PERSPECTIVE

# International connectedness and local disconnectedness: MNE strategy, city-regions and disruption

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**Abstract**
Much of the rising international connectedness of city-regions has developed from MNEs replacing local connections with (superior) international ones. This often creates local disconnectedness that energizes the current populist backlash against MNE activities. We develop approaches to new IB theory, addressing the interdependencies of MNEs and city-regions that we propose as a crucial avenue for future research. We contrast two generic MNE strategies. The first is the traditional one: the 'global orchestration' of resources and markets. We argue that it exacerbates local disconnectedness. The second, that we call 'local spawning,' involves engaging with the local entrepreneurial eco-system to create and renew local connectedness, diffusing populist responses. Some MNEs are better able to implement a local spawning strategy, due to industry factors like innovation clock-speed, and firm characteristics like organizational path dependency. Finally, we distinguish between disconnection, which is an outcome of MNE strategy, and global disruptions, like the coronavirus (COVID-19) pandemic, which are primarily stochastic events. Addressing disconnections requires MNEs to re-orient their strategies while dealing with disruptions requires undertaking risk mitigation. We present empirical evidence from city-regions around the world to illustrate our theory.
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## INTRODUCTION

The growing political backlash against internationalization – in a broad sense of the term (Rodrik, 2018) – poses an existential challenge for multinational enterprise (MNE) strategy. While the reasons for this backlash are complex (Autor, et al., 2017), it has undoubtedly been exacerbated by uneven local development. Increased trade and offshoring have allowed for emerging economies to catch up economically, simultaneously spurring efficiency-increasing transformations in all parts of the globe. However, these international business phenomena have also altered the internal economic dynamics of all advanced economies and, in the process, devalued the human capital of significant sections of the

population (Mudambi, 2018). Not surprisingly, many of these advanced economies have witnessed rising political instability, populism, and emerging protectionism (Pastor & Veronesi, 2019; Witt, 2019).

Limiting our main analysis to the context of advanced economies, we make two fundamental arguments in this paper. First, MNE strategies have been a significant part of the ongoing process of global restructuring, resulting in their becoming the targets of populist wrath in recent years. MNE's growing location portfolios are designed to strategically leverage the rising knowledge intensity of the global economy (Mudambi, 2008). Therefore, the strategy of these firms is not exogenous to local development (Beugelsdijk, McCann & Mudambi, 2010; Kano, 2018), but has almost always actively harmed the interests of low-knowledge, low-skill workers in advanced economies. Second, we posit that, rather than being passive objects buffeted by this challenge, MNEs can design their strategies to counteract it. In order to do so, they need to recognize the adverse local effects of their operations in the regions in which they locate. They can then dynamically leverage and actively co-create location-specific advantages. These may appear in the form of country-specific advantages (CSAs) (Rugman & Verbeke, 2001a). Perhaps more importantly, they also need to recognize that they may adversely influence the regions in which they locate and that they have the means to amend these effects.

MNEs are likely to meet opposition if their activities are perceived to immiserate sections of the population in the locations where they operate. Hence, we propose that IB's traditional cross-border objects of analysis – location choice, entry mode, and governance – need to be complemented with new theory that incorporates the fact that, to a growing extent, MNEs' very survival depends on the interdependencies between their local engagement and regional development on the one hand and their cross-border activities on the other (Cantwell, Dunning & Lundan, 2010; Cano-Kollmann, et al., 2016).[1]

Traditionally, IB has related CSAs to national competitiveness, and consequently focuses its analysis of the location choice of MNEs at the national level, e.g., institutions like law, education (especially university systems), economic policies, and political systems. However, national competitiveness is increasingly based on sub-national economic systems (Scott & Storper, 2003). One long-

standing conceptualization of such systems is that of the *city-region*, i.e., a functional economic space consisting of a core city and its surrounding geographical catchment area for labor and services, comprising smaller cities and towns (Park, et al., 1925; Dickinson, 1947; Berry, 1973). While the research tradition of economic geography has studied city-regions for more than a century (Geddes, 1915; Cheshire, 1990; Parr, 2005), the concept has not yet received much attention in IB (for select exceptions, see Goerzen, et al., 2013; Stallkamp, et al., 2018; Blevins, et al., 2016; Ma, Delios & Lau, 2013; Ma, Tong, & Fitza, 2013). We argue that this limits the advance of MNE theory. MNEs often locate in populous city-regions and typically choose these regions' core cities, given their pools of skilled labor and the proximity of technology assets (Scott, 2001; Mudambi, 2008). However, we suggest that such focused MNE entry affects the development of the city-region asymmetrically, and sometimes exacerbates the decline in the region's catchment area. The reason is that, while MNEs create international connectedness between the city-regions in which they locate, they also impact their local connectedness, for good or ill. Given current steep declines in spatial transaction costs,[2] international connectedness is on the rise (Pearce, 1999). Hence, to a growing extent, it conditions the development of city-regions.

In this paper, our preliminary step is to analyze *local connectedness* in city-regions in economic, social, and political dimensions. Our focus here is how catchment areas are connected to core cities. Catchment areas are typically characterized by smaller cities dominated by traditional, less knowledge-intensive activities (e.g., low-skill, labor-intensive manufacturing) and agricultural towns that have depended on reciprocal trade relationships with the core city. This connectedness has been a major source of economic opportunities in catchment areas.

The next step constitutes the heart of our analysis, examining how this traditional internal dynamic of city-regions is impacted by MNE activity and strategy. First, we examine MNE activity in the form of *international connectedness* and develop the paper's first proposition. Core cities typically derive a much greater share of their value creation from knowledge-intensive production and R&D activities; their labor force is continuously upskilled, and they attract highly skilled labor from abroad (Goerzen, et al., 2013). That makes core cities attractive for MNE investments that directly

or indirectly create specialized knowledge-intensive business services. The result is that firms in core cities – MNEs as well as the network of domestic firms that they work with – now increasingly serve global value chains, to the detriment of local value chain relationships and services for local manufacturing firms in catchment areas. At the same time, core cities increasingly rely on foreign imports of consumer goods and foods rather than on the products of traditional local manufacturers and agriculture. As the local value chain relationships of increasingly knowledge-intensive core cities dwindle, the smaller cities and towns in their catchment areas need to renew their local connectedness. If they do not, their economic opportunities will decline relative to core cities, centralizing wealth and population there. The result will be rising inequality between catchment areas and core cities that often brings about social as well as political instability.

In the second step of our analysis, we examine MNE strategy. We argue that the uneven distribution of economic opportunities within city-regions as a result of international connectedness is not inevitable. Whether catchment areas become disconnected or can renew their local connections to core cities is influenced by MNEs' *strategies of local engagement*. We develop two generic MNE strategies that give rise to two propositions that capture what we argue is the central choice for today's MNE: whether or not they complement their rationalization of global value chains with activities stimulating new local connectedness by becoming part of local entrepreneurial ecosystems.

We propose that the traditional MNE strategy focused solely on global orchestration will contribute to replacing local with international connectedness, and hence be associated with rising local inequality. In contrast, we propose a novel strategy that we call *local spawning* which will contribute to the renewal of local connectedness through active engagement with the local startups. We define an MNE's local spawning activities as those that create and develop the firm as the hub in a local entrepreneurship ecosystem. It entails an active engagement with the local entrepreneurship community through a variety of modalities. In contrast to scalable efficiency as the main objective of global value chain orchestration, local spawning seeks scalable learning, and, in the most general terms, it involves value chain experimentation.

A knowledge-seeking MNE that complements its global orchestration activities with local spawning may leverage new local connectedness as an open innovation strategy. By exploring suppliers and talent in catchment areas, it will benefit its own performance and drive local economic development. In the process, it will create a tighter fit between its firm-specific advantages (FSAs) and the locational advantage of the relevant city-region. Thus, international connectedness may forge new types of local connectedness, contributing to developing polycentric city-regions, with secondary core cities, new technology clusters, and thriving residential satellites (Ganau-Casas, 2014; Hall & Pain, 2006, Scott, 2001). In such city-regions, new disseminated economic opportunities serve to lower the risk of policy backlash against internationalization.

Finally, we link our analysis to the skepticism toward globalization that has been rising over the past decade (Cuervo-Cazurra, et al. 2017) and, therefore, the limits to what MNE strategy can achieve. This serves to precisely delineate the subject matter of this paper. Our focus is on global connectedness and local disconnectedness that are the direct outcomes of MNE actions and, therefore, can be ameliorated by strategy re-orientation. In contrast, global disruptions like the coronavirus (COVID-19) pandemic are exogenous shocks that affect local economies but do not arise from MNE activity per se. We carefully distinguish between 'disconnectedness' and 'disruptions,' but emphasize that our paper, in the main, addresses the former.

The interdependencies of MNE strategy and the wider development of city-regions is a question of great relevance for not just the development of theory in a range of fields but also local policymakers and MNE executives making innovation strategy and location choice decisions. In order to provide IB with the power to theorize this question, the article incorporates ideas from economic geography, since a central theoretical stronghold in this discipline is the nature and development of city-regions. While the article remains conceptual, in order to illustrate the concerned phenomena and effects, it draws upon illustrative empirical material.

## LOCAL CONNECTEDNESS: CITY-REGIONS

### City-regions
Cities, their associated economic activity, and their role as knowledge hubs, have been central to

economic geography research for more than a century. Geography scholars have always recognized that economic activity and knowledge are distributed unevenly over geographic space. In the early years of the research tradition, the focus was on understanding how land use, rent, and cost spatially segregated geographies into dense, profitable, and expensive urban areas, and progressively less productive and cheaper surrounding spaces (von Thünen, 1826). Later, economists joined geographers to analyze the nature of the economic activity agglomerating in urban areas. Marshall (1920), often considered the originator of the theory of economic clusters, pointed out that cities are not merely population centers, as they also harbor clusters of related industrial activities and their associated labor markets. This conceptualization of clusters has since been refined with analyses of universities and other knowledge institutions and supporting regulatory institutions (Anderson, 1994; Feldman, 1994; Steiner, 1998; Scott, 2006; Youtie & Shapira, 2008). As noted by Storper and Walker (1989), the economic activities in cities generate a supporting business and cultural environment of urban amenities, cultural diversity, and creative milieus (Florida, 2002; Sassen, 2018). Taken together, these lead to a virtuous cycle of growth fueled by continually attracting highly skilled labor. One overarching finding of this line of research is that economic outcomes are also unevenly distributed: some cities develop stronger clusters, higher-class amenities, and institutions, and attract more highly skilled labor than others (Hill and Brennan, 2000; Goerzen, et al., 2013).

Economic geographers also identified the fundamental urban forms arising in these heterogeneous geographical spaces. Remaining primarily focused only on advanced economies (Robinson, 2002), this theorizing began with the theory of *central places*. Beginning with the observation that a location's ability to offer amenities and services hinges upon its population size, Christäller (1933) suggested that urban "places" offer services and amenities to their own population as well as to the populations of smaller places in their surrounding areas ("hinterlands"), resulting in a hierarchy of cities, towns, and villages.[3] This first conceptualization of cities as functional systems (Berry, 1973) gave rise to the notion of *city-regions*, i.e., regions with a large core city with functional relationships with its surrounding region of smaller cities and rural areas. These served as a geographical catchment area for the core city's services and amenities,

and travel-to-work commuting. Whereas catchment areas emerge organically, political boundaries and policies often align with and reinforce them (Park, et al., 1925; Dickinson, 1947; Berry, 1973).[4]

Sitting at the top of the regional urban hierarchy, the core city contains a wide array of services collocated in a central business district, surrounded by concentric circles of manufacturing activities and residential suburbs (Park, et al., 1925), sometimes interspersed with sectors of specialized manufacturing (Hoyt, 1939). Later, as populations grew and manufacturing industries changed, the model of city-regions was amended. Industrial production that was not cost-efficient to be located in the core city shifted outwards. This model can still be seen in the layout of core cities like Chicago in the first half of the twentieth century (Chicago Zoning Commission, 1922). During the last half of the twentieth century, the growth and sprawl of major metropoles prompted geographers to further adjust the model, acknowledging both a more extensive and more diverse core city with different types of residential zones, transport corridors, and pockets of new industries. Concomitantly, the newer models incorporated the emergence of manufacturing clusters and residential satellites in smaller cities in catchment areas (Henderson & Castells, 1987; Agnew & Duncan, 1989; Soja, 2014; Knox, 1993).

### Local Connectedness

The fundamental driver of the development of catchment areas has always been their *local connectedness* to the core city in their region. In the earliest models of functional city systems, largely agricultural catchment areas were in copious reciprocal exchange relationships with core cities. The catchment area supplied food, raw materials, and often a commuting labor force, while the core was the location of high-knowledge services, amenities, and the associated jobs. As manufacturing industries grew, city-regions became more complex, but their fundamental local spatial connectedness retained the interdependence of catchment areas and core cities. The former supplied manufactured goods, components, and later also residential housing stock, while the latter provided services and, increasingly, specialized jobs.

Thus, in the *economic* dimension, we may distinguish between three types of local connections. First, dominant in the pre-industrial age, but still relevant, is trade relationships between local agricultural producers and suppliers of services and manufactured goods. Second, growing since

industrialization, value chain relationships between local supplier and buyer firms. Third, with the rise of the knowledge economy, local knowledge-intensive economic connections have grown in importance, such as local R&D outsourcing and innovation projects and alliances between increasingly specialized and knowledge-intensive local firms.

These types of economic connectedness have a range of economic benefits. Value chain relationships are associated with external scale economies in terms of flexibility, efficiency, and user-producer learning (Maskell & Malmberg, 1999; Lorenzen, 2007). Knowledge spillovers between diverse but related industries, so-called "Jacobs externalities" (Jacobs, 1969), may propagate new forms of innovation (Boschma & Iammarino, 2009). Finally, across a city-region, the dense, diverse, and shifting relationships between suppliers, buyers, and other stakeholders may give rise to an entrepreneurial ecosystem. Together with conspicuous local entrepreneur role models, spillovers of knowledge of the entrepreneurial process (Delgado, et al., 2010), and shared entrepreneurial mindsets and norms (Malecki, 2018), the presence of local investors and incubators may serve to significantly lower the barriers to new firm entry (Spigel, 2017).

Local connectedness also has a *political* dimension. Conscious of the economic connectedness of the city-region, local stakeholders often align interests in order to support it. The provision of power, communication, and transport infrastructures connecting firms in different industrial zones, as well as public education, is crucial for the functioning of local clusters and local value chains. Local political institutions (mayor's offices, city councils) are also important stakeholders in local entrepreneurial ecosystems, providing requisite policy (tax incentives, zoning) and public goods (education, training programs) that strengthen entrepreneurial mindsets) (Malecki, 2018).

Local policies may also serve to connect a city-region in the *social* dimension, across different societal groups and strata. A city-region with strong local connectedness will employ different types and levels of skills within local value chains. Local labor market policies (sometimes public, sometimes negotiated between employers and unions) may ensure a continued local diversity of skills through sustainable wage levels for all groups of skill holders. In well-developed city-regions, stakeholders also negotiate to facilitate differentiated residential zones for different wage-groups, as well as

local transport infrastructures facilitating commuting to work and access to services.

Figure 1 sums up the argument of local connectedness.

## Distribution of Economic Opportunities

Local connectedness in economic, political, and social terms is associated with regional development, not just in terms of the average wealth of a city-region but also in terms of its internal distribution of economic opportunities. Extant research points out that the latter is a more useful measure of local development than the distribution of absolute wealth (such as earnings). While the latter will more often than not be unevenly distributed, whether wealth inequality will give rise to political instability relates to the distribution of opportunities for increased earnings, upskilling, starting up one's own enterprise, and access to affordable services and housing (Bourguignon, 2015; OECD, 2018).

Local connectedness has important effects on how economic opportunities are distributed in a city-region. Local trade between agricultural producers and suppliers of services and manufactured goods benefits both parties. Since the former are chiefly located in the catchment area and the latter in the core city, such local trade is a long-standing way of disseminating economic opportunity geographically. Local value chains disseminate gains from trade from exporting firms to local suppliers. In early industrialization, such value chain relationships were often confined to industrial clusters in core cities and adjacent suburbs. However, as manufacturing in most city-regions shifted outward from the core to smaller cities during the second half of the twentieth century, value chain relationships were established between catchment areas and core cities. A particular form of such connectedness, on the rise during the last decades, is that between the increasing scale of manufacturing plants in smaller cities in catchment areas (Duranton and Puga, 2005) and headquarters and business services in core cities (ÓhUallacháin and Leslie, 2007). The result of these types of economic connectedness is not just disseminated opportunities for employment of manufacturing and agricultural skill-holders in the catchment area and knowledge-intensive skill-holders in the core city but also, as mentioned, external scale and knowledge spillovers to the benefit of firms in the catchment area as well as in the core city. Relatedly, when a local entrepreneurship ecosystem grows out
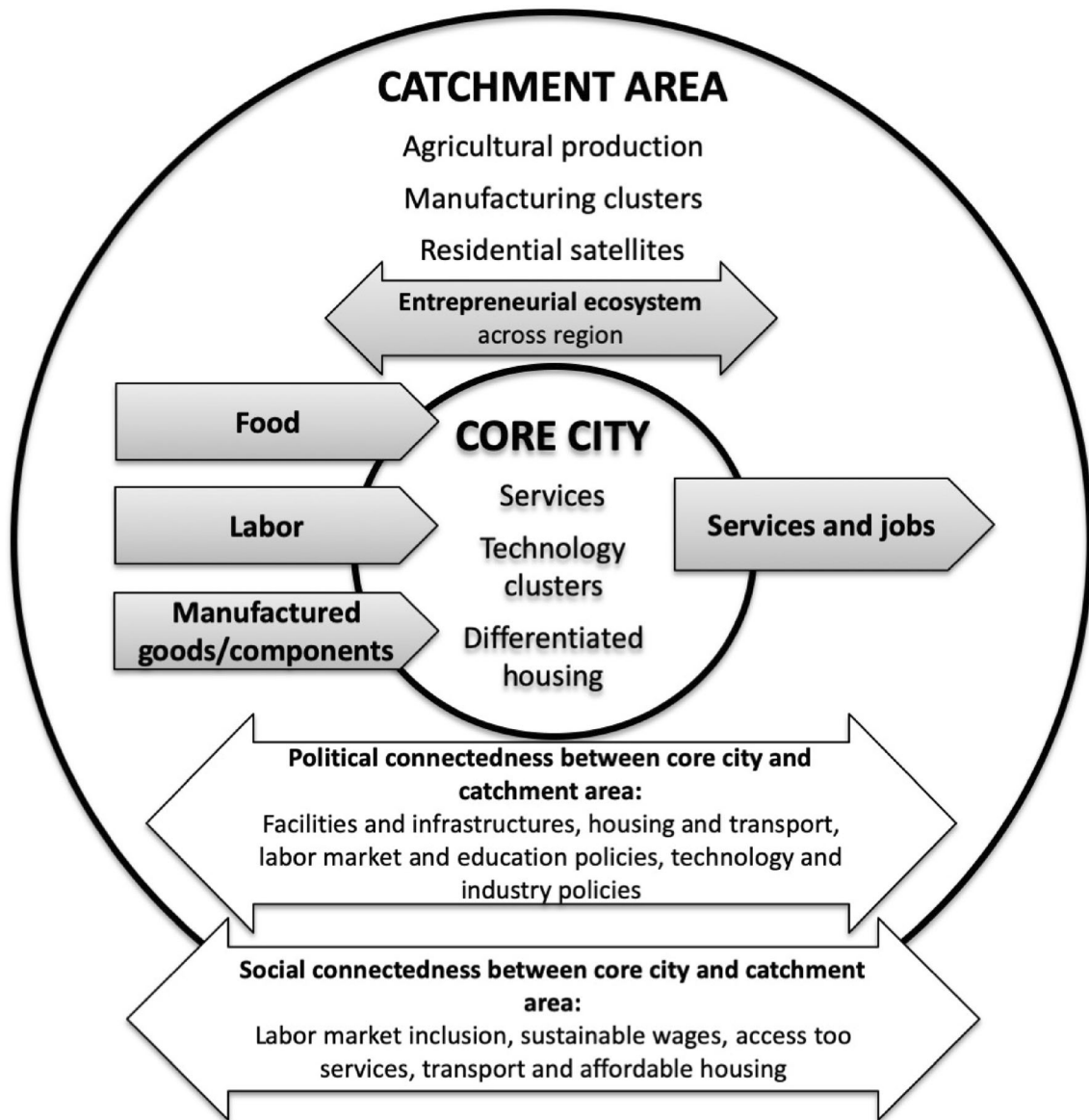
**Figure 1** Local connectedness in a city-region: economic, social, and political local dimensions.

of local economic connectedness between the catchment area and the core city, it is likely to disseminate opportunities for new firms across the city-region. In the political and social dimensions, local connectedness disseminates access to affordable housing, transportation, and services in daily life. In the short term, this provides local transport infrastructures facilitating commuting to work from the catchment area to the core city, and provides catchment area residents access to highly specialized services in the core city (Florida and Feldman, 1988). In the longer term, it also disseminates opportunities for upskilling and gaining

access to political representation to residents across the city-region.

While early city-regions were focused around agriculture and traditional manufacturing, the rise of the knowledge economy is transforming the local economic landscape virtually everywhere. Economic connections, as well as industrial clusters, are becoming increasingly knowledge-intensive, the former as R&D outsourcing and alliances, the latter as technology clusters (Scott, 2001; Mudambi, 2008). Local policies are refocused to serve such types of connections and clusters, investing in university education and research,

public research, and supporting high-tech incubators. City-regions in advanced economies have experienced differing impacts of this shift upon their geographical distribution of economic opportunities. In general, in most city-regions, the knowledge economy has stimulated booming rural–urban migration and the rapid growth of core cities, resulting in urban sprawl and large conurbations. In some city-regions, such growth has also disseminated to catchment areas, giving rise to "secondary cores" or technology clusters. However, such dissemination of economic opportunities has typically been confined to particularly prosperous city-regions with one or two smaller cities offering high-level universities or amenities that are particularly attractive to highly-skilled labor (Hall and Pain, 2006; Soja, 2014). For many other city-regions, the main effects have been a growing disparity of economic opportunities between catchment areas and core cities.

We argue that city-regions that experience such a disparity are characterized by growing local disconnectedness. With the rise of the knowledge economy, city-regions are increasingly attractive as targets for MNE investment (Balland, et al., 2018). We argue that MNEs exert a potentially crucial influence on local disconnectedness, and, hence, ultimately on the distribution of economic opportunities in the city-regions in which they locate. We now turn to an analysis of how this occurs.

## INTERNATIONAL CONNECTEDNESS: MNES

### Inter-city Connectedness
While city-regions are densely connected locally, there has always been some extent of migration between them, and many derive much value from exports. Migration and trade create inter-city connections, of which we can identify two main types (Lorenzen & Mudambi, 2013). The most fundamental is *person-based* connections, such as family relationships, friendships, acquaintanceships, and increasingly informal professional networks (offline and online) between individuals living in different city-regions. Person-based inter-city connections can be maintained across geographical distance thanks to developments in communication and transportation technologies (Agrawal, et al., 2006). Typically, individuals leverage the social proximity provided by their relationships, as well as cultural similarities and shared ethnic backgrounds, to work in scientific teams or to explore entrepreneurial

opportunities across the cities to which they are connected (Saxenian, 2006). These activities involve the exchange of information, advice, and knowledge.

The second type of inter-city connection is organization-based. These include, of course, short-term value chain relationships, but organization-based connections may also entail higher levels of involvement and mutual interdependencies, as in the case of strategic alliances, joint ventures, and, ultimately, ownership. Such connections all span geographies through organizational units located in different city-regions (Bathelt, et al., 2004). Person-based and organization-based connections are intertwined. On the one hand, many person-based connections are created by organizations that transfer personnel across city-regions. However, such individuals are not free to act autonomously within their employer organizations: governance and incentives are designed to align personal decision-making with the strategy of the parent organization. On the other hand, organizations benefit from existing person-based connections and may hire individuals because of the valuable inter-city connections they hold. Organization-based connections with higher levels of involvement may even be designed based on personal relationships between an organization's employees and residents in particular city-regions (Qiu, 2005; Saxenian, 2002; Zaheer, et al., 2009).

### International Connectedness
Even if much inter-city connectedness remains within the borders of nation-states, international connectedness has grown dramatically over the last half of the twentieth century. Person-based international connectedness has been growing, driven by the increasing international mobility of both unskilled workers and highly skilled and educated professionals. While these increases have triggered populist reactions, emerging employment opportunities across the globe have spurred firms to quietly advocate for continued free movement of such professionals. Many such employment opportunities, including the transfer of personnel, are driven by a particular type of organization-based international connectedness that is at the heart of the IB research agenda, e.g., in MNEs. Arguably, leveraging international networks of ownership are the raison d'etre for the existence of MNEs (Buckley and Casson, 1976), and they do so partly as architects of global value chains, arising through their fine-slicing and geographical disaggregation

of value chain activities, allowing them to undertake activities at their most efficient global locations (Massey, 1984; Scott, 1988; Dunning, 1998; Gereffi, 1999; Coe, et al., 2008; Mudambi, 2008; Beugelsdijk, McCann & Mudambi, 2010, Kano, 2018).

MNE strategy has traditionally been market-, asset-, and arbitrage-seeking, and the resulting international connectedness has been in the form of value chain relationships.[5] This has led to a particular spatial configuration connecting city-regions in advanced economies (typically MNE home countries) to lower-cost city-regions in emerging economies characterized initially by lower manufacturing costs.[6] With the emergence of the knowledge economy, MNEs reconfigure their ownership networks and international connections, as well as global value chains, to access and leverage internationally dispersed knowledge (Mudambi, 2008). Facilitated by a concomitant lowering of spatial transaction costs[7] MNEs establish knowledge-intensive international connections to city-regions with strong local technological capabilities, and particularly those that host technology clusters. Such clusters are the result of path-dependent reinforcement of locally differentiated skill bases and firm capabilities. Once a city-region acquires a critical mass of capabilities in a sector, e.g., Stuttgart, Germany, or Detroit, USA, in automobiles, subsequent firm investments over time reinforce them (Hannigan, et al., 2015). Furthermore, growing international migration of highly skilled labor augments local specialized skills.

City-regions that host technology clusters are found in both emerging and advanced economies (Li and Bathelt, 2018). Hence, MNEs search internationally for knowledge supplements and may even challenge the dominance of R&D activities carried out in their home country (Mudambi and Navarra, 2004), where R&D has traditionally been co-located with MNE headquarters. Since state-of-the-art technological and cultural knowledge is embedded in cluster-specific social networks (Giuliani, 2007), it takes "being there" in order to access it (Gertler, 2003). Consequently, many MNEs now establish subsidiaries in particular city-regions in order to "plug into" local clusters in order to access valuable knowledge specific to these locations (Lorenzen and Mahnke, 2004; Schotter et al., 2017; Stallkamp, et al., 2018). While IB has focused attention on MNE activities in 'global cities' (metropoles serving as major trade hubs and often hosting MNE headquarters) (Sassen, 2018; Goerzen,

et al., 2013), knowledge-seeking MNEs also enter into smaller city-regions with attractive skill profiles and technology clusters (Scott, 2001; Mudambi, 2008; Mudambi & Santangelo, 2016). The broad scope of MNE entry into city-regions is evidenced by the significant internationalization of R&D activities over the last few decades (e.g., Awate, Larsen & Mudambi, 2015). Figure 2 sums up the argument of international connectedness.

## INTERNATIONAL CONNECTEDNESS AND LOCAL DISCONNECTEDNESS?

### The Challenge for City-regions Posed by the Knowledge Economy
In a general sense, the rise of the knowledge-based economy poses challenges for local development. The increasing pace at which new technologies arise necessitates life-long learning. City-regions that fail to implement policies and create an environment that helps their citizens continuously adapt may find that sections of their populations experience social disconnectedness. This will likely occur as some citizens miss out on opportunities for upskilling and higher value employment.

