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Section ARTICLES

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How do multinational enterprises co-locate in industrial districts? An introduction to the integration of alternative explanations from international business and economic geography literatures

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ABSTRACT: This article focuses on understanding why multinational enterprises co-locate in industrial districts, stressing, unfolding and describing the potential of the local or regional-level agglomerations of people and firms which permits multinational enterprises to obtain additional sources of competitive advantage when properly fit. In order to fulfil this goal, the paper presents an attempt to link the literature of industrial districts and economic geography with that on international business. Three theoretical frameworks are tested in an empirical case. The paper has implications for the two lines of literature and opens up a key debate for the future.

JEL Classification: L60; 014; R30; R58.

Keywords: industrial districts; economic geography; international business; off-shoring, MNEs.

¿Cómo se co-localizan las empresas multinacionales en los distritos industriales? Una introducción a la integración de explicaciones alternativas desde la perspectiva de las literaturas de *international business* y geografía económica

RESUMEN: Este artículo se centra en comprender por qué las empresas multinacionales se co-localiza en los distritos industriales, destacando, desplegando y describiendo el potencial de las aglomeraciones, locales o de nivel regional, de personas y empresas, que permiten a las empresas multinacionales obtener fuentes adicionales de ventaja competitiva cuando se adaptan adecuadamente. Para cumplir este objetivo, el trabajo presenta un intento de vincular la literatura de los distritos industriales y la geografía económica con la de *international business.* Tres marcos teóricos se ponen a prueba en un caso empírico. El documento tiene

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implicaciones para las dos líneas de la literatura y se abre un debate clave para el futuro.

Clasificación JEL:

Palabras clave: distritos industriales, geografía económica, international business, off-shoring, empresas multinacionales

1. Introduction

This paper is focus on understanding why multinational enterprises (MNEs) co-locate in industrial districts, stressing, unfolding and describing the potential of the local-level (*Location* in Dunning's terms) which permits MNEs to obtain additional sources of competitive advantage. Thus, this paper disentangles and clarifies how industrial districts have to be analyzed by MNEs in order to take advantage from the industrial districts resources in the co-location and off-shoring process. Thus, the paper expands the repository of decisions which may upgrade the MNE off-shoring process. In order to accomplish this task, the paper presents an attempt to link both strands of literature: the international business (IB) and strategic management literature with that of the economic geography and regional science, especially industrial districts but also related clusters literature mainstream. The rational of this paper lies on the fact that the IB literature has traditionally referred to *location* as the national level (e.g. Dunning, 2009; McCann and Mudambi, 2004) neglecting the key importance of the specific location (region, district or cluster) from which to take advantage with co-location. In fact, the IB literature does not explicitly recognize the subtleties of the local space. Therefore, in our view, establishing a dialogue between two aforementioned strands of literature, will contribute to build up a more comprehensive framework from which to understand better the potential of industrial districts when MNEs schedule and carry out their off-shoring process. This paper is based at both the geographical local-level (industrial district) and firm-level. Despite interesting advances in the topic (see Sedita *et al.,* 2013; Hervas-Oliver and Boix, 2013), the phenomenon and its multiple concepts integration require further analysis.

As Beugelsdijk *et al.* (2010) state, no one of the aforementioned literatures explicitly focuses on how the firm's organizational characteristics relate to the firm's fundamental geographical characteristics. Complementary, it is also observed that, with the recent exemptions (Meyer *et al.,* 2011; Rugman *et al.,* 2011) the off-shoring literature is not linked to the *location approach*. Overall, the off-shoring literature has been disconnected from that of the cluster literature and is hardly represented by exploratory case studies which are useful but lack of theory integration and thus are not operational. In this chain of thought, the motivation of this paper lies on the fact that the MNEs co-location in industrial districts lacks of a clear theoretical integration because the same topic is fragmented into different economic perspectives (Beugelsdijk *et al.,* 2010; McCann and Mudambi, 2004) as the international business and management (e.g. Tallman and Chacar, 2011; Dunning, 2009), the economic geography and regional science (e.g. Cooke, 2005)

or the industrial district and clusters literatures (e.g. Bathelt *et al.,* 2004; Hervas-Oliver *et al.,* 2008). Specifically, this paper is aimed at integrating these literatures and thus providing a clear and explicit reