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# Global Investments and Regional Development Trajectories: the Missing Links

Riccardo Crescenzi & Simona Iammarino

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# Global Investments and Regional Development Trajectories: the Missing Links

Riccardo Crescenzi\* & Simona Iammarino\*\*

## Abstract

Regional economic development has been long conceptualised as a non-linear, interactive and socially embedded process: these features were traditionally regarded as spatially mediated and highly localised. However, unprecedentedly fast technological change coupled with the intensification of global economic integration processes has spurred the need to place regional development in a truly open and interdependent framework. Despite substantial progress made by 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 particular 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 allows us to shed some initial light on how the operationalisation of regional connectivity can improve our empirical understanding of the evolution of regional economies and the policy approach needed to support their reaction to change.

**Keywords:** FDI, regions, local-global connectivity, regional development, Europe

**JEL classification:** F2, R11, R12, O19, O3, O52

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# Global Investments and Regional Development Trajectories: the Missing Links

## 1. Introduction

The recent literature on regional economic development has reached a consensus on the idea that spatial proximity, density and localised processes should be placed into the wider context of economic globalisation by accounting for other forms of proximity between local and non-local agents (e.g. Uyarra, 2011; Huber, 2012; Crescenzi et al., 2016b). Regional economic and innovation trajectories do not depend exclusively on localised productive and knowledge assets, but need to combine ‘local buzz’ (Storper and Venables, 2004) and ‘global pipelines’ (Bathelt et al., 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, 62), while other non-spatial relations – i.e. cognitive, organisational, social and institutional – play a crucial role as complements and/or substitutes of physical closeness (e.g. D’Este et al., 2013; Crescenzi et al., 2016b).

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. Dicken, 1994, 2003, 2007; Ernst and Kim, 2002; Henderson et al., 2002; Dicken and Henderson, 2003; Coe et al., 2004, 2008; Hobday et al., 2005; Wrigley et al., 2005; Hess and Yeung, 2006; 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) (see, among others, Gereffi and Korzeniewicz, 1994; Gereffi and Kaplinsky, 2001; Gereffi, 2005; Gereffi et al., 2005).<sup>1</sup>

Despite considerable academic advances in reconciling firms' cross-borders organisational networks with space-specific assets and institutional structures – i.e. the 'strategic coupling' process which 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 aims to contribute 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 and Rodriguez-Pose, 2011) that systematically links localised 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 subnational regions of the European Union 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 the period 2003-2014, we follow up on previous work and classify regions in a dynamic perspective, looking in particular at different stages of the value chain, or functions (e.g. Sturgeon 2008; Crescenzi et al., 2014), before and after the 2008

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<sup>1</sup> Although there is substantial similarity among the concepts (GPNs, GVCs, GCCs), there are also important differences. The distinction is however not bounding for our purposes here, as our argument does not relate to any particular structures and governance of such networks; for an insightful discussion see Coe et al. (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 organised in four sections. The following Section 2 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. Section 3 presents some descriptive evidence of the geography of foreign investment flows in and from the European Union over the years 2003-2014, 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. Section 4 concludes, highlighting some possible implications for public policies and the challenges ahead in the analysis of global-local interdependence.

## 2. Global firms' networks and regional connectivity

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

Three key features of the current phase of economic globalisation have direct geographical implications (Iammarino and 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 a half of world 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 (UNCTAD, 2015), and in the European regions in particular (Crescenzi et al., 2016c). Second, the majority of these cross-border flows span neighbouring economies, rather than being genuinely global transactions. This global regionalism is also characterised by the slicing up and recombination of global value chains in which establishments and groups of activities are ‘unbundled’ (Baldwin, 2011) primarily across groups of neighbouring economic systems (e.g. Rugman, 2005; Guy, 2009, 2015). Third, around two-thirds of global FDI stocks are now in service industries (63% in 2012), with the remaining one third involving manufacturing. Services liberalisation, their increasing tradability due to 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 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 et al., 2001; Ernst and Kim 2002). 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 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 (Ernst et al., 2001; Ernst and Kim 2002; Coe et al. 2004). 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 new-comer 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-specific and place-specific (Young et al., 1994; Ietto-Gillies, 2012; Iammarino and McCann, 2016), 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 and McCann, 2016). 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 emphasised the importance of the spillovers from global firms to their host locations (e.g. Blomström and Persson 1983; Kokko 1996; Blomström and Kokko 1998; Javorcik 2004; Javorcik and Spatareanu 2008). 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 under-explored. 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 externalisation 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 et al., 2010; Malecki, 2010). The impressive surge of both inward and outward FDI to and from developing and emerging locations – until recently characterised 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 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 (for example, 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 and Srholec, 2008), it is the simultaneous exposure to inflows and outflows (*bi-directionality*) in places – like most of the European Union – where the concepts of 'host' and 'home' overlap and blur that identifies the capability of cities and regions to constantly renew their competitive advantage and to react to shocks, shaping their long-term socio-economic performance, welfare and resilience.

## 2.2 Connectivity and regional economic development

Following the above line of argument, regional economic development trajectories can be re-conceptualised 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 and Rodriguez-Pose, 2011 and 2012): (i) the link between local innovative efforts and knowledge generation; (ii) the geographical diffusion of knowledge spillovers and the region's industrial specialization; (iii) the genesis and structure of local and regional policies; and (iv) 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: (i) 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; (ii) influencing how global knowledge and resources made available by regional connectivity are de-coded 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 and Zanfei, 2007; Dicken, 2007; Criscuolo et al. 2010). 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-industry 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 et al., 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. Blomstrom and Lipsey, 1989); finally, labour market effects are mainly mediated by labour mobility (e.g. Driffield and 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 shares

technological bases with each other are in fact more likely to benefit from positive externalities (Ernst and Kim, 2002; Javorcik, 2004; Boschma, 2005).

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 and Zanfei, 2002), ‘market stealing effects’ at the expenses of domestic firms (e.g. Aitken and Harrison, 1999), and limited labour mobility due to higher wages paid by foreign enterprises. As also highlighted by Coe et al. (2004, 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 (see, for a review, Barba Navaretti and 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 delocalised activities and reconfiguration of home production (Castellani and Zanfei, 2006; Castellani and Pieri, 2015). The theoretical literature has emphasised 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 and Robert-Nicoud, 2007; Robert-

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<sup>2</sup> See also Narula and Dunning (2010, 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”.

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. Grossman and Rossi-Hansberg, 2006; Driffield et al., 2009; Barba Navaretti et al., 2010; Castellani and Pieri, 2015; Gagliardi et al., 2015). 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 and Iammarino, 2003; Castellani and Pieri, 2013).

However, as pointed out by Castellani and Pieri (2015), the impact on the home economy of internationalisation 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 internationalisation 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 globalisation of production in advanced economies (e.g. Elia et al., 2009; Kemeny and Rigby, 2012).

The bulk of innovation studies posit 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 et al., 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 (Camagni, 2002; Kitson et al., 2004; Bailey and Driffield, 2007). 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 organisation network, have been largely considered at the national system level, often proxied by involvement in international trade, but still fail to be recognised as an essential engine of development in the case of regions (Gambardella et al., 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, 194) in economic systems at different levels of geography (e.g. Fagerberg and Srholec, 2008; Boschma and Iammarino, 2009). 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 European Union, 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 co-ordination of different ‘value networks’ by local firms, organisations and institutions. In fact, vertical disintegration through outsourcing and offshoring may indeed threaten the thickness of localised 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 our 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 (see, for all, Martin and Sunley, 2014, and Boschma, 2015). Although a few attempts have been made in order to incorporate the role of knowledge (Boschma, 2005) and trade networks into the concept (Thissen et al. 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 our



understanding of regional development trajectories and resilience and the ways to enhance them.

### 3. Regions *on the move*: a broad-brush picture of regional connectivity through global investment flows in Europe

#### 3.1 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 we look 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 multi-scalar web of global inter-regional connectivity neither can they 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 organisational 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. sub-contracting, outsourcing, joint-ventures, trade, knowledge and skills exchange) would be ideal for our purposes here 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 (starting year of data collection) and 2014 (most recent post-crisis year with complete data), and includes all cross-border greenfield and brownfield investment<sup>3</sup> inward and outward Europe from/to the world including intra-Europe. The latter is defined as follows: European Union 28 (EU)<sup>4</sup>, EFTA countries<sup>5</sup>, Candidates 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.

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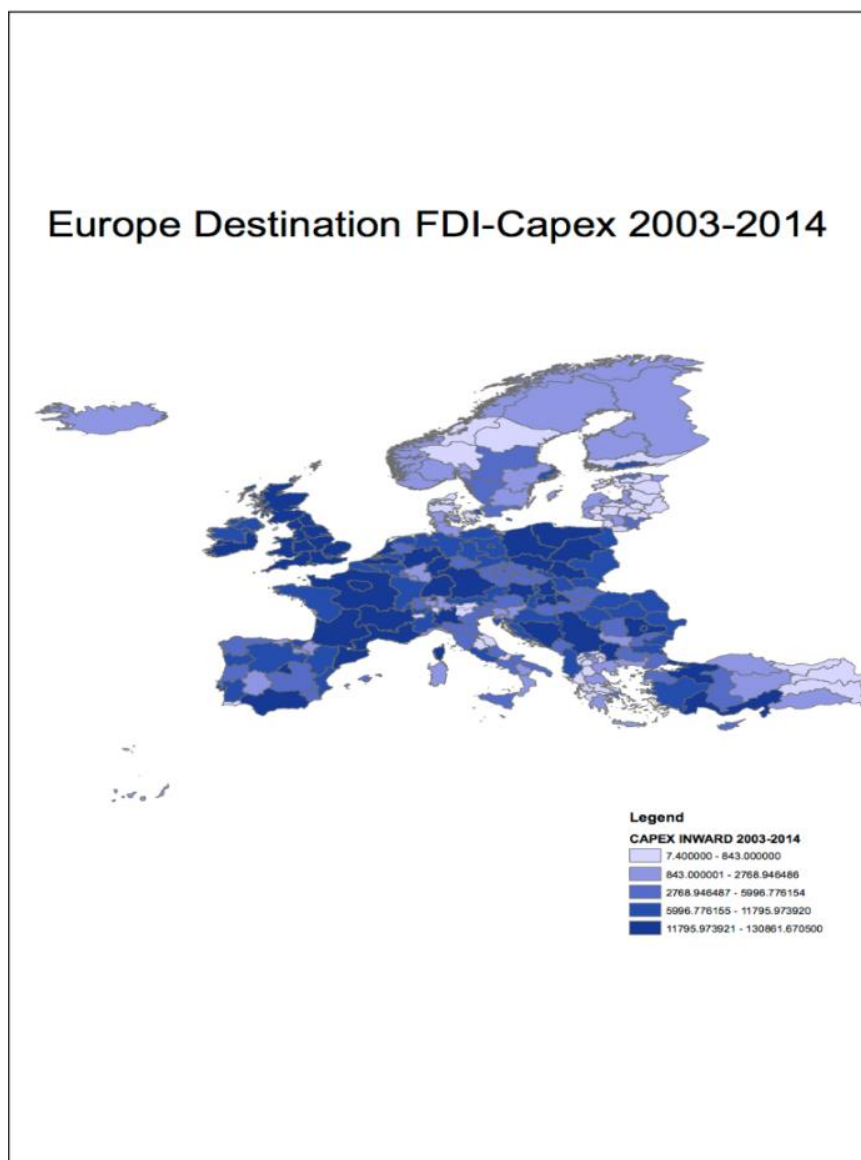
<sup>3</sup> In the database Joint Ventures are tracked only when they lead to new operations, whereas Mergers & Acquisitions as well as other equity investment are not included. Foreign firms’ operations are identified by Financial Times analysts through a wide variety of sources, including nearly 9,000 media sources, project data from over 1,000 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 percent of investment projects are validated with company sources. In addition, Crescenzi et al. (2014) and Ascani et al. (2016) show that investment projects recorded in *fDi Markets* are highly correlated with other macro-level data on FDI from UNCTAD, IMF and the World Bank.

<sup>4</sup> EU28 includes: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, and United Kingdom. Andorra, Greenland, Monaco, and San Marino are also included in EU28.

<sup>5</sup> EFTA includes: Iceland, Liechtenstein, Norway, and Switzerland.