The rise of the knowledge economy is also challenging the dissemination of economic opportunities in many city-regions. As mentioned, for centuries, skills and services have agglomerated in core cities. The rise of the knowledge economy exponentiates this tendency. High-skill labor, service firms, and knowledge-intensive activities are increasingly attracted to core cities, in turn developing technology clusters and sprouting services whose knowledge-intensity continues to rise. In former times, local connectedness disseminated wealth as well as economic opportunities across city-regions. However, the rise of the knowledge economy is accompanied by a growing disconnectedness in many city-regions from their surrounding catchment areas. As a result, the rising wages and employment associated with the knowledge economy are often confined to core cities (Florida, 2002; 2017). In many city-regions, increasingly wealthy core cities undergo ambitious urban redevelopment. For instance, former "brownfield" industrial sites, vacant (sometimes for decades) after manufacturing shifted away, are replaced with expensive, high-rise residences. Sleek, modern local transport infrastructures connect inner suburbs wherein new growing new lower density housing units are developed. By contrast, as few knowledge-intensive
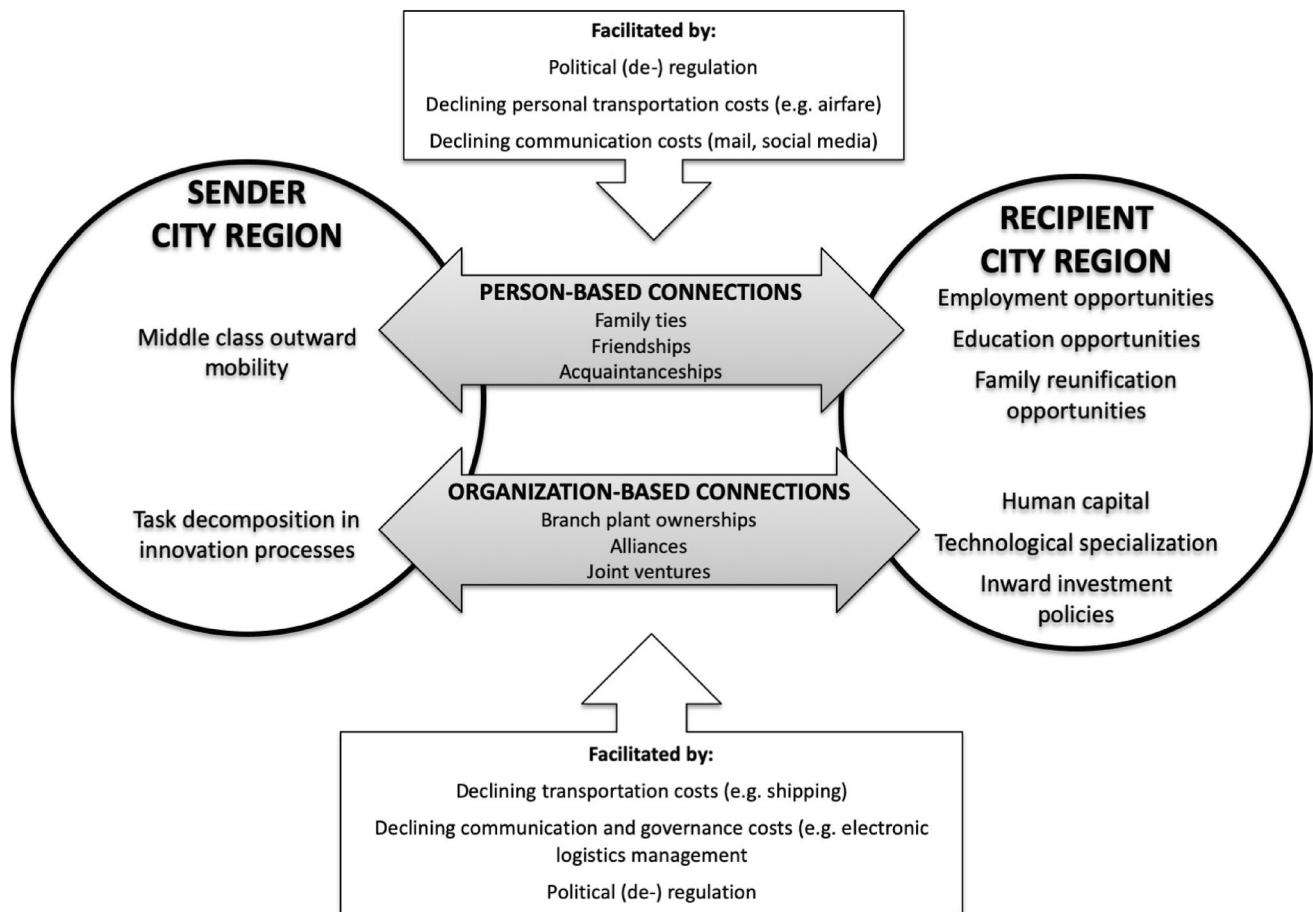
**Figure 2** International connectedness between city-regions: drivers and facilitators.

firms locate in catchment areas, and as high-wage residents move away, they rarely attract similar urban redevelopment projects.

It is not the rise of the knowledge economy as such which constitutes a problem for development in many catchment areas, it is their growing local disconnectedness from core cities. We argue that, for many city-regions, international connectedness directly exacerbates local disconnectedness. We discuss that below. The theoretical foundation for our discussion is based on the realities of advanced economies, and in the current paper we limit our argument to city-regions in these countries.

**Average Employment and Wealth Creation**
On average, we expect city-regions' international connectedness to be associated with increasing wealth, in terms of average firm turnovers, wage levels, and so forth, for two reasons. First, knowledge-seeking MNEs are attracted to city-regions with highly skilled labor, technology clusters, and

elaborate R&D infrastructures, all associated with large private as well as public spending. Second, MNEs' local branches, as well as local suppliers, are typically integrated into knowledge-intensive global value chains with higher skill levels and earnings (Belderbos, Du, & Goerzen, 2017; Kano, 2018). Furthermore, international connectedness may facilitate technological catch-up through push and pull factors associated with the capability development of local firms (e.g., Ferrier, Ryes, & Zhu, 2016). Whether internationally connected cities' technological path will be broad or deep is influenced by whether the social network structure of their connections is decentralized among many local firms and individuals or centralized around a few powerful gatekeepers (Lorenzen & Mudambi, 2013).

A quick look at the data for U.S. city-regions exemplifies the association between international connectedness and average regional wealth. We examined two different measures of regional

wealth using the locations of co-inventors: head-count employment and per capita wages. We also generate two separate measures of international knowledge-intensive connections: the percentage of patents assigned to a city-region that have at least one non-US inventor as well as a country dispersion index of country locations of the inventors. The estimation is based on a panel dataset of over 9 million US PTO patent records over the period 1976–2010, mapped to the 917 metropolitan and micropolitan regions of the United States, that collectively account for over 95% of the country's population. The dataset is enriched with numerous city-region controls, including population, government spending, the presence of research laboratories, with dummies to control for both very large and very small population sizes. Accounting for missing values, the dataset used in the estimation consists of over 20,000 city–years of data. As seen in Table 1, both measures of international knowledge-intensive connections have a significant positive effect on local employment levels. More importantly, we find that they also have positive and significant effects on local wages (see Tables 1, 2). These findings represent the first step in a research program relating international connectedness to local economic outcomes in the knowledge economy. It provides a critical avenue of future research for IB scholars, especially at a time when the benefits of globalization itself are being questioned (Cuervo-Cazurra, et al., 2017).

## Uneven Opportunities
Along with increases in average employment and wealth creation, in some city-regions, international connectedness is also associated with an uneven distribution of these benefits and economic opportunities. There are two main mechanisms at play here. First, international connectedness exacerbates the agglomeration of wealth and economic opportunities in core cities. Upon entry, MNEs hire local highly skilled labor and form supplier relationships and alliances with local technology firms and knowledge institutions (Cantwell & Mudambi, 2011), adding to the growth of technology clusters in core cities. Furthermore, MNE entry tends to be followed by the emergence of new, highly specialized, constantly evolving service activities (Sassen, 2018). These also agglomerate in core cities.

Second, MNE-driven international connections may replace or crowd out local connectedness and hence hamper the dissemination of wealth and economic opportunities from core cities to catchment areas. At the most fundamental level, in a process that has been ongoing for decades, manufacturers and agricultural producers in catchment areas have been steadily losing their local market, as consumers in core cities increasingly rely on international imports of food and consumer goods. However, international connectedness may also potentially disrupt local value chains. Increasingly specialized in knowledge-intensive activities, firms in core cities also get increasingly entrenched in global value chains, as suppliers to local MNE branches or as exporters. As a result, international value chain relationships may crowd out local value chain relationships. There may also be fewer new local value chain relationships established, as new high-tech ventures in core cities start up with the sole objective of serving international markets and global value chains (Mudambi, 2008) rather than local firms and residents. Functional specialization of firms in core cities into headquarters and business services (Duranton & Puga, 2005) further facilitates their incorporation in global value chains, substituting for local connections to plants in smaller cities in the local catchment area.

The disruption of local connectedness by international connectedness is illustrated by the analysis by van Assche and Turkina of HEC Montreal of 154 aerospace, biopharma, and IT/telecom clusters in city-regions in the USA, Canada, Mexico, and Europe.[8] With the kind permission from the authors, we present their analysis of connectedness in Table 3. The analysis is based on observations of a total of 44,061 connections (buyer–supplier relationships, ownerships, and partnerships) over three time periods: 2002–2005, 2006–2009, and 2010–2014. Of these connections, 35,181 were local, while 8880 were international. As can be seen from Table 3, it is clear that the overall extent of connectedness is relatively stable across industries. There appears to be quite a stability in connection type (a very slight movement away from partnership connections and toward ownership connections), but a dramatic change in geographic distribution: an increase in non-local (first and foremost international, but also and national) connectedness and a decline in local connectedness. Local activity specialization (increasing partnership connections) is increasing along with vertical disaggregation (replacement of local buyer–supplier and ownership connections by national and increasingly international connections).

While this analysis of city-regions in North America and Europe thus constitutes a rich

empirical illustration of the phenomenon that international connectedness is concomitant with a decline in local connectedness, it does not demonstrate a causal relationship. We posit that investigating the relationships we propose in this paper are some of the grandest and most urgent tasks confronting IB researchers today.

## Economic and Social Disconnectedness
The effects of increasing local disconnectedness may be significant. In the economic dimension, core cities, increasingly based on knowledge-intensive activities and international connectedness, become less dependent on their catchment areas. While core cities thus capture wealth and economic opportunities, creating jobs and new firm startups, significant parts of the catchment areas are drained of economic activities (except for, in some cases, subsidized agriculture). No longer in a reciprocal relationship with core cities, such catchment areas often suffer from depopulation and problems of social exclusion (Sinclair, 1967; Pacione, 1984).[9] Wealth and economic opportunities are also likely to be distributed in a socially uneven manner. In catchment areas, offshoring of low-skilled jobs creates wage pressures on middle-skill labor and waning in the negotiating power of local unions. Increasingly specialized in knowledge-intensive jobs and employing a highly educated global elite of labor, core cities offer fewer opportunities for low-skilled individuals, except in low-wage service jobs (Florida, 2017). Gentrification raises real estate prices, creating a shortage of affordable housing for low- and even middle-income workers. Urban sprawl puts pressure on local transportation networks. We summarize the above argument in our first proposition:

> **Proposition 1:** While international connectedness will, on average, make city-regions wealthier, it may make their catchment areas relatively worse off compared with their core cities.

