.1722
- Ernst, D. (2010). Upgrading through innovation in a small network economy: Insights from Taiwan's IT industry. *Economics of Innovation and New Technology*, 19(4), 295–324. doi:10.1080/10438590802469560
- Ernst, D., Guerrieri, P., Iammarino, S., & Pietrobelli, C. (2001). New challenges for industrial clusters and districts: Global production networks and knowledge diffusion. In P. Guerrieri, S. Iammarino, & C. Pietrobelli (Eds.), *The global challenge to industrial districts* (pp. 131–144). Cheltenham: Edward Elgar.
- Ernst, D., & Kim, L. (2002). Global production networks, knowledge diffusion, and local capability formation. *Research Policy*, 31(8), 1417–1429. doi:10.1016/S0048-7333(02)00072-0
- Fagerberg, J., & Srholec, M. (2008). National innovation systems, capabilities and economic development. *Research Policy*, 37(9), 1417–1435. doi:10.1016/j.respol.2008.06.003
- Fontana, R., Geuna, A., & Matt, M. (2006). Factors affecting university–industry R&D projects: The importance of searching, screening and signalling. *Research Policy*, 35(2), 309–323. doi:10.1016/j.respol.2005.12.001
- Gagliardi, L., Iammarino, S., & Rodriguez-Pose, A. (2015). *Outward FDI and the geography of jobs: Evidence from the UK* (CEPR Discussion Paper No. 10855, September). London: Centre for Economic Policy Research (CEPR).
- Gambardella, A., Mariani, M., & Torrisi, S. (2009). How 'provincial' is your region? Openness and regional performance in Europe. *Regional Studies*, 43(7), 935–947. doi:10.1080/00343400801932268
- Gereffi, G. (2005). The global economy: Organization, governance, and development. *Handbook of Economic Sociology*, 2, 160–182.
- Gereffi, G., Humphrey, J., & Sturgeon, T. (2005). The governance of global value chains. *Review of International Political Economy*, 12(1), 78–104. doi:10.1080/09692290500049805
- Gereffi, G., & Kaplinsky, R. eds. (2001). *The value of value chains: Spreading the gains from globalisation* (Vol. 32). Brighton: Institute of Development Studies (IDS), University of Sussex.
- Gereffi, G., & Korzeniewicz, M. (Eds.). (1994). *Commodity chains and global capitalism*. London: Praeger.
- Girma, S., Greenaway, D., & Wakelin, K. (2001). Who benefits from foreign direct investment in the UK? *Scottish Journal of Political Economy*, 48(2), 119–133. doi:10.1111/1467-9485.00189
- Grossman, G. M., & Rossi-Hansberg, E. (2006). *Trading tasks: A simple theory of offshoring* (Working Paper Number No. w12721). Cambridge, MA: National Bureau of Economic Research (NBER).
- Guy, F. (2009). *The global environment of business*. Oxford: Oxford University Press.
- Guy, F. (2015). Globalisation, regionalization and technological change. In D. Archibugi & A. Filippetti (Eds.), *The handbook of global science, technology and innovation* (pp. 575–596). Oxford: Wiley-Blackwell.
- Henderson, J., Dicken, P., Hess, M., Coe, N. M., & Yeung, H. W. C. (2002). Global production networks and the analysis of economic development. *Review of International Political Economy*, 9, 436–464. doi:10.1080/09692290210150842
- Hess, M., & Yeung, H. W. C. (2006). Whither global production networks in economic geography? Past, present and future. *Environment and Planning A*, 38(6), 1193–1204.
- Hobday, M., Davies, A., & Prencipe, A. (2005). Systems integration: A core capability of the modern corporation. *Industrial and Corporate Change*, 14(6), 1109–1143. doi:10.1093/icc/dth080
- Huber, F. (2012). On the role and interrelationship of spatial, social and cognitive proximity: Personal knowledge relationships of R&D workers in the Cambridge information technology cluster. *Regional Studies*, 46(9), 1169–1182. doi:10.1080/00343404.2011.569539
- Iammarino, S., & McCann, P. (2013). *Multinationals and economic geography: Location, technology and innovation*. Cheltenham: Edward Elgar.
- Iammarino, S., & McCann, P. (Forthcoming 2017). Network geographies and geographical networks. Co-dependence and co-evolution of multinational enterprises and space. In G. L. Clark, M. P. Feldman, M. S. Gertler, & D. Wójcik (Eds.), *The New Oxford handbook of economic geography*. Oxford: Oxford University Press.
- Ietto-Gillies, G. (2012). *Transnational corporations and international production: Concepts, theories and effects*. Cheltenham: Edward Elgar.
- Jacobs, J. (1961). *Death and life of great American cities*. New York: Random House.