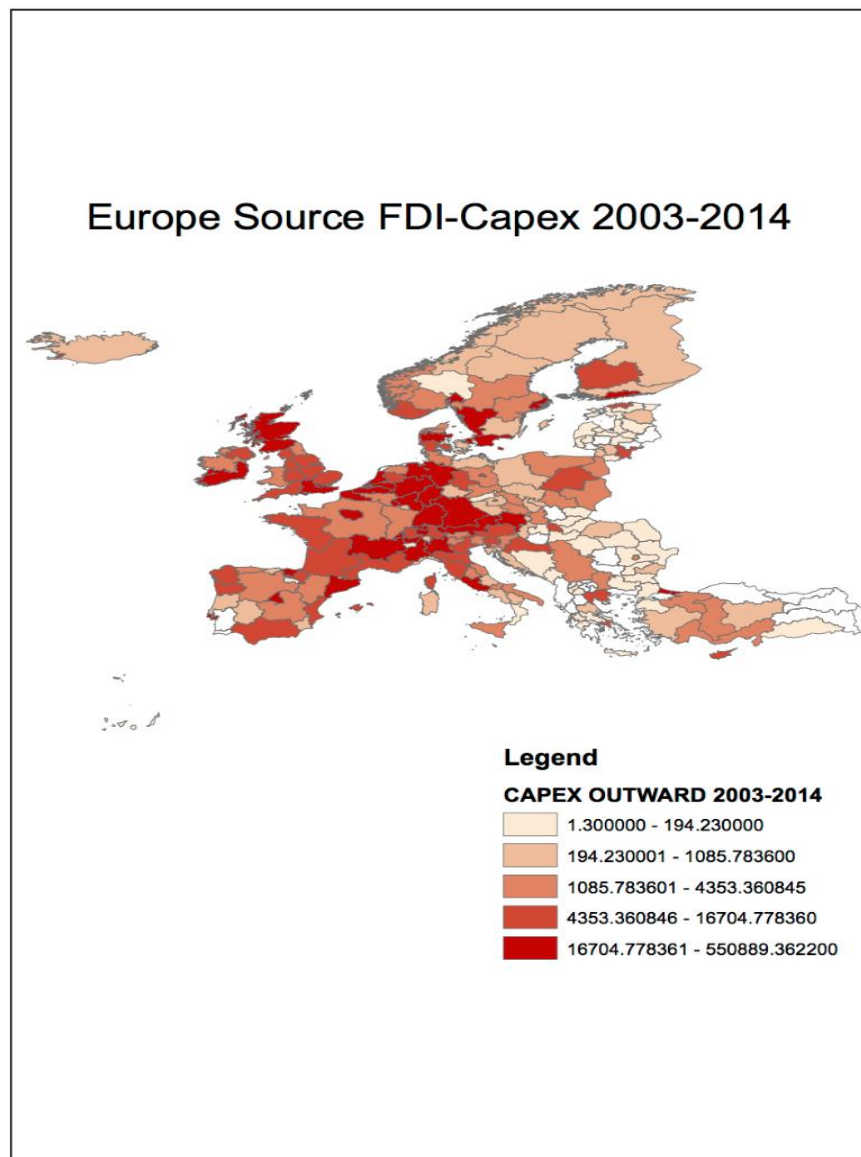
<sup>6</sup> Candidate countries include: Albania, Bosnia-Herzegovina, Kosovo, Macedonia, Montenegro, Serbia, and Turkey.

**Figure 1 – Foreign Direct Investment towards the Regions of Europe (Cumulative Inward Capital Expenditure 2003-2014, Million USD).**



Source: authors' elaboration on *fDi-Markets* data

**Figure 2 – Foreign Direct Investment originating from the Regions of Europe (Cumulative Outward Capital Expenditure 2003-2014, Million USD).**



Source: authors' elaboration on *fDi-Markets* data

Figures 1 and 2 map the spatial distribution of inward (Fig. 1) and outward (Fig. 2) FDI cumulative capital expenditure (Capex)<sup>7</sup> in the EU regions (at the Territorial Level 2 of the OECD Regional Classification<sup>8,9</sup>) over the 2003-2014 period. The spatial distribution of the non-normalised value of FDI inflows (Fig. 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 in the Candidate Countries are also relevant hotspots for the attraction of FDI. The geography of regional outward FDI (Fig. 2) is concentrated in the 'Blue Banana' of Europe and in capital cities, confirming the spatial selectivity of active internationalisation processes. A simple descriptive analysis of the change in the spatial extent, nature and directionality of these flows offers relevant

<sup>7</sup> The relative variation of FDI cumulative inflows and outflows between the pre-crisis and post-crisis periods could also be expressed in terms of 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 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 that will be hired in the new subsidiary: as a result, this information is often missing in the database.

<sup>8</sup> This classification has a direct correspondence to the EUROSTAT Regional Classification based on the NUTS regions but has the advantage of better capturing regional units with institutional and functional coherence. OECD TL2 regions correspond to EUROSTAT NUTS1 regions in the following countries: Austria, Belgium, Cyprus, France, Germany, Luxembourg, Malta, Netherlands, Poland, Turkey, and United Kingdom. Conversely, TL2 regions correspond to NUTS2 regions in Bulgaria, Croatia, Czech Republic, Denmark, Finland, Greece, Hungary, Ireland, Italy, Norway, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, and Switzerland. NUTS3 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.

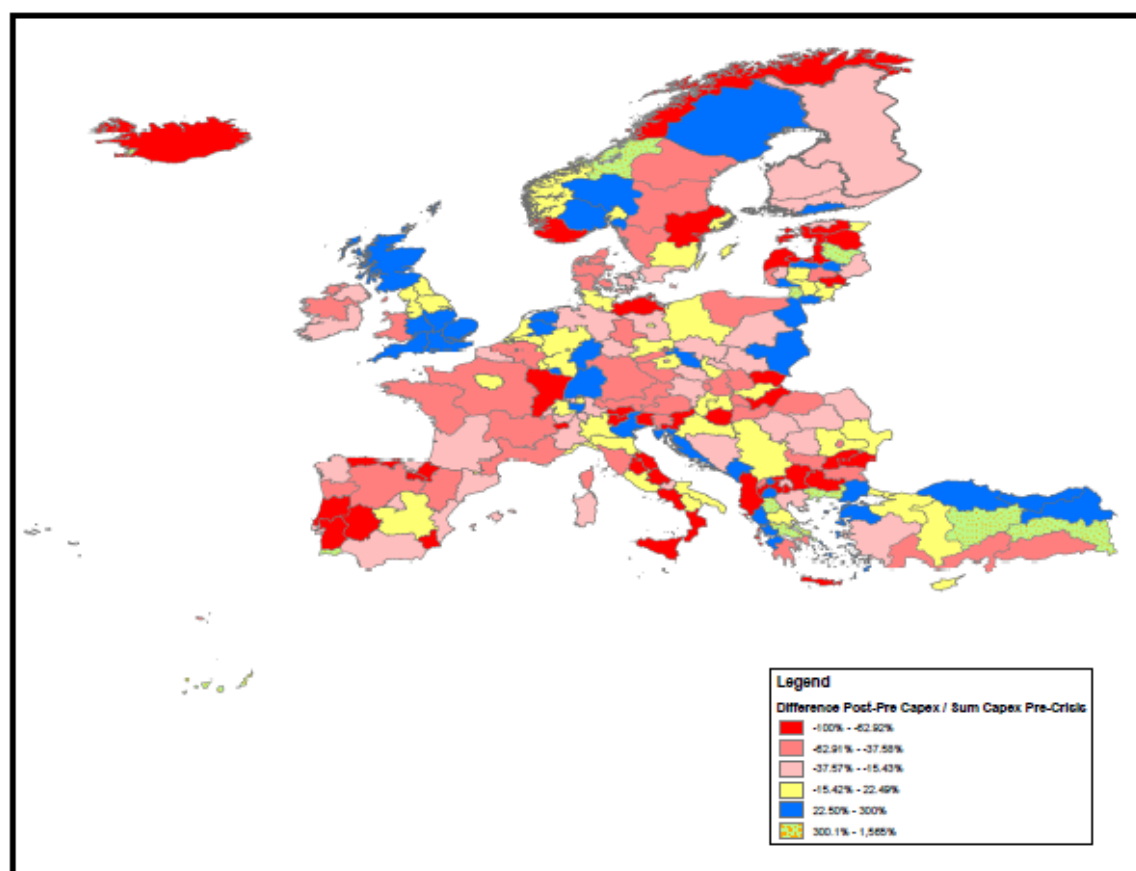
<sup>9</sup> For those countries with no subnational classification provided by the Eurostat 2013 NUTS shapefile (e.g. Albania), the data have been allocated at the national level (shapefile downloaded from: [http://www.baruch.cuny.edu/geoportal/data/esri/esri\\_intl.htm](http://www.baruch.cuny.edu/geoportal/data/esri/esri_intl.htm)).

insights on these multi-layered 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 re-configure 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 (2003-2008) and the post-crisis (2009-2014) periods.

**Figure 3 – Changes in Foreign Direct Investment towards the Regions of Europe after the crisis (Differences in Capital Expenditure between 2003-2008 and 2009-2014).**

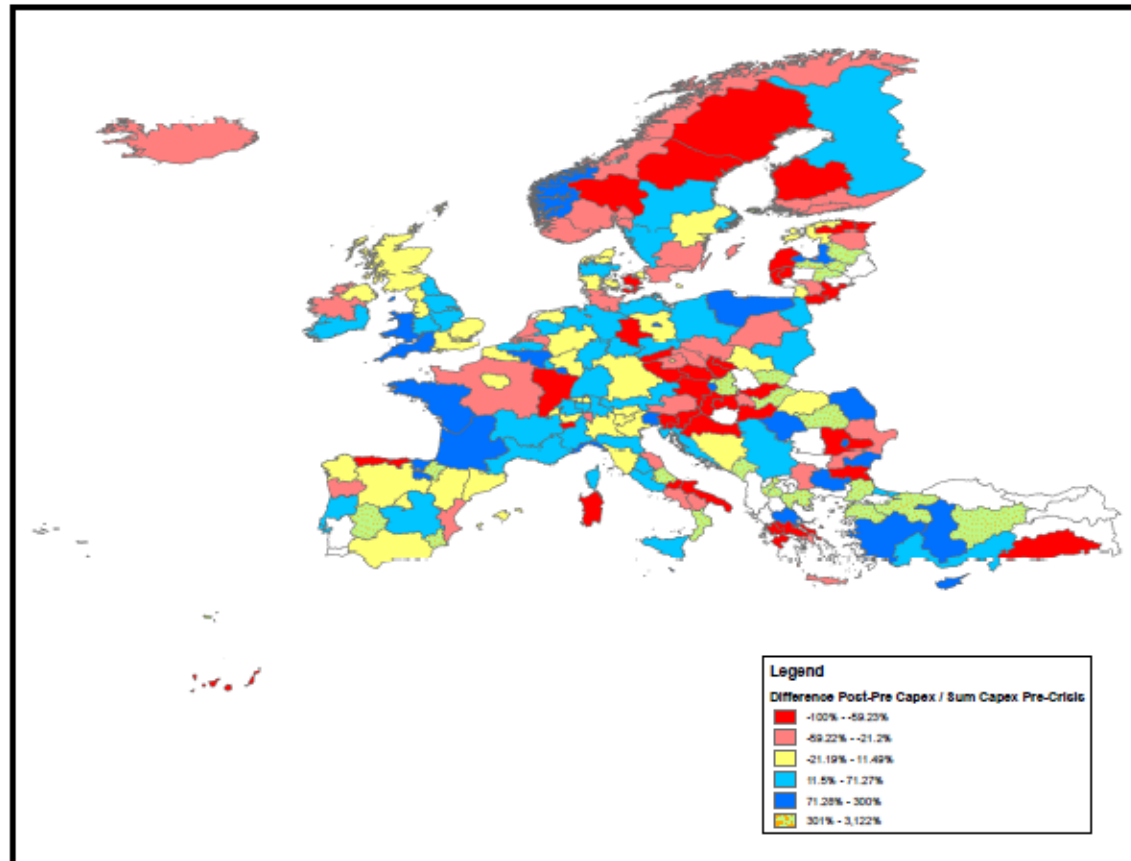
### Europe Destination FDI-Capex



Source: authors' elaboration on *fDi-Markets* data

**Figure 4 – Changes in Foreign Direct Investment originating from the Regions of Europe after the crisis (Differences in Capital Expenditure between 2003-2008 and 2009-2014).**

## Europe Source FDI-Capex



Source: authors' elaboration on *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 normalised change in the capital invested between the two periods: each colour-coded category identifies a quintile of the distribution.<sup>10</sup> A sixth category – the green colour with orange dots – is included in the maps to identify outliers. The latter are

<sup>10</sup> 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 2003-2014 it is coloured white.



regions characterized by a relative variation of FDI in the post-crisis period larger than 300%: this is mostly associated to regions with pre-crisis investment values close to zero that inflate the percentage change even with modest increases in the following period. Whilst focussing on the individual maps can shed light on the evolution of investment flows over time (changes in connectivity across space), the 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 localised: a) 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 the north-west of Germany, and Lombardia, Liguria, and Emilia-Romagna in northern Italy), and the South (Apulia and Basilicata in the Italian Mezzogiorno); b) 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 candidate countries 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 United Kingdom; north of Italy (Lombardy, Veneto, Trentino-Alto Adige); and large part of Spain (e.g. Galicia, Madrid, Castile and León, Aragon, Catalonia, Andalusia). The regions of Paris (Île-de-France), Milan (Lombardia) and those in the north-west of Germany are the most noticeable *stayers* in terms of both inflows and 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 the 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 we focus our attention on the dark blue areas we 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 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 organisational forces spurring the rationalization of MNE operations and boosting the offshoring of an increasing number of functions. Indeed, in almost all EU ‘old’ member states 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, for example the northern regions in Poland, and in candidate countries 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-Wurttemberg and Hessen in Germany, the South of England and the Midlands in the UK, traditionally regarded as European regional **winners**; emerging *winners* may be found in the Adriatic Croatia, and in the region Wschodni in Poland. In line with the conceptual discussion developed in the first part of this paper, the *winners* 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>11</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 that the reduction in outward investment

