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Approaching multinationals in clusters from different perspectives: an integration of literatures

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Abstract: For the specific topic of multinationals in clusters, both regional strands and international business and management literatures, address the topic from different yet intertwined perspectives. This study attempts to facilitate the integration of the conversations and the distinct literatures in order to produce a clear understanding and conceptualization of the existent knowledge on the topic, with the aim to foster an integration of those different lines of inquiry on the topic. Mixing a robust and longitudinal *bibliometric* analysis (1992-2018) and a qualitative critical review, the study disentangles sub-conversations on the topic from each perspective. The article also encounters commonalities that foster cross-fertilization and also blind spots that prevent integration of findings from each other literatures. Implications for the advance of the topic.

Key words: MNEs, internationalization, localization, co-location, economic geography, international business, clusters, innovation.

JEL O3, R1

1-Introduction

This paper presents an attempt to study the intersected topic of *multinationals in clusters* (addressing clusters, industrial districts and agglomerations), analysing the different yet related literatures in order to produce an integration and a clear understanding and conceptualization of the existent knowledge on the topic. Specifically, this study navigates through international business and management (IB), economic geography and regional science literature (EG)¹, as well as that of regional innovation studies, all of them intersecting the topic of multinationals in clusters. Regional-oriented innovation studies (e.g. Belussi, 2018; Hervás-Oliver and Boix, 2013), economic geography studies (e.g. Huggins, Izushi and Prokop, 2019; Mudambi and Santangelo, 2016) and international business studies (e.g. Monteiro and Birkinshaw, 2017) intersect multinationals and clusters, assuming different perspectives, rationales and insights that contribute to the conceptualization on the topic from different perspectives (e.g. Bathelt, Cantwell and Mudambi, 2018).

This paper attempts to explore each strand's specificities (intellectual structure, conversations, assumptions, etc.) in order to facilitate a richer dialogue between those strands of literature and thus contributing to building up a more comprehensive framework on the topic. The exploration of this intersection of literatures has been claimed as necessary in diverse calls (e.g. Mudambi et al., 2018; Bathelt, Cantwell and Mudambi, 2018; Beugelsdijk and Mudambi, 2013; Beugelsdijk, McCann, and Mudambi 2010; Dunning, 2009). In particular, this study's main purpose consists of facilitating an integration of existent knowledge and fostering a potential cross-fertilization that permits the setting of a future research agenda to improve advance on the topic. This study attempts to contribute to the the topic in order to map sub-conversations and establish a clearer research agenda.

Methodologically, we use *bibliometrics* in order to organize and understand the relationship between a vast amount of differing and disconnected literature covering similar phenomena and topics. In total, 601 journal articles, including 40,176 references and covering the 1992-2018

¹ When referring to EG, we mean economic geography, regional science or regional innovation systems, all of them describing the subtleties and nuances of localization advantages in specific locations. These strands are diverse but connected and address the meso- or local/regional-level of analysis. Mostly, they address innovation and technical change (e.g. Marshall, Amin, Cooke, Lorenzen, Maskell, Malmberg, Lundvall, Asheim, among many others). On the other hand, when addressing IB we also encompass strategy literature which deals from a management/business perspective with off-shoring, multinationals or transnational corporations seeking advantage overseas (e.g. Chung, Alcácer, Mudambi, or even Porter, among many others). Despite this classification, both strands, to some extent, overlap.

period, were analyzed. We focus on the analysis of documents (601) and their cited references (40,176) for co-citation method, exploring within two sets of information the authorship, the outlets and the lines of inquiry. Subsequently, and for the purpose to get a deep understanding of the theory, the bibliometric insights are also revisited by analyzing the content of the literature qualitatively. After this introduction, Section 2 addresses the *bibliometric* analysis on the topic. Then, Section 3 presents the qualitative critical review, analyzing different literatures. Finally, the last section discusses and concludes the study, presenting a tentative research agenda.

2-Empirical research: a bibliometric analysis of the phenomenon

2.1- Introduction: tools and data

Our method is rooted in bibliometrics (Boyack and Klavans 2010), with the purpose of organizing and understanding the relationship between a vast amount of differing and disconnected literature covering similar phenomena and topics. Analysis of information requires the making of decisions with respect to the search criteria or key words utilized. In order to achieve a complete coverage of the literature and avoid a reference bias, we run topic queries around key topics (phenomena researched) several times. The topic queries try to identify all scholarly articles published in refereed journals. We searched within *Social Sciences Citation Index* (SSCI) by Thomson Reuters, using a search strategy depicted in the field named TOPIC (title, abstract, key words). After testing different “topics” representing the phenomenon (multinationals in clusters, industrial districts and agglomerations), a search in the SSCI was undertaken through the TOPIC criteria: [(Agglomeration* OR Cluster* OR Industrial district*) AND (Multinational* OR Multi-national* OR MNC* OR MNE*)], and by then further restricting the output to the *BUSINESS, ECONOMICS, ENVIRONMENTAL STUDIES, GEOGRAPHY, MANAGEMENT, PLANNING DEVELOPMENT, URBAN STUDIES and REGIONAL URBAN PLANNING* fields within the SSCI. Then, after cleaning the dataset we listed a sample composed of 601 journal articles which included 40,176 references, covering the 1992-2018 period. Our procedure assigned a numeric code to every document, so that they could all be identified throughout the study. Every document contains references. We focus on the analysis of documents (601) and their cited references (40,176) for co-citation method, exploring within two sets of information the authorship, the outlets, the lines of inquiry and