## Political Disconnectedness and Backlash against Internationalization
Following the logic of Proposition 1, local disconnectedness raises new challenges for local public policies. In many city-regions, the interests of highly skilled labor are increasingly disconnected from low-skilled and low-wage labor. In firms that are internationally connected, this tendency may be exacerbated as managers side with MNE interests, sometimes to the detriment of local employees (Van Assche and Gangnes, 2019). At the same time,

public policies increasingly focus on international competitiveness. This often leads to renegotiation of the local political consensus, and sometimes to the dismantling of institutions of social and spatial inclusion. Investments in new public infrastructures and services increasingly benefit urban high-wage elites, and this can occur at the expense of the populations in catchment areas.

In many advanced economies, the response of politicians (and even some academics) to such local disconnectedness and uneven economic opportunities has been to advocate populist alternatives (Mudambi, 2018; Pastor & Veronesi, 2019). Most of them suggest radical measures to counteract the adverse effects of international connectedness, such as protectionism and isolation.[10] In particular, catchment areas that suffer declining economic opportunities have seen political instability. Faced with the challenge of an increasingly knowledge-based and internationally connected economy, such catchment areas need to find ways to renew local connectedness in order to avoid falling into a vicious cycle of decline. In order to build new local value chain relationships to firms in knowledge-intensive core cities, firms in small cities and towns need to attract high-skill labor and develop value-creating clusters of their own.

# LOCAL MNE ENGAGEMENT: REPLACEMENT VERSUS RENEWAL OF LOCAL CONNECTEDNESS

## MNE Local Engagement Strategy
In some city-regions, international connectedness has replaced local connectedness, potentially disrupting local economies, societies, and ultimately local politics. Notable examples of such local disconnectedness can be found in the so-called 'Rust Belt' of the American Midwest (Hannigan, et al., 2015), parts of the Bay Area in California, (Badger, 2017) and areas in former East Germany like Uecker-Randow, which sits to the northeast of Berlin (Spiegel International, 2011). By contrast, in other city-regions, international connectedness has added to the renewal of local connectedness, playing an active role in stabilizing local development. In some such city-regions, the gains in core cities have been accompanied by the emergence of new technology clusters and thriving residential satellites outside the core cities, in smaller cities and towns. Some even see the growth of secondary core cities (e.g., Stallkamp, et al., 2018), as in the

Table 1 United States 1975–2010: international connectedness of city-regions and employment based on patent co-inventorship

| City-region variables | (1) Employment 1 Log-employment | (2) Employment 2 Log-employment | (3) Employment 3 Log-employment | (4) Employment 4 Log-employment | (5) Employment 5 Log-employment |
|---|---|---|---|---|---|
| Percent international patents | | | 0.134 (0.000) | | 0.059 (0.032) |
| Country Dispersion Index | | | | 0.357 (0.000) | 0.229 (0.002) |
| Log (population) | 1.273 (0.000) | 1.246 (0.000) | 1.243 (0.000) | 1.242 (0.000) | 1.242 (0.000) |
| Federal govt expenditures | 0.000* (0.072) | 0.000 (0.453) | 0.000 (0.453) | 0.000 (0.459) | 0.000 (0.459) |
| Federal govt expenditures (defense) | 0.000 (0.912) | 0.000 (0.535) | 0.000 (0.512) | 0.000 (0.509) | 0.000 (0.509) |
| Megacity: population > 4 million | − 0.141 (− 0.000) | − 0.156 (− 0.000) | − 0.153 (− 0.000) | − 0.153 (− 0.000) | − 0.153 (− 0.000) |
| Small population < 100,000 | 0.037 (0.187) | 0.034 (0.201) | 0.033 (0.204) | 0.033 (0.208) | 0.033 (0.208) |
| Silicon Valley dummy | − 0.473 (− 0.002) | − 0.485 (− 0.001) | − 0.471 (− 0.001) | − 0.470 (− 0.001) | − 0.469 (− 0.001) |
| Number local patents | | − 0.000 (− 0.011) | − 0.000 (− 0.014) | − 0.000 (− 0.015) | − 0.000 (− 0.015) |
| Number of small labs (5 years rolling) | | 0.000 (0.134) | 0.000 (0.153) | 0.000 (0.139) | 0.000 (0.144) |
| Number of large labs (5 years rolling) | | 0.007 (0.000) | 0.007 (0.000) | 0.007 (0.000) | 0.007 (0.000) |
| Sub-category Index | | − 0.082 (− 0.000) | − 0.083 (− 0.000) | − 0.083 (− 0.000) | − 0.083 (− 0.000) |
| Patent productivity | | 0.014 (0.003) | 0.013 (0.006) | 0.013 (0.007) | 0.013 (0.007) |
| Number of assignee labs | | − 0.000 (− 0.342) | − 0.000 (− 0.322) | − 0.000 (− 0.271) | − 0.000 (− 0.289) |
| Observations | 22,917 | 20,725 | 20,725 | 20,725 | 20,725 |
| Number of CBSA_NumCode | 917 | 917 | 917 | 917 | 917 |

The vast majority of patents are owned by firms, mostly MNEs. Robust $p$ values in parentheses.

cases of Los Angeles, the Randstad in the Netherlands, and the 'Greater Toronto Area' in Canada.

What explains the difference? We argue that the MNE strategy of local engagement plays a central role in whether international connectedness will substitute or renew local connectedness. In other words, MNEs are a crucial part of whether city-regions enter into virtuous or vicious cycles of development. The key strategic issue is whether MNEs will focus only on their well-known competencies of orchestrating global value chains, or whether they will also undertake complementary activities of engaging with entrepreneurial ecosystems in city-regions, a generic process that we call, as noted, local spawning. We shall discuss these two archetypical activities in detail below, reminding the reader that we retain our focus on city-regions in advanced economies.

**Global Orchestration**
The emblematic activity of the modern MNE remains global orchestration. Well-described in the IB literature, this entails a strong focus on designing and upgrading existing global value chains by fine-slicing activities and moving low knowledge activities out of high wage economies. This strategic activity – grounded in scalable learning versus scalable efficiency logics – means that, in city-regions in advanced economies, MNEs typically maintain a strict focus on knowledge-intensive activities, curtailing local value chain relationships that are connections to low-knowledge activities. Hence, MNEs contribute to continuous upskilling and the shift to knowledge-intensive activities in core cities, but also exacerbate the problem of local disconnectedness by shifting low knowledge-intensive activities to

**Table 2** United States 1976–2010: international connectedness of city-regions and per capita wages based on patent co-inventorship

| City-region variables | (1) Wages 1 | (2) Wages 2 | (3) Wages 3 | (4) Wages 4 | (5) Wages 5 |
|---|---|---|---|---|---|
| Percent international patents | | | 3.755 (0.000) | | 0.865 (0.073) |
| Country Dispersion Index | | | | 10.662 (0.000) | 8.779 (0.000) |
| Log (population) | 2.763 (0.000) | 1.979 (0.000) | 1.942 (0.000) | 1.932 (0.000) | 1.932 (0.000) |
| Federal govt expenditures | 0.000 (0008) | 0.000 (0.631) | 0.000 (0.638) | 0.000 (0.646) | 0.000 (0.646) |
| Federal govt expenditures (defense) | − 0.000 (− 0.204) | 0.000 (0.734) | 0.000 (0.719) | 0.000 (0.711) | 0.000 (0.711) |
| Megacity: population > 4 million | − 2.066 (− 0.280) | − 5.168*** (− 0.001) | − 5.077*** (− 0.001) | − 5.057*** (− 0.001) | − 5.055*** (− 0.001) |
| Small population < 100,000 | 0.655 (0.363) | 0.521 (0.435) | 0.490 (0.453) | 0.480 (0.459) | 0.480 (0.459) |
| Silicon valley dummy | 0.063 (0.992) | − 8.450*** (− 0.002) | − 8.283*** (− 0.003) | − 8.272*** (− 0.002) | − 8.267*** (− 0.002) |
| Number local patents | | − 0.001 (− 0.285) | − 0.001 (− 0.322) | − 0.001 (− 0.327) | − 0.001 (− 0.327) |
| Number of small labs (5 years rolling) | | − 0.008 (− 0.174) | − 0.008 (− 0.147) | − 0.008 (− 0.156) | − 0.008 (− 0.153) |
| Number of large labs (5 years rolling) | | 0.224*** (0.000) | 0.218*** (0.000) | 0.216*** (0.000) | 0.216*** (0.000) |
| Sub-category Index | | − 1.144*** (− 0.000) | − 1.158*** (− 0.000) | − 1.175*** (− 0.000) | − 1.172*** (− 0.000) |
| Patent productivity | | 0.386*** (0.000) | 0.362*** (0.000) | 0.353*** (0.000) | 0.353*** (0.000) |
| Number of assignee labs | | 0.008*** (0.000) | 0.008*** (0.000) | 0.008*** (0.000) | 0.008*** (0.000) |
| Observations | 22,924 | 20,732 | 20,732 | 20,732 | 20,732 |
| Number of CBSA_NumCode | 917 | 917 | 917 | 917 | 917 |

The vast majority of patents are owned by firms, mostly MNEs. Robust $p$ values in parentheses.