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<sup>11</sup> Most regions in Greece seem not to be hit by the crisis as they are not colored 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, we see that both of them – Attica and Central Macedonia – experienced a strong decrease in the amount of FDI received.

has remained confined to the eastern part of France (East France), Southern Italy (Apulia, Molise, and Sardinia), Sweden (Middle and Upper Norrland), Easter 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.

### 3.2 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>12</sup> and the Rest of the World.

The table 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

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<sup>12</sup> The core-periphery distinction is based on the *Structural Funds (ERDF and ESF) eligibility 2014-2020* adopted by the European Commission. Regions classified as *less developed* (GDP/head < 75% of 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;
- Periphery: Albania, Bosnia-Herzegovina, Kosovo, Macedonia, Montenegro, Serbia, and Turkey.

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 (see Crescenzi et al. 2016a).

**Table 1 – The spatial extent of FDI in the regions of Europe (changes in FDI to/from different groups of regions)**

	[CAPEX - Core - Periphery - Extra Europe] - Shares								
	from CORE			from PERIPHERY			from EXTRA-EU		
	PRE-CRISIS	POST-CRISIS	Growth Rate	PRE-CRISIS	POST-CRISIS	Growth Rate	PRE-CRISIS	POST-CRISIS	Growth Rate
to CORE	20%	18%	-16%	19%	13%	-32%	72%	79%	1%
to PERIPHERY	12%	9%	-31%	28%	16%	-43%	28%	21%	-34%
to EXTRA-EU	68%	74%	2%	53%	71%	34%			

Source: authors' elaboration on *fDi-Markets* data

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 color-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, 2 and 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>13</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 both tables) 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'.

**Table 2 – The nature of FDI inflows in the regions of Europe BEFORE the Crisis (Shares of business activities by class of change in Capex)**

Europe Destination - Business Activities only PRE CRISIS (2003-2008) - Shares				
Classes of change in Capex	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 on *fDi-Markets* data

**Table 3 - The nature of FDI inflows in the regions of Europe AFTER the Crisis (Shares of business activities by class of change in Capex)**

Europe Destination - Business Activities only POST CRISIS (2009-2014) - Shares				
Classes of change in Capex	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 on *fDi-Markets* data

<sup>13</sup> There are also several other regions following similar patterns but to a lesser extent especially in Spain (Pais Vasco, Galicia, Andalusia, Isles Baleares, Castilla y Leon, La Rioja), Italy (Abruzzo, Toscana, Ticino), Portugal (Centro, Lisbona), Germany and some regions in the Eastern Countries.

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 de-localise 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 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 internationalisation 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.

**Table 4 - The nature of outward FDI originating from the regions of Europe BEFORE the Crisis (Shares of business activities by class of change in Capex)**

Europe Source - Business Activities only PRE CRISIS (2003-2008) - Shares				
Classes 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 on *fDi-Markets* data

**Table 5 - The nature of outward FDI originating from the regions of Europe AFTER the Crisis (Shares of business activities by class of change in Capex)**

<b>Europe Source- Business Activities only POST CRISIS (2009-2014) - Shares</b>				
Classes 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 on fDi-Markets data

### 3.3 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 (PPS) and unemployment rates – crude proxies for regional development – for *slipper* and *climber* regions identified in Section 3, focusing on the 1<sup>st</sup> and 5<sup>th</sup> quintile in the distribution of the changes in inward/outward flows before and after the crisis. Table 6 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 re-absorb 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 EU28 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 EU28 average. When regions are categorised looking at changes in their FDI outflows (Tab. 7), *climbers* show slightly higher levels of GDP per capita but also more favourable GDP adjustment patterns (+6.65%), when compared to *slippers* (+4.84%) and to the EU28 average (+4.71% over the same period). Conversely, changes in unemployment rates are more homogenous between the two groups (and in line with the EU28 average), confirming the potentially ambiguous link between active internationalisation and domestic employment.