even the content of the conversations. Despite finding documents preliminarily addressing this conversation since the 90s, the small amount of documents of the sample reflects the very emergent and nascent character of the conversation and the growth in the last decade in the study period (2001-2018) is especially noteworthy (see figure 1), showing clearly the growing importance of the topic. Processing and crunching data (both documents and references) requires the generating of matrixes of co-citation using *Access* and *Bibexcel* (Persson, Danell, and Wiborg Schneider 2009), with the purpose of visualizing networks or graphic maps of co-citation using *Pajek* and *Vosviewer* software and their respective algorithms. For the sake of brevity, more information and results are available upon request. References for that search are in Appendix I. See figure 1.

Insert figure 1 here

First of all, a basic descriptive analysis of the 601 documents reveals interesting insights. 83% of the references (references cited by those 601 documents or the foundations of the debate) are dated only since the early 90s², showing a relatively nascent conversation.

As regards Web of Science thematic categories for those 601 documents, EG (composed of Geography, Environmental Studies, Planning & Development Urban Studies and Regional Urban Studies), accounts for a total of 204 documents (33.9%). Then, *Management and Business and Economics*, jointly, represent the largest knowledge strand addressing the intersected field, with a total of 514 documents (out of 601, 85.5% of the sample)³. The sample is explained in the following sections.

2.2- Co-citation analysis of references

We applied a co-citation analysis, that is, measuring the citation frequency of pairs of references (40,176) contained in those 601 documents at three levels: articles, authors and journals. Two documents are co-cited (concurrence) when both simultaneously are listed in a document's list

² While Wheeler and Mody (1992), Clarke and Beaney (1993) or Bostock and Jones (1994) started to study the topic, it is Harrison (1994), in *Environment and Planning A*, who emphasizes the intersection between MNEs and highly localized knowledge, following a *flexible specialization* way, in Silicon Valley, pointing out the *power of major multinational corporations that constitute an important node within global networks of big firms and their small firm subcontractors*. Then, in 1995 Head, K., Ries, J., and Swenson, in *Journal of International Economics*, measured explicitly the positive connection between agglomerations and co-location decisions by MNEs.

³ There are documents assigned to those categories at the same time.

of references. Thus, high relationships exist between two references (or, alternatively, journals or authors) when that co-citation or joint concurrence in a document's references occurs more times in the documents of the sample (e.g. Small 1973). This represents a thematic affinity or the existence of a similar conversation, subgroup of research or line of inquiry within the field of study (intersection or concurrence of localization and multinationals). These matrixes are ultimately represented in networks whose visualization sheds key information for identifying the structure of the literature and its lines of enquiry. Furthermore, other relevant information such as seminal authors/studies or bridging nodes linking different subgroups of research are also obtained. In figure 2 we observe the network of co-citation (>10 joint co-citations) formed by nodes (representing each reference) and their links to other nodes. The size of the node depicts the intensity or number of times a document or node is cited, while the width or thickness of the links represents the intensity of the relationship and relatedness between documents. In all, we observed the following authors constituting the seminal foundations or status of leading authors of the topic, that is, they represent the cornerstones of the intellectual structure of the topic.

Insert Table 1 here

Insert Figure 2 here

In the figure 2, we can see different authoritative or seminal authors (those most cited): Dunning (495), Cantwell (465), Porter (379), Rugman (214) and Birknshaw (186) for the management, international business strand (other authors are Mudambi or Cohen). Then, Krugman (216) and Head (285) for the international economics perspective. Lastly, Markusen (175), McCann (149) or Bathelt (128) for the EG perspective (other authors are Scott, Amin or Maskell, among others) (Persson 2001; >60 joint co-citations). Overall, the IB literature is more proactive in the topic and their authors are more prominent in the intellectual structure of the topic. See Table 1 for number of citations and Figure 2 for graphic representation.

Insert Figure 3 here

Insert Table 2 here

As shown in figure 3, with *Vosviewer* technique, the analysis of journals suggests two big groups (those around IB and EG) and one peripheral (international economics, with journals such as *J. of Int. Economic* or *Am Econ Rev*). In the IB group, JIBS (1,989) and SMJ (1,256)

are the most visible and authoritative, receiving the most of the citations on the topic. Then, Acad Manage Rev (498) and Academy of Manage J (449) are also visible and central. In the EG group, Regional Studies (1,036) and Journal of Economic Geography (739) are the most visible ones, followed by Economic Geography (345) and the World Development journal (359). Then, Research Policy (908) is the connector between the two groups, and also represents by itself a regional-oriented innovation literature. Finally, Journal of International Economics (572) or American Economic Review (494) are the leading ones in the international and general economics strand. See Table 2 for citations and Figure 3 for graphical representation.

Insert table 3 here

Then, in table 3 the co-citation strength (journal co-citation) or the number of times that a pair of references in those 601 articles is co-cited on that topic are shown. In table 3, it is observed how the pairs of IB and management journals are the ones showing the highest strength, specifically the ones with most citations are also the ones with the highest journal co-citation JIBS-SMJ (10,790). Then, Research Policy (RP) act as a connector with the IB group: (RP-SMJ 4,374) and JIBS-RP (4,186) are the leading pairs of journal co-citation. Subsequently, Research Policy also connects with EG group, such as the pair of Regional Studies and RP (2,845). In the EG group, another important pair is that from Journal of Economic Geography and Regional Studies (JEG-RS 3,139). Generally, we primarily observed an isolation of sub-conversation in the different groups, as the strength of the journal co-citations in each group (JIBS-SMJ or JEG-RS). Despite the containerized conversations, we also observed a cross-fertilization of journals that indicate an incipient integration of the conversation. Thus, the two groups are jointly co-cited (their journals) through the intersection of the main outlets in each: JIBS and Regional Studies (JIBS-RS 3,654) and the pair of Journal of Economic Geography and JIBS (JEG-JIBS 3,102). Overall, the empirics show how the core of the intellectual structure of the phenomenon is primarily sourced by the IB/Management discipline, corroborating previous figures and tables. The IB/management strand leads the conversation through JIBS and SMJ. Then, Regional Studies and Journal of Economic Geography are the ones leading the EG group, but far distant from the IB contribution to the topic. It is also important to highlight the role of RP as the leading outlet for regional-oriented innovation studies and also its role as connector of the IB and EG group. See Table 3.

3- Understanding the regional and economic geography perspective

Economic Geography primarily adopts the lens of the analysis on the specificities of locations, exploring how the presence or entrance of multinationals impact location and its constituents (SMEs, institutions, knowledge, etc.). Put differently, EG puts first the local/regional context, adopting the perspective to get to know whether the location gain or lose from the entrance of MNEs through the identification of main drivers for local development and catch-up from MNE entrance. From this perspective, there are different lines of inquiry.

First, the sub-line of research focused on global networks (commodity chains, value chains and production networks), studying how production is spatially organized or the local and global intersection of economic activities (e.g. Bathelt et al., 2004). This line focuses intensively on power asymmetries and the type of network that multinationals develop in each location, particularly in developing countries (e.g. Gereffi et al., 2005; Coe, 2018). This perspective recognizes the advantages of clusters connected to global value chains (e.g. Amin and Thrift 1992; Harrison 1994) and the necessity to connect clusters (Bathelt et al., 2004; Lorenzen and Mudambi, 2013). Reflections on this subject try to understand the intersection between the space of flows of knowledge places, and in particular between the activities of MNEs and the various local contexts. From this perspective, opening clusters/industrial districts is a way to reduce lock-in (e.g. Bathelt, Malmberg, and Maskell 2004) and thus complement local buzz. In this line of research, generally, the multinationals' strategy is not usually considered.

Second, a sub-line of research studying multinationals' embeddedness and their impact on territories (e.g. Hervas-Oliver and Boix, 2013; Østergaard and Park, 2015; Belussi, 2018). This conversation also focuses on unfolding the local/spatial specificities or the local/regional context where multinationals locate and the transfer of highly tacit and sticky architectural knowledge across borders and clusters (Hervas-Oliver and Albors-Garrigos, 2008; Tallman and Chacar, 2011; Hervas-Oliver and Boix, 2013; Jenkins and Tallman, 2010, 2016). Embeddedness is thus one of the central concepts in this literature. In fact, the idea of embeddedness has also motivated an emerging sub-research line about *home-grown* multinationals (Sedita, Caloffi and Belussi, 2013; Belussi and Hervas-Oliver, 2017) or indigenous multinationals (Hervas-Oliver and Albors-Garrigos, 2008), referring to those small MNEs that are from and have been created originally at the focal cluster. From this perspective, the more the subsidiary of a foreign MNE is entrenched in the local system (social, business and institutional dynamics), the more likely it is considered a driver for local development and