- Javorcik, B. S. (2004). Does foreign direct investment increase the productivity of domestic firms? In search of spillovers through backward linkages. *American Economic Review*, 94(3), 605–627. doi:10.1257/0002828041464605
- Javorcik, B. S., & Spatareanu, M. (2008). To share or not to share: Does local participation matter for spillovers from foreign direct investment? *Journal of Development Economics*, 85(1), 194–217. doi:10.1016/j.jdeveco.2006.08.005
- Kemeny, T., & Rigby, D. (2012). Trading away what kind of jobs? Globalization, trade and tasks in the US economy. *Review of World Economics*, 148, 1–16. doi:10.1007/s10290-011-0099-5
- Kitson, M., Martin, R., & Tyler, P. (2004). Regional competitiveness: An elusive yet key concept? *Regional Studies*, 38(9), 991–999. doi:10.1080/0034340042000320816
- Kokko, A. (1996). Productivity spillovers from competition between local firms and foreign affiliates. *Journal of International Development*, 8(4), 517–530. doi:10.1002/(SICI)1099-1328(199607)8:4<517::AID-JID298>3.0.CO;2-P
- Malecki, E. J. (2010). Global knowledge and creativity: New challenges for firms and regions. *Regional Studies*, 44(8), 1033–1052. doi:10.1080/00343400903108676
- Martin, R., & Sunley, P. (2014). On the notion of regional economic resilience: Conceptualization and explanation. *Journal of Economic Geography*. doi:10.1093/jeg/lbu015
- Massini, S., & Miozzo, M. (2012). Outsourcing and offshoring of business services: Challenges to theory, management and geography of innovation. *Regional Studies*, 46(9), 1219–1242. doi:10.1080/00343404.2010.509128
- Mudambi, R. (2007). Offshoring: Economic geography and the multinational firm. *Journal of International Business Studies*, 38(1), 206–210.



- Mudambi, R., & Santangelo, G. D. (2015). From shallow resource pools to emerging clusters: The role of multinational enterprise subsidiaries in peripheral areas. *Regional Studies*, 50(12), 1965–1979. doi:10.1080/00343404.2014.985199
- Narula, R., & Dunning, J. H. (2010). Multinational enterprises, development and globalization: Some clarifications and a research agenda. *Oxford Development Studies*, 38(3), 263–287. doi:10.1080/13600818.2010.505684
- Neilson, J. (2014). Value chains, neoliberalism and development practice: The Indonesian experience. *Review of International Political Economy*, 21(1), 38–69. doi:10.1080/09692290.2013.809782
- Ottaviano, G. I. (2011). 'New' New Economic Geography: Firm heterogeneity and agglomeration economies. *Journal of Economic Geography*, 11(2), 231–240. doi:10.1093/jeg/lbq041
- Paci, R. (1997). More similar and less equal: Economic growth in the European regions. *Review of World Economics*, 133(4), 609–634. doi:10.1007/BF02707405
- Phelps, N. A. (2008). Cluster or capture? Manufacturing foreign direct investment, external economies and agglomeration. *Regional Studies*, 42(4), 457–473. doi:10.1080/00343400701543256
- Robert-Nicoud, F. (2008). Offshoring of routine tasks and (de)industrialisation: Threat or opportunity – And for whom? *Journal of Urban Economics*, 63(2), 517–535.
- Rodríguez-Pose, A. (2013). Do institutions matter for regional development? *Regional Studies*, 47(7), 1034–1047. doi:10.1080/00343404.2012.748978
- Rodríguez-Pose, A., & Di Cataldo, M. (2015). Quality of government and innovative performance in the regions of Europe. *Journal of Economic Geography*, 15(4), 673–706. doi:10.1093/jeg/lbu023
- Rugman, A. M. (2005). *The regional multinationals*. Cambridge: Cambridge University Press.
- Storper, M., & Venables, A. J. (2004). Buzz: Face-to-face contact and the urban economy. *Journal of Economic Geography*, 4(4), 351–370. doi:10.1093/jnlecg/lbh027
- Sturgeon, T. J. (2008). Mapping integrative trade: Conceptualising and measuring global value chains. *International Journal of Technological Learning, Innovation and Development*, 1(3), 237–257. doi:10.1504/IJTLLID.2008.019973
- Thissen, M., van Oort, F., Diodato, D., & Ruijs, A. (2013). *Regional competitiveness and smart specialization in Europe: Place-based development in international economic networks*. Cheltenham: Edward Elgar.
- Turok, I. (1999). Localisation or mainstream bending in urban regeneration? European experience. *Local Economy*, 14(1), 72–86. doi:10.1080/02690949908726476
- United Nations Conference on Trade and Development (UNCTAD). (2015). *Trade and development report*. New York: United Nations.
- Uyarra, E. (2011). Regional innovation systems revisited: Networks, institutions, policy and complexity. In T. Herrschel, & P. Tallberg (Eds.), *The role of the regions, networks, scale, territory* (pp. 169–194). Gothenburg: Region Skane.
- Wrigley, N., Coe, N. M., & Currah, A. (2005). Globalizing retail: Conceptualizing the distribution-based transnational corporation (TNC). *Progress in Human Geography*, 29(4), 437–457. doi:10.1191/0309132505ph559oa
- Yeung, H. W. C. (2009). Regional development and the competitive dynamics of global production networks: An East Asian perspective. *Regional Studies*, 43(3), 325–351. doi:10.1080/00343400902777059
- Yeung, H. W. C. (2016). *Strategic coupling: East Asian industrial transformation in the new global economy*. Ithaca: Cornell University Press.
- Young, S., Hood, N., & Peters, E. (1994). Multinational enterprises and regional economic development. *Regional Studies*, 28(7), 657–677. doi:10.1080/00343409412331348566
- Zaheer, S. (1995). Overcoming the liability of foreignness. *Academy of Management Journal*, 38(2), 341–363. doi:10.2307/256683