**Table 6 – Changes in Inward FDI flows and short-term regional economic trajectories**

<i>Europe Destination</i>								
Quintile of change in Capex	Number of regions	Category	GDP pc PPS 2005-2008	GDP pc PPS pc 2009-2014	Δ GDP PPS pc	Unemployment rate 1999-2008	Unemployment rate 2009-2015	Δ Unemployment
			<i>Average Gross domestic product per capita, Euro, PPS</i>	<i>Average Gross domestic product per capita, Euro, PPS</i>	<i>Rate of growth 1999-2008 vs. 2009-2015</i>	<i>Unemployment rate, 15 years or over, percentage</i>	<i>Unemployment rate, 15 years or over, percentage</i>	<i>Difference 1999-2008 vs. 2009-2015</i>
(1)	24	<i>Slippers</i>	24,158.33	24,327.08	0.70%	8.48	12.42	3.94
(5)	16	<i>Climbers</i>	27,975.00	28,153.13	0.64%	6.36	7.47	1.11

\* The number of regions in each class is lower than in previous tables due to the exclusion of outliers and missing data for GDP and/or unemployment. Note that the *Slippers* category only includes the regions in the bottom quintile of the change in capex distribution as discussed in the text.

Source: authors' elaboration on Eurostat data

**Table 7 - Changes in Outward FDI flows and short-term regional economic trajectories**

<i>Europe Source</i>								
Quintile of change in Capex	Number of regions	Categories	GDP pc 2005-2008	GDP pc 2009-2014	Δ GDP pc	Unemployment rate 1999-2008	Unemployment rate 2009-2015	Δ Unemployment
			<i>Average Gross domestic product per capita, Euro, PPS</i>	<i>Average Gross domestic product per capita, Euro, PPS</i>	<i>Rate of growth 1999-2008 vs. 2009-2015</i>	<i>Unemployment rate, 15 years or over, percentage</i>	<i>Unemployment rate, 15 years or over, percentage</i>	<i>Difference 1999-2008 vs. 2009-2015</i>
(1)	25	<i>Slippers</i>	19,516.00	20,460.00	4.84%	9.20	11.08	1.89
(5)	28	<i>Climbers</i>	21,189.29	22,597.62	6.65%	8.77	10.51	1.74

\* The number of regions in each class is lower than in previous tables due to the exclusion of outliers and missing data for GDP and/or unemployment. Note that the *Slippers* category only includes the regions in the first quintile of the change in capex distribution, while the *Climbers* category only includes the regions in the fifth quintile of the change capex distribution as discussed in the text.

Source: authors' elaboration on 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 EU28 average), confirming that our 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 EU28. 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.

**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 2005-2008	GDP pc 2009-2014	Δ GDP pc	Unemployment rate 2000-2008	Unemployment rate 2009-2015	Δ Unemployment
		<i>Average Gross domestic product per capita, Euro, PPS</i>	<i>Average Gross domestic product per capita, Euro, PPS</i>	<i>Rate of growth 1999-2008 vs. 2009-2015</i>	<i>Unemployment rate, 15 years or over, percentage</i>	<i>Unemployment rate, 15 years or over, percentage</i>	<i>Difference 1999-2008 vs. 2009-2015</i>
<b>10</b>	<b>Winners</b>						
	<i>Average Winners</i>	23,785	24,451.67	2.80%	7.35	7.76	0.41
<b>35</b>	<b>Losers</b>						
	<i>Average Losers</i>	22,515	22,797.86	1.26%	9.15	10.88	1.73

Source: authors' elaboration on Eurostat data

#### 4. 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, we need 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 co-ordination of a diverse structure of 'value networks', both localised and non-spatial: this in turn requires capacity to manage institutional change (Rodriguez-Pose, 2013; Rodriguez-Pose and Di Cataldo, 2015). A more accurate understanding of the consequences of regional attractiveness towards inward flows – and the long-term processes of specialisation 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 SMEs, which can provide new knowledge links and a re-orientation 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 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 organisation 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 and Santangelo, 2015).

Heterogeneity and complexity require composite, diversified and tailored development policies, based on modular combinations of public and private actions, both from 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 level. 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, for example social policy.

As highlighted in recent contributions (e.g. Bannò et al., 2015), there is still scant appreciation of both region-specific factors and policy measures that influence local firms' and other agents' propensity to internationalise, offshore and outsource, or to overcome the 'liability of foreignness' (Zaheer, 1995; see also Massini and 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 organisational 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 specialised 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 simultaneously aim 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 and Driffield, 2007, 189). Interdependence and connectivity make public policy particularly important (see also, Phelps, 2008; Neilson, 2014) 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 (asymmetric) impacts.

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