catch-up (e.g. Østergaard and Park, 2015). However, there are also conditions related to the local context that can facilitate the activation of local development paths, among which is the level of local technological knowledge, which influences cluster absorptive capacity (Edgington and Hayter, 2013). Success stories seem to exist (Harrison, 1994; Ivarsson, 2002; Eisingerich et al., 2010; Hervas-Oliver and Boix, 2013), but in general this literature is rather skeptical about the ability of MNEs to trigger sustainable processes of local development (e.g. Ter Wal, 2013). Finally, MNE strategy is also considered in some cases, bridging with the IB literature (see Hervas-Oliver and Boix-Domènech, 2013; Cainelli, Di Maria and Ganau, 2014; Mariotti, Piscitello and Elia, 2014; Li and Bathelt, 2018).

Third, a sub-line of research dealing with local externalities and FDI, pointing out the FDI synergistic effect which promotes localization-based regional growth, due to the multiplicative effects in the region from receiving FDI (e.g.; Cantwell and Piscitello 2005; Menghinello, De Propris, and Driffield 2010). In this particular sub-line of research, EG has primarily devoted efforts on the understanding of the effects of MNE entry in regions/clusters (e.g. Menghinello, De Propris, and Driffield 2010) and the relative attractiveness of regional spillovers or location strategies (e.g. Cantwell and Piscitello 2005; Crescenzi, Pietrobelli and Rabellotti, 2016). Generally, the assumption establishes that the more the MNE is rooted in the local context, the greater the likelihood that local firms and the wider local context benefit from the knowledge and skills of the MNE. The conversation focuses primarily on understanding of the conditions that can allow a cluster/region to benefit from the presence of MNEs (De Propris and Driffield, 2006; Edgington and Hayter, 2013). MNEs can work as knowledge gatekeepers (Raines, Turok and Brown, 2001; Mariotti, Mutinelli and Piscitello, 2008) and labor mobility from foreign MNEs to local firms can be seen as a manner for knowledge transfer (Angeli, Grandi and Grimaldi, 2014). Evidence points out that the interaction between local externalities and FDI has a synergistic effect which promotes localization-based regional growth (e.g.; Cantwell and Piscitello 2005; Menghinello, De Propris, and Driffield 2010). The study of MNE subsidiaries, their strategies and interactions with clusters, however, is under-researched from this perspective, even though it is advanced from IB.

4.- IB literature: a review of the conversation on the topic

4.1-Unit of analysis and embeddedness

International business literature, however, focused more on the firm (the MNE) and how it coordinates economic activities across borders, emphasizing the national or country-level of analysis and giving less importance to the location. Following Bathelt et al., (2018), IB literature highlights the analysis of corporate networks across borders over territorial embeddedness, treating locations as sources of advantages or disadvantages. IB literature has traditionally referred to *localization* at the national level (e.g. Dunning 2009; McCann and Mudambi 2004).

Despite the overwhelming emphasis on the national-level as a unit of analysis, the IB literature also attempted to shift the traditional national-level discourse toward a more regionally-focused lens in order to source advantages when co-locating overseas (Dunning, 1998; 2009) and thus understanding the impact of location and firm characteristics on location choices (e.g. Alcacer and Chung, 2014). Thus, and within the context of the Dunning's OLI paradigm, the study of the L (-ocation) factor has been claimed to be of utmost importance for the future of IB studies. As Dunning (1998; 2009) stated, the importance of the specific geographic location for MNEs was not properly tackled by IB scholars: "*The extent to which MNEs promote, or gravitate to, spatial clusters within a country or region is an under-researched area*" (1998, p. 58). In fact, a growing number of studies are addressing the L(-ocation) advantages, explicitly recognizing that co-location in particular geographic areas can shape multinationals (e.g. Monteiro and Birkinshaw, 2017; Goerzen et al., 2013; Narula and Santangelo 2012; Meyer, Mudambi, and Narula 2011; Alcacer and Chung, 2007; Cantwell 1995), bypassing thus the general nation-level of analysis. This recent shift from a nation-level to a more territorial one, however, was incepted during the 90's. MNEs have been claimed to be related to search specific locations (Head, Ries and Swenson, 1995; Birkinshaw and Hood, 2000). In this chain of thought, Nachum (2000) explicitly reported that IB should incorporate EG concepts in order to enrich its repository of knowledge in location (from the abstract):

This paper attempts to examine theoretically and empirically the explanatory power of concepts drawn from economic geography for the explanation of the location of multinationals. It combines concepts from economic geography and international business theories in a model that seeks to explain the location of multinational, and tests the model on financial and professional service FDI to the US. The findings suggest a need to extend the conventional location model of international business by acknowledging the processes taking place among firms located in geographic proximity.