(often offshore) low-cost locations. Specifically, the new international connections that they create and facilitate replace existing local connections to catchment areas without creating opportunities for new ones to form. Thus, while MNEs may, as mentioned, drive up regional employment and wealth, the development is confined to what development economists have called "enclaves" that are weakly integrated within the local economy (Hirschman, 1977; Phelps, et al., 2015).[11]

For an illustration, consider the Detroit auto cluster in the US as analyzed by Hannigan, et al. (2015). The Big Three auto manufacturers (GM, Ford, and Chrysler, the last-named under a series of foreign owners) have remained wedded to the traditional model of buyer–supplier organization with a tiered pyramid of suppliers. Local innovation in the Detroit cluster within mainstream auto

manufacturing has thrived and grown, attracting new R&D investments from and connections to every major automotive technology cluster in Europe and Asia. Local innovation activities have transitioned from internal combustion engine technology to hybrid drivetrains (Cano-Kollmann, et al., 2018). However, these activities have remained within the confines of current automotive MNE firm boundaries. They have entirely benefited the city-region's high-skill workers who work in island-like office towers and R&D campuses, residing in the prosperous ring of suburbs around the region's core city. While new technology clusters have developed in the suburban ring, this is not a polycentric development, for the new clusters are disconnected from low-skill local populations that used to man the automotive assembly lines. As the factories in the city-region's smaller

**Table 3** Clusters in USA, Canada, Mexico, and Europe 2002–2014: trends in local and non-local connections by linkage type

|  | Share of non-local connections (%) | | | Growth in number of connections (%), 2002–2005 to 2010–2014 | | |
|---|---|---|---|---|---|---|
|  | 2002–2005 | 2006–2009 | 2010–2014 | Local | Non-local domestic | Non-local international |
| Aerospace |  |  |  |  |  |  |
| Total | 13.52 | 14.58 | 15.68 | − 4.73 | 12.7 | 13.00 |
| Buyer–supplier | 10.35 | 11.78 | 13.16 | − 12.10 | 15.30 | 13.72 |
| Intra-firm | 64.96 | 68.59 | 70.98 | − 13.70 | 14.20 | 20.11 |
| Partnership | 8.85 | 8.61 | 8.65 | 11.60 | 8.60 | 5.18 |
| Biopharma |  |  |  |  |  |  |
| Total | 19.59 | 20.23 | 20.54 | − 0.97 | 8.83 | 8.22 |
| Buyer–supplier | 14.80 | 15.85 | 17.25 | − 8.50 | 9.60 | 6.34 |
| Intra-firm | 40.57 | 44.12 | 44.49 | − 5.60 | 10.70 | 13.28 |
| Partnership | 13.02 | 12.72 | 12.49 | 11.20 | 6.20 | 5.25 |
| IT/telecom |  |  |  |  |  |  |
| Total | 23.63 | 23.51 | 25.10 | − 3.13 | 14.23 | 19.07 |
| Buyer–supplier | 33.58 | 34.43 | 41.35 | − 15.90 | 17.10 | 24.16 |
| Intra-firm | 86.18 | 86.92 | 88.80 | − 8.20 | 15.40 | 26.01 |
| Partnership | 9.88 | 9.62 | 9.54 | 14.70 | 10.20 | 7.03 |

The data in Table 3 were collated by Turkina, van Assche and Kali from the European Cluster Observatory, the U.S. Cluster Mapping Project, the Canadian Cluster Database and Mexico's INADEM/INEGI.

cities like Flint were shuttered, Detroit, once the wealthiest city in the U.S., became a case study of long-term inner-city decline and local disconnectedness in economic and social terms.

Thus, MNE global orchestration activities may, ceteris paribus, be to the detriment of local connectedness in the city-region in which the MNE has located activities. As exemplified by Detroit, this effect may be strongest for MNEs in their home country, where the central and most important R&D centers tend to be co-located with headquarters in the core of a city-region. When such MNEs transition from local to global value chains, local disruption in terms of the loss of low-knowledge jobs and the decline of catchment areas is pronounced. However, recently entered foreign MNEs may exacerbate this decline, since they are typically drawn to knowledge resources in core cities and have little incentive to set up local value chains in today's economy.[12]

A strategy purely focusing on global orchestration typically generates short-term returns to the MNE. However, activities of the firm that concentrate all development in the more affluent parts of the city-region are, as mentioned, likely to aggravate local populist policy responses. Furthermore, such an MNE strategy may also pose a threat to long-term MNE performance in two ways. First, such a strategic focus is likely to promote local lock-into extant production and business models, thereby limiting the flexibility of both local firms and MNE subsidiaries. Second, and more seriously,

from an innovation perspective, it limits the scope for the MNE's local knowledge search. Since international connections are restricted to established knowledge-intensive organizations within the MNE's network, new local players, like entrepreneurial startups, may have limited access and may even experience significant adverse effects. A low level of local entrepreneurial experimentation means an infertile environment for knowledge search (in the sense of Nelson and Winter, 1982) for both local firms and MNE subsidiaries. We summarize our argument about global orchestration in the following proposition:

> **Proposition 2:** MNEs with a local engagement strategy focused purely on global orchestration contribute to a replacement of local connectedness with international connectedness, and will hence skew local distributions of economic opportunities toward city-regions' core cities.

### Local Spawning
MNEs' local engagement strategies are not confined to global orchestration. Some MNEs also undertake activities that create and leverage new forms of local connectedness, supplementing their focus on global value chain rationalization through local spawning.

Local spawning constitutes an open innovation strategy for MNEs, providing some measure of insurance against radical innovation. In developing this theoretical perspective, we rest on the

complementary foundations of evolutionary economics (Nelson and Winter, 1982) and organizational learning (March, 1991). The organizational routines of large MNEs are particularly suited to "routinized innovation" (Nelson and Winter, 1982) and exploitation (March, 1991). In contrast, small, entrepreneurial firms are particularly adept at "search innovation" (Nelson and Winter, 1982) and exploration (March, 1991). Evolutionary theory offers a powerful basis for the position that large MNEs and small startups are complementary, mutually reinforcing components of a healthy innovation system in a "pillars-and-ivy" model framework (Bhagavatula, et al., 2019). Ideally, each group specializes in aspects of innovation at which it excels, relying and co-dependent on the other for the aspects where it is weak.

Thus, engaging with newer, non-traditional firms with activities currently peripheral to MNEs' main lines of business provides cheap and flexible access to knowledge bases, which may prove to be key to future competitiveness. Ceteris paribus, the MNEs which are more likely to engage locally through local spawning activities are those operating in rapidly evolving fast clockspeed industries (Souza, et al., 2004).[13] In such arenas, disruptive change is a fact of life, and MNEs can only survive by co-opting it by undertaking a continuous search for new knowledge and opportunities.

There are four main ways MNEs may play a role in stimulating a city-region's entrepreneurial ecosystem. First, they can engage in new types of local supplier relationships benefiting from incumbents' skills and technologies, typically in comparatively well-developed regions. Second, MNEs can fund startups through corporate venturing, an "arm's-length" way of exploring new technological opportunities, through modalities such as corporate venture capital funds, sponsorship of university research, support of local incubators/accelerators, and strategic alliances with startup firms. Third, MNEs can admit or even facilitate spinoffs by former employees, allowing the latter to leverage their skills and connections to the MNE, typically to mutual benefit (Klepper and Sleeper, 2005). Fourth, by engaging in corporate entrepreneurship, rather than by maintaining a narrow global value chain orchestration focus, MNEs can "accumulate resource bundles that provide a platform on which industry leadership can be built" (Stopford & Baden-Fuller, 1994: 521). All four types of local spawning activities may also lead MNEs to invest in local educational institutions, engaging in local upskilling in order to support emergent local value chains, especially in more peripheral city-regions (Mudambi & Santangelo, 2016). Furthermore, the three latter examples constitute activities that local entrepreneurship government policies often seek to stimulate. Such policies often have mixed results (Rigby & Ramlogan, 2016), and we argue that these may be traced to MNEs' incentives to engage in stimulating the local entrepreneurial ecosystem.

For city-regions in emerging economies, there is growing evidence that MNEs based in advanced economies engage with local spawning activities, driven by what has been called the "global race for talent" (Lewin, et al., 2009). City-regions that host technology clusters, ranging from Bangalore (Patibandla & Petersen, 2002) to Shanghai and Beijing (Ma, et al., 2013), are becoming tightly enmeshed in the global innovation network in a wide variety of industries. In such geographical contexts, many foreign MNEs have progressed beyond global orchestration and contribute to local entrepreneurial eco-systems (Lorenzen & Mudambi, 2013; Bhagavatula, et al., 2019).

For city-regions in advanced economies, MNEs engaging through local spawning will produce not only new startups and exploratory innovation but also forge new local connectedness in two ways. First, MNEs may themselves create new local connections that span core cities and catchment areas. MNEs with a local spawning strategy reap the twofold advantages of being able to insource new ideas and technologies from local small (startup) firms and then choose which ones to scale up. At the same time, they are able to outsource yesterday's high-knowledge activities, less profitable but still necessary, to local suppliers. This approach is realistic in city-regions in advanced economies when older high-knowledge activities are amenable to cost reduction through automation. Often, such dynamic outsourcing takes place through local spinoffs, as this form of an organization ensures that new suppliers retain knowledge of MNEs' internal processes (Klepper & Sleeper 2005). As less knowledge-intensive activities are typically undertaken in city-regions' catchment areas, where land costs are lower, MNEs' dynamic local outsourcing and spinoffs may create new local connectedness between core cities and catchment areas.

Second, MNE local spawning can help to break local path dependencies of knowledge-intensive firms being confined to core cities. When MNE corporate venture capital and seed funding targets

local firms broadly, such new connectedness is likely to span more extensive parts of the city-regions in which they locate, rather than just core cities. Even when MNE's local spawning does focus on core cities, to the extent that it stimulates a vibrant local entrepreneurship ecosystem, it may have externalities beyond core cities, disseminating opportunities for starting up knowledge-intensive ventures in catchment areas.

Indeed, MNEs, free of local path dependencies, have been central facilitators of the recent emergence of smaller hubs of economic activity (and even nascent technology clusters) in some city-region catchment areas. Los Angeles, the Dutch Randstad area, and the 'Greater Toronto Area' in Canada represent well-known examples of polycentric city-region development, with secondary technology clusters and even smaller urban centers outside the core city. Here, core, as well as smaller, cities are interconnected (Kloosterman & Lambregts, 2001; Soja, 2014). In the social dimension, bubbling, open-ended entrepreneurial ecosystems open up opportunities for both highly skilled and less-skilled labor. The benefits to city-regions from MNEs engaging through local spawning change over time. City-regions with newer clusters or clusters undergoing transformation (Mudambi, et al., 2017) are particularly attractive for MNEs seeking to engage in local spawning due to their higher levels of entry and lower levels of competition. Clusters at these stages of development will also be less vulnerable to disruptions by MNE entry.