Overall, the IB strand has evolved incorporating different ideas from EG, such as that of *embeddedness*. In fact, in IB it is recognized the importance of the geographic space for the

creation of competences through a network of subsidiaries, requiring a balance between internal and external embeddedness⁴ (Narula 2014). Multiple embeddedness implies collaboration (Narula and Santangelo 2012) with local partners that make up the local innovation system (Rugman 2000). In any case, external embeddedness from the IB perspective coincide with that of the EG, but the focus in IB is given to the multinational's *internal process* to become embedded (e.g. Monteiro and Birkinshaw, 2017).

4.2-MNE effects from entry in nations/regions: gains or losses?

As regards sourcing from territories, IB literature struggles to answer a critical question: *how worth it is entering clusters?* The debate on entering or not to clusters has been a growing line of enquiry, discussing the positive and negative benefits from entering agglomerations in strategy (e.g. Shaver and Flyer, 2000; Alcacer and Chung, 2007; Cantwell and Mudambi, 2011). In this sub-line of research, MNEs present differences in their location strategies, suggesting that firms consider not only gains from inward knowledge spillovers but also the possible cost of outward spillovers, opening the *asymmetric gains* debate from collocation, lately developed in strategy (e.g. Canina et al., 2005; Alcacer and Chung, 2014). In particular, this line of research presents an interesting assumption: firms will locate to maximize their net spillovers as a function of locations' knowledge activity, their own capabilities, and competitors' anticipated actions. In fact, as pointed out by Shaver and Flyer (2000) or Alcacer and Chung (2007) there are negative effects from collocations, that is, negative net spillovers that signal not location.

Complementary to the former sub-line of research, IB has also researched the *MNEs' strategies accessing agglomerations* (e.g., Enright, 2009), assuming that each cluster presents different advantages to consider when deploying specific activities. Thus, location and firm characteristics impact on location choices (Alcacer, Dezsó and Zhao, 2013; Goerzen, Asmussen and Nielsen, 2013; Alcacer and Chung, 2014; Alcacer, Dezsó and Zhao, 2015).

⁴ This is what Mudambi (2011) calls this the "innovation-integration dilemma": foreign subsidiaries need to be locally embedded to have access to leading-edge ideas; also, integrated into the corporate network to transfer those ideas.

There is also another sub-field of research, based on innovation studies, blurred with the previous management and business studies and journals. This sub-field is published in journals such as *Industrial and Corporate Change*, *Research Policy*, or *Industry and Innovation*, among other managerial ones, and constitutes a fuzzy area crossing both major strands and linking them. From this approach, studies investigate the potential effect of MNEs in the host localizations, overlapping also with the EG explained below. This literature has investigated how clusters can be originated by MNEs (Owen-Smith et al., 2002; Perez-Aleman, 2005; Adams, 2011), and also how incumbents and later entrant MNEs propelled the cluster, shaping knowledge density in the cluster and spreading knowledge breadth throughout the cluster (e.g. Eisengerich et al., 2010; Giblin and Ryan, 2015).

5.-Integration of findings

As regards the intellectual structure of the topic, bibliometric evidence reveals that literature is led by seminal authors such as Porter, Dunning or Cantwell, among others, with a strong corresponding influence of the IB journals, specially JIBS and SMJ that contribute by far the most to the citations and co-citations of the topic. Then, *Regional Studies* and *Journal of Economic Geography* lead the foundations of the EG group, and *Research Policy*, does the same with the regional-oriented innovation studies, acting also a connector of the two leading groups. Despite an interesting cross-fertilization of the conversation (JIBS and *Regional Studies* pair, or *Journal of Economic Geography* and JIBS journal co-citation), the topic is still divided in silos of knowledge, according to the relative strength of the journals co-citations within each group. Recent studies, however, that try to facilitate the conversation, signaling a nascent integration through mixing authors and lines of research from the two groups (see Bathelt et al., 2018; Mudambi et al., 2018).

The analysis of literatures, however, suggest different conversations around the same topic. EG literature, on the one hand, focuses research primarily on the specificities of the spatial location (region/cluster) and the effect that the MNE entrance exerts on it through three different sub-lines of inquiry. A global networks sub-line that emphasize power asymmetries between MNEs and locations and the global-local knowledge intersection (Bathelt et al., 2004; Gereffi et al., 2005), deciphering cluster global connectivity or global value chains. A sub-line of inquiry addressing embeddedness of multinationals and knowledge exchange across borders and

locations (e.g. Jenkins and Tallman, 2016; Hervás-Oliver and Boix, 2013). Lastly, the effects of MNE entry in a cluster/region (Menghinello et al., 2010).

IB literature, on the other hand, focuses primarily on how MNEs organize activities across borders, putting less emphasis on the analysis of the location that is just a source of advantages or disadvantages. Despite the focus on the multinational strategies and cross-border activity organization, IB literature has also highlighted the importance of the context or location (e.g. Head et al., 1995; Birkinshaw and Wood, 2000; Nachum, 2000), specially pointing out embeddedness from the specific perspective of the multinationals' strategy and less on the local context (e.g. Narula and Santangelo, 2012; Monteiro and Birkinshaw, 2017). IB devoted to multinationals and clusters literature is primarily organized through three different sub-lines of inquiry. First, addressing external embeddedness, researching how multinationals are embedded to source resources (Nachum, 2000, Monteiro and Birkinshaw, 2017). Second, studying MNE effects of entry in locations: evaluating whether accessing agglomerations benefits or not multinationals, signaling the existence of net effects or spillovers, that is, gains and losses from collocation that may foster or prevent, respectively, the entrance of MNEs in clusters (e.g. Shaver and Flyer, 2000). Third, MNE strategies: analyzing the impact of location and firm characteristics on strategic location choices (e.g. Alcacer and Chung, 2014).

6-Conclusions and future research agenda

This study's aim has consisted on attempting to provide an integration of literatures that fosters a potential cross-fertilization to improve knowledge on the topic of multinationals in clusters. For this purpose, a bibliometric study on the topic and a critical review of literatures are accomplished. Overall, the influence of EG issues in the IB research agenda is minor and less active, with some exceptions (e.g. Bathelt and Li, 2014; Hervás-Oliver and Boix, 2013). Similarly, the study of MNE subsidiaries, their strategies and interactions with clusters is under-researched in the EG literature. For EG, it may be worth considering MNE strategies, noticing also that MNEs invest in an activity-by-activity basis, and thus location choices are driven by the compatibility between activities and local advantages in agglomerations (e.g. Hervás-Oliver and Boix, 2013). For future studies, EG should devote more efforts to study MNE mode of entry, along with MNE's ownership choice (similar to Mariotti et al., 2014), because it may condition the effect of entry on clusters/regions. Also, it becomes very attractive to keep

researching on home-grown multinationals (Belussi, 2018), especially on the following unaddressed question: Home-grown or indigenous MNEs in agglomerations: facilitators or barriers to foreign MNEs' entrance?

Main research lines in IB are those devoted to the study of external embeddedness: how multinationals are embedded to the local context to source resources; how MNE effects from entry in nations/regions: gains or losses; and, agglomerations, locations choices and MNE strategies. External embeddedness from the IB perspective coincide with that of the EG, but the focus is given to the multinational's internal process to become embedded (e.g. Monteiro and Birkinshaw, 2017). For IB and management scholars, unfolding the nuances and characteristics of agglomerations from the EG perspective can prove to be relevant for advancing location and firm characteristics on location choices. This can be approached by addressing some stylized facts from the EG literature about cluster evolution and life cycles (e.g. Belussi and Sedita, 2009; Menzel and Fornahl, 2010) or cluster taxonomies (Markusen, 1985; Gordon and McCann, 2000), researching the diversity of agglomerations and its relationship to diverse MNE strategies.

Summarizing, this study's findings suggest that different literatures diverge and present different conversations, dealing with the same phenomenon from different points of view, angles and assumptions. This limited awareness of each other, that also constitutes a richness of diversity, leads to the formation of invisible colleges of coherent knowledge (within strands and journals) and signals the still fragmented nature of the topic. Despite this fragmentation, there are recent signs that show an emergent convergence and the nascent integration of the conversation. This is observed from a cross-fertilization of scholars and conversations, as it occurs with authors that published in both literatures (e.g. Bathelt, Mudambi or Birkinshaw) and produced *hybrid* studies (e.g. Mudambi et al., 2018; Bathelt, Cantwell and Mudambi, 2018; Li and Bathelt, 2018) that are building momentum for a more integrated and substantial joint conversation.

Main research lines in EG are those referred to global networks (value chains, commodity chains, production) and clusters/regions connections to global value chains; Embeddedness of MNEs, emphasizing local/regional contexts; and, the effects of MNE entry in a cluster/region.

This study presents limitations. First, the selection of a database (Web of Science) and key words using English might exclude important works written, or listed in journals, or indexed in a different language. Second, the process of citation can be motivated by self-legitimization strategies or other purposes (see Bornmann and Daniel 2008) rather than for the purpose of drawing on prior knowledge. Third, our own “qualitative” interpretation of literature also might influence the conclusions of this paper. For future research, a meta-analysis could also improve results. The best thing for the advancement of the topic, however, may be the participation of really diverse scholars, from different fields of research, in the elaboration of studies on this particular topic. These multidisciplinary teams can really contribute to crossing lines and integrate perspectives for cross-fertilization.