Seattle, as analyzed by Mayer (2013) and us, illustrates the positive effects of local spawning activities. This city-region's flagship MNEs, Microsoft, Amazon, and Boeing, have heavily influenced local innovation activities through both their buyer–supplier networks as well as their engagement with the local startup environment. Thus, in both the short and long run, MNEs in this city-region forge new forms of local connectedness spanning core city and catchment area. Both Amazon and Microsoft are central nodes within ecosystems that comprise hundreds of small firms, many of them startups. The rise of Amazon in the early 2000s coincides with a significant increase in the annual output of patents in the Seattle city-region, but, concomitantly with the growth of patents by three MNEs, the patent count of their associated web of startups has continued to rise (Table 4).

Industry, as well as history, have importance for MNEs' choices regarding a local engagement strategy. Amazon and Microsoft operate in fast clockspeed industries and must constantly search for new technologies,– and it is efficient for them, as witnessed by their engagement in the Seattle city-region, to seed hundreds of small startups to undertake the requisite exploratory R&D. By contrast, the dominant design of the automobile had remained stable for nearly three-quarters of a century. Until very recently, large automotive MNEs viewed innovation through an incremental lens, and therefore maintained tight control over it (MacDuffie, 2013). Such MNEs kept innovative activities in-house or delegated them to longstanding suppliers with whom they had mutually dependent relationships, as in the Detroit city-region. Furthermore, the auto industry in Detroit witnessed several decades of adversarial buyer–supplier relationships that negatively affected its ability to engender a startup culture in the city-region (Helper, 1991). Thus, MNEs' choices of local engagement strategy have a considerable element of path dependency.

Location characteristics undoubtedly also play a role in determining the incentives of MNEs to engage in local spawning: in locations with a munificent supply of high-value resources, MNEs have less incentive to encourage the formation of new firms. In contrast, in locations with a weak supply of local resources, MNEs have no choice but to encourage the development of startups (Mudambi and Santangelo, 2016). However, the existence of numerous counter-examples suggests that, while location characteristics are not irrelevant, they are far from decisive in shaping MNE strategy. There are numerous examples of locations like Seattle, New York City's Silicon Alley, and London's Silicon Roundabout that are rich agglomerations of resources where MNEs nonetheless have undertaken local spawning strategies.

The foregoing theory leads us to our final proposition:

**Proposition 3:** MNEs that engage in local spawning contribute to a renewal of local connectedness and will hence disseminate opportunities to catchment areas.

We make two further explanatory points concerning Proposition 3. First, while some of the new economic activity generated by local spawning can involve the replacement of old, severed local linkages, by discovering previously unrecognized opportunities, such Kirznerian entrepreneurship

(Kirzner, 1973) is likely to play a minor role in cases of successful local spawning. We suggest that much of the new activity arises from the joint development of entirely new opportunities by combining the MNE's capabilities and resources (also financial) with the ideation of local entrepreneurs, as defined by the creation school of entrepreneurship (Alvarez & Barney, 2007).

Second, it is well known that most MNEs are multi-hub firms with considerable subsidiary level entrepreneurship (Birkinshaw, 1997; Schotter, et al., 2017). Clearly, local spawning can occur in the city-region where the MNE's headquarters is located, as when Apple supports startups in the San Francisco area. However, it can also occur in the city-regions hosting the firm's subsidiaries, as when Google works with entrepreneurial firms in Montreal. Thus, our concept of local spawning relates to all significant knowledge-creating units of the MNE. What this means is that local spawning can occur even in a city-region other than the one hosting the MNE's headquarters.

Figure 3 below summarizes four possible outcomes for MNEs versus city-regions of MNE local engagement strategy.

Box A in Figure 3 captures our central claim: even the age of global value chains, the interests of MNEs and their host city-regions are not necessarily opposed to one another. In other words, global orchestration and local spawning are complementary strategies, not mutually exclusive ones. While global orchestration is the essence of MNE strategy, local spawning, where feasible, will strengthen FSAs. If an MNE is able to implement local spawning processes – that are often horizontal, specialized, partnership connections (Sassen, 2009; Turkina, et al., 2016) – then stronger international connectedness through value chain disaggregation may be associated with stronger local connectedness and a healthier economic (and eventually, social and political) development of the city-region.

Clearly, this win–win outcome is not the only possible outcome. Box B, in Figure 3, highlights that pure MNE profit-maximizing global orchestration may result in an aggravation of local disparities. This is a more likely outcome in industrial environments that are not conducive to fluid inter-firm relationships, especially where there is a longstanding technology regime and/or dominant design in place (slower clockspeed industries), along with established organizational routines.

Box C highlights that in some cases city-regions may benefit, whereas MNEs decline. MNEs downsizing and even exit can stimulate the development of a city-region through skills spillovers and displacement entrepreneurship. Highly skilled labor may be locational sticky and remain local after MNE downsizing and even exit (Jaffe, Trajtenberg & Henderson, 1993; Markusen, 1996; Benito, 2005). Thus, the downsizing of MNEs that have invested in training local labor, as well as in attracting foreign talent, will seed locations within city-regions with human capital. If the skills of the displaced MNE employees are not technologically obsolete, they can spill over to other local firms, attract new FDI from other MNEs or stimulate entrepreneurial activity by former employees (Campbell, Ganco, Franco & Agarwal, 2016; Klepper & Sleeper, 2005) or some combination of the three.[14]

However, as highlighted out in box D, in some contexts, such as declining industries, resources and skills released into a city-region after MNE downsizing may be technologically obsolete and of little value.

### Disconnectedness versus Disruption
IB scholars have long recognized the crucial role of local context (Meyer, et al., 2011), as explicitly enshrined in the global integration local responsiveness model (Ghoshal, 1987; Rugman et al., 2011). The adverse impacts on local contexts where the MNE operates emanate from two sources. The

Table 4 Seattle innovation output as measured by patents. Source: Authors' computations from US PTO data. Data current through October 2018

| Time period | Number of years | Seattle patent output | Seattle patents/ year | Amazon, Boeing, Microsoft patents | Seattle patents/year w/o the Big 3 |
|---|---|---|---|---|---|
| 1990–1999 | 10 | 5798 | 579.8 | 760 | 503.8 |
| 2000–2009 | 10 | 18,657 | 1865.7 | 5181 | 1347.6 |
| 2010–2013 | 4 | 11,246 | 2811.5 | 6038 | 1302 |
| 2014–2018 | 5 | 19,992 | 3998.4 | 11,040 | 1790.4 |

The rise of Amazon in the early 2000s coincides with a dramatic upsurge in the Seattle area's patent output.

| | | Firm-specific advantages of MNEs | |
|---|---|---|---|
| | | **Positive** | **Negative** |
| **Development of city regions** | **Positive** | **A**<br>*Local spawning*: MNE renews local connectedness through investing in the local entrepreneurial eco-system | **C**<br>*Local spawning*: MNE downsizing or failure releases resources into the city region, upskilling other firms and creating displacement entrepreneurship |
| | **Negative** | **B**<br>*Global orchestration*: MNE builds international connectedness, replacing local connectedness | **D**<br>*Global orchestration*: Downsizing or exit of MNE but no valuable resource or skill spillovers to city region |

**Figure 3** Interdependencies between firm-specific advantages of MNEs and development of city-regions.

first source is "collateral damage" from MNE strategy, as international linkages replace local ones, resulting in local disconnectedness. The second source consists of global disruptions of the type exemplified by the COVID-19 pandemic of 2019/2020. Our paper directly addresses the first source, but it is incumbent on us to say a few words about the second, if only to delineate the subject matter of our paper.

In contrast to disconnectedness, global disruptions are exogenous shocks whose specific nature is often quite unpredictable. They almost always disproportionately impact international activity (Wenzel, et al., 2020), so that MNEs may face some reflected blame for their negative local effects. We make two crucial points, one of which relates directly to our analysis in this paper and one which goes beyond it. First, our analysis implies that MNEs that implement the strategy of local spawning might be somewhat buffered from hostile populist reactions to disruptions due to their positive local engagements. Thus, local spawning may well have some additional positive risk mitigation effects.

Second, while disruptions have been associated with a decrease in some elements of international business like FDI (e.g., Mold, 2008), we argue that they disproportionately affect the tangible flows of people and, to some extent, goods. In contrast, the global knowledge economy is based on the connectivity of intangibles (Cano-Kollman, et al., 2016), which has thus far proved relatively resilient. In fact, global disruptions may well accelerate the shift of value creation toward intangibles for precisely this reason. Thus, the analysis of connectedness in this paper seems even more critical in a world beset by disruptions.

## CONCLUDING REMARKS

For MNEs, the knowledge economy poses new strategy challenges. Due to the rapidly growing knowledge-intensity of economic activity in combination with exponential advances in digital technology (Brynjolfsson and McAfee, 2014) and the corresponding decline in spatial transaction costs, competence-creating and knowledge-seeking MNEs (Birkinshaw & Morrison, 1995; Cantwell & Mudambi, 2005; Rugman & Verbeke, 2001b) flock to the 'knowledge hubs' of the world economy. They locate their production facilities, R&D plants, or simply small-scale 'listening posts' (Maskell, 2014) there, and their corporate networks generate connectedness among these geographically dispersed locations.

As such knowledge-seeking activities expand, so do the challenges of managing them. As network organizations, MNEs are, in principle, uniquely able to leverage digitization and harness the knowledge economy to create value through connectedness for themselves and for the city-regions in which they are located. They often have a tremendous influence in (sometimes involuntarily) shaping the development of city-regions. In some cases, single, large MNEs hold more power than local governments, universities, or private organizations. As we have argued in this paper, MNEs have the power to both connect and disconnect. To sustain competitiveness, and to avoid the political backlash against internationalization, MNE managers must understand the effects their strategies have on city-regions. However, these effects – both positive and negative – remain under-researched. In particular, we need to know more about how the range of strategic options available to MNE managers will be shaped by the industry environment and path dependencies.