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Figures and Tables

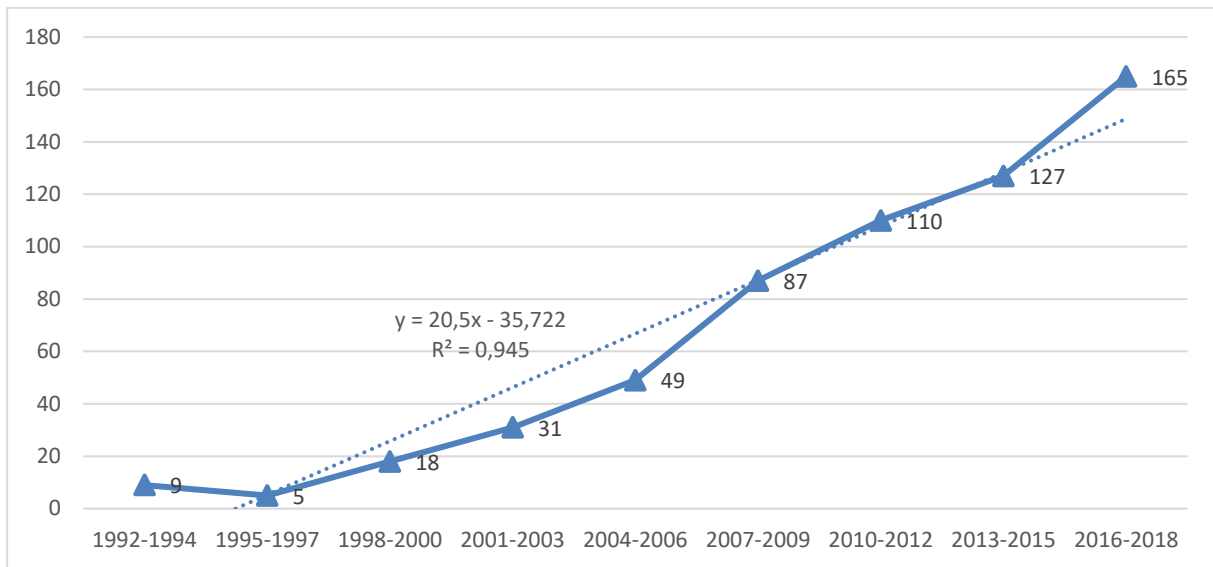


Figure 1. Diachronic evolution of the number of documents indexed in the SSCI database on localization and multinationals research papers. Source: own

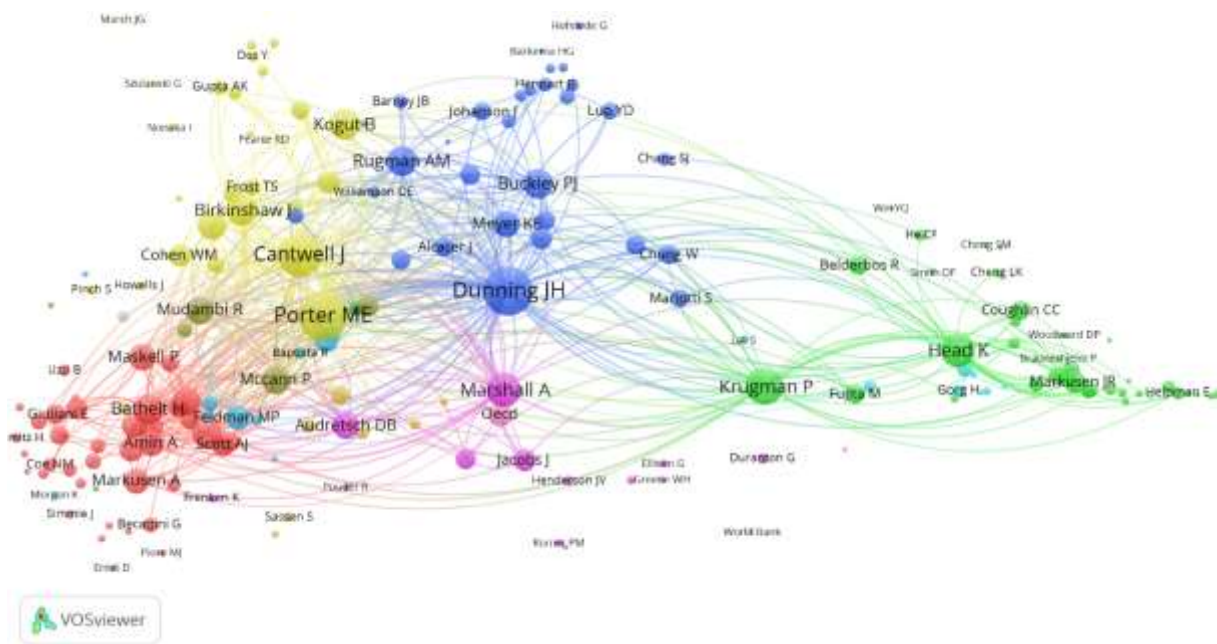


Figure 2. Network of authors' co-citation analysis on localization and multinationals research papers (visualization using Pajek software and Kamada-Kawai algorithm). Source: own

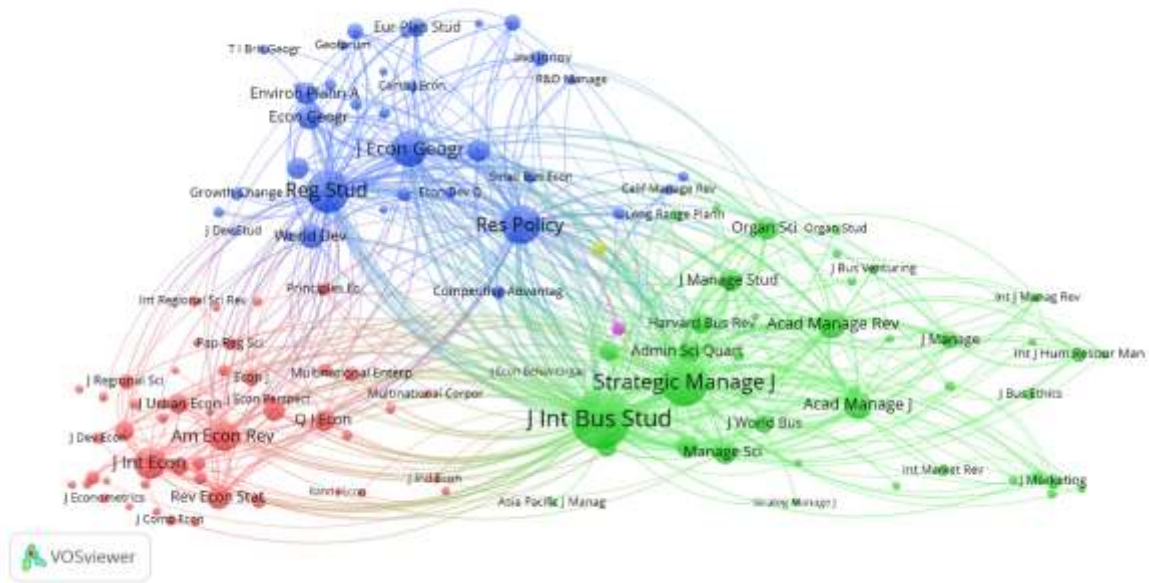


Figure 3. Journals co-citation network on localization and multinationals research papers (visualization using VOSViewer). Source: own

Table 1. The most cited authors on the topic of multinationals in clusters.

Author	Number of citations
Dunning JH	495
Cantwell J	465
Porter ME	379
Head K	285
Krugman P	216
Rugman AM	214
Birkinshaw J	186
Markusen JR	175
Buckley PJ	173
Mudambi R	169
Kogut B	155
Mccann P	149
Boschma RA	146
Storper M	133
Bathelt H	128
Saxenian A	127

Marshall A	121
Meyer KE	120
Gereffi G	119
Cooke P	118
Amin A	116
Scott AJ	116
Martin R	112
Audretsch DB	102
Phelps NA	102
Belderbos R	101

Source: authors. For the sake of brevity, more results upon request.

Table 2. The most cited journals on the topic of multinationals in clusters.

Journal	Number of citations
J Int Bus Stud	1989
Strategic Manage J	1256
Reg Stud	1036
Res Policy	908
J Econ Geogr	739
J Int Econ	572
Acad Manage Rev	498
Am Econ Rev	494
Acad Manage J	449
World Dev	359
Econ Geogr	345
Manage Sci	336
Rev Econ Stat	334
Organ Sci	332
Admin Sci Quart	317
Ind Corp Change	301

Source: authors. For the sake of brevity, more results upon request.

Table 3. Number of times a pair of references of these journals is co-cited on multinationals and clusters topic

Journal 1	Journal 2	Co-citation strength
J Int Bus Stud	Strategic Manage J	10790
Res Policy	Strategic Manage J	4374
J Int Bus Stud	Res Policy	4186
Acad Manage Rev	J Int Bus Stud	3755
Acad Manage J	J Int Bus Stud	3699
J Int Bus Stud	Reg Stud	3654
Acad Manage Rev	Strategic Manage J	3158
J Econ Geogr	Reg Stud	3139
J Econ Geogr	J Int Bus Stud	3102
Acad Manage J	Strategic Manage J	3007
Organ Sci	Strategic Manage J	3001
Reg Stud	Res Policy	2845
Manage Sci	Strategic Manage J	2658
Reg Stud	Strategic Manage J	2601
J Int Bus Stud	Manage Int Rev	2600
J Econ Geogr	Res Policy	2430
J Int Bus Stud	Organ Sci	2399

Source: own, for the sake of brevity, more results upon request.