For policymakers, the potential of international connectedness to disrupt local connectedness illustrates the pitfalls of regional high-tech innovation policies as well as incentive schemes to attract MNE entry. Innovation does not always create opportunities for all. In this paper, we have pointed out that, for city-regions, innovation-based development may concentrate in core cities and has the potential to disconnect and even disenfranchise parts of the rest of the regions. Hence, it is a challenge for policymakers to invest in local upskilling and knowledge-intensive activities that benefit the entire city-region, including the catchment areas. Furthermore, while MNEs have the power to connect city-regions internationally, those pursuing a traditional strategy focused on global orchestration will also potentially exacerbate the problems of local disconnectedness that are an endemic aspect of the knowledge economy (Florida, 2002). Regional policymakers need to engage with entrant MNEs in order to incentivize them to pursue complementary local spawning activities to the benefit of the local entrepreneurial ecosystem.

This paper has taken the first tentative steps towards developing new theory on the relationships between MNE strategy and the development of city-regions. Our theory development complemented extant IB theory with insights from research in economic geography. On the one hand, IB research focuses on internal MNE organization and strategy, often black-boxing processes on the ground where MNEs locate. Thus, while IB scholars point to the rise of internationally connected cities concomitantly with MNE location (Dunning and Normann, 1987; Goerzen, et al., 2013), they offer no analysis of how the latter relates to the development of city-regions in a wider sense.

On the other hand, economic geography research focuses on cities, but, with few exceptions, largely black-boxes the nature of the internal workings of MNEs. Thus, while geographers provide sophisticated descriptions of the diverse urban forms in both the core cities and the wider catchment areas of city-regions, they do not offer insight into how such forms are connected to MNE activity, evolution, and strategy. Integrating arguments from such neighboring research traditions is ambitious, and, however tentative, our exercise has provided useful inputs into both research traditions. Hitherto, economic geography and IB have been separated by their different analytical approaches. Fundamentally, on the one hand, economic geography has taken a 'Smithian' approach to city-regions (Smith, 1776), focusing on local divisions of labor and local connectedness, and is relatively weak in addressing variances across, and relationships between, different regions. On the other hand, IB has taken a 'Ricardian' approach (Ricardo, 1817), putting regional specialization, comparative advantage, and international connectedness center stage, while remaining comparatively unconcerned with local agglomeration and urban forms. Hopefully, our propositions, as well as the stylized patterns of knowledge-seeking MNE operations within city-regions which we have sketched out, may stimulate IB scholars as well as geographers to address the blind spots of their research traditions.

In order to develop the agenda we have begun here, researchers in IB and EG need to adopt an empirical research strategy. To continue to build theory, it must move beyond anecdotal evidence to systematically investigate both associative and causal relationships between global value chains, city-regions, and economic development. Extant research is largely silent on the role of person-based connectedness for regional development. We have focused on organization-based connectedness, treating person-based connectedness as a dependent variable, but this form of connectedness also has independent dynamics and effects. Moreover, our theory focused on knowledge-driven dynamics, R&D, technology clusters, and knowledge labor. We need to know more about the relationships between high knowledge (e.g., scientists, engineers), high skill (e.g., service technicians, electricians, welders) and low knowledge/skill workers and employment.

We need to know more about the role of the MNE home country and our propositions' relevance for emerging economies.[15] Urban theory, which we draw upon, has been criticized for failing to capture much of the dynamics of cities in emerging economies (Robinson, 2002). We expect the early stages of this empirical work to be largely qualitative and to consist of complementary studies at the analytical levels of the MNEs as well as the city-region. Even more ambitiously, comparative studies of MNEs and city-regions would be helpful to appreciate the processes and mechanisms involved. International data need to be leveraged to test the hypotheses that emerge from such work. The undertaking of such complex empirical research tasks benefits from recent collaborations across disciplinary boundaries (as evidenced by, for instance, special issues of *Journal of Economic Geography* (10/4, 2010), *JIBS* (44/5, 2013) and the *Journal of International Management* (24/2, 2018)). With this

Perspectives paper, we hope to have inspired IB scholars to continue this important development and expansion of the IB research tradition.

Finally, we acknowledge that we have not explicitly analyzed global disruptions like the coronavirus (COVID-19) pandemic in this paper. MNE risk mitigation strategies to prepare for such occurrences are yet another fruitful avenue for future IB research. In closing, we posit that the connectedness of city-regions is likely to become more, rather than less, important in a world beset by such relatively unpredictable seismic events.

## NOTES

[1]Rather than co-evolution in a technical sense (see, e.g., Volberda and Lewin, (2003) and Cano-Kollmann et al. (2016) who propose a synergetic relationship between locations and MNEs ("flowers and bees").

[2]We present a detailed description of spatial transaction costs based on Mudambi, et al. (2018) in Note 7 below.

[3]According to the theory, such central place hierarchies were typically national.

[4]Catchment areas may grow in size with falling spatial transaction costs (e.g., car-based commuting), but mutually competing neighboring city-regions will divide catchment areas between them, curbing their size (Christäller 1933; Hotelling, 1929).

[5]We base this portrayal on the classic Dunning categorization of MNE strategic motives into market-seeking, asset-seeking, and efficiency-seeking (Dunning & Lundan, 2008).

[6]There is evidence of growing functional specialization between countries due to the rise of global value chains (Timmer and de Vries, 2019).

[7]Spatial transaction costs are defined as the costs of undertaking business transactions across space (Mudambi, Li, Ma, Makino, Qian, and Boschma, 2018). Such costs arise from distance (transport and logistics costs) and institutional differences (governance and communication costs) (Beugelsdijk &

Mudambi, 2013). In earlier periods of internationalization, the process of geographical disaggregation of sales and distribution activities took advantage of the global homogenization of skills and consumer preferences. In contrast, disaggregation of manufacturing activities was more impeded by spatial transaction costs. However, the exponential advances in digital technologies (Brynjolfsson and McAfee, 2014) and the associated changes in logistics and transportation technologies mean a general decline in such costs. Spatial costs still remain high in just a few industries where consumer preferences are predominantly local, or goods depreciate fast (such as personal services, design, some cultural industries, or fine foods) (McCann & Shefer, 2003; Scott, 2005; Christopherson, et al., 2008).

[8]Of these clusters, 56 were in the aerospace industry, 51 in biopharma, and 47 were in IT/telecom. The data are based on information from the European Cluster Observatory, U.S. Cluster Mapping Project, Canadian Cluster Database, and Mexico's INADEM/INEGI. Clusters were identified using the well-known location quotient approach that is based on employment shares (Delgado, Porter & Stern 2010). The bulk of connectedness data were collected from official company reports (about 75%), while the remainder was gleaned from online information. The network that arose from these data was tested to examine whether it is scale-free, i.e., with a relative commonness of vertices with a degree (connectedness) greatly exceeding the average. Scale-free networks are incredibly robust, as they have a high level of redundancy. This ensures that even the removal of critical vertices (clusters, in our case) does not significantly change the network properties that we observe. The data were collected and analyzed by Ari van Assche and Ekaterina Turkina of HEC Montreal. We are grateful to them for allowing us to use these analyses. For a further detailed description of the data and related analyses, see Turkina, van Assche & Kali (2016) and Turkina & van Assche (2018).

[9]'Company towns,' having sprung up around one large business firm, may continue to thrive even given local disconnectedness because such towns depend less upon local connections to the rest of their city-region. For instance, they have typically been part of their own global value chains without relying on core cities. However, company towns arose serendipitously and are exceptions to the processes we discuss here.

[10]There is evidence that policymakers in US regions most exposed to international trade are more prone to frame internationalization negatively and pursue protectionist goals (Autor, et al., 2017).

[11]Development economists (e.g., Hirschman 1977; Warr, 1989; Sidaway, 2007; Phelps, et al., 2015) have detailed analyses of enclaves within emerging economies. They demonstrate that enclaves function as appendages of the advanced home economy of the MNE tenant. They trace their failure to spark meaningful advances and widespread local income generation in the host economy to their lack of local linkages. The MNE local engagement strategy of global orchestration maps most closely on to the classic notion of an enclave. In practice, it functions much like an export processing zone (Warr, 1989), though without the formal legal restrictions.

[12]Older MNEs whose foreign operations have been in operation for a century and sometimes longer (e.g., Ford in Europe, Alfa Laval and Philips in the U.S.) are embedded in local economies and have developed local value chains that are quite similar to those of home-country MNEs. Therefore, our model applies quite directly to such foreign MNE operations.

[13]The faster the industry clockspeed, the shorter its development cycle times and the less time between product redesigns (Souza, et al., 2004: 537).

[14]Kitchener-Waterloo, a city pair in the greater Toronto catchment area provides an illustrative example. At the center of a traditional industrial and agricultural region, it was beginning to decline with many firms offshoring their manufacturing, when Research in Motion (later called Blackberry) was founded in 1984. Incubated by a local entrepreneur and the local world class engineering-focused university, a strong IT talent base emerged. The relative closeness to Toronto allowed Blackberry to remain headquartered in Kitchener-Waterloo. After Blackberry's collapse between 2011 and 2016, companies like Microsoft, Google, and Apple all took advantage to set up their own R&D and high skilled IT facilities here. This happened despite all of them already having activities in central Toronto. The collapse of Blackberry released resources and skills into the Toronto catchment region of Kitchener-Waterloo, that were redeployed by the new MNE entrants as well as local startups, so that local innovation and entrepreneurship continued to thrive.

[15]At the least, a formal empirical model should incorporate the effects of MNE's home countries, e.g., by including country fixed effects. However, there is also a need to theorize whether and how the mechanisms we suggest play out in a particular way in an MNE's home city-region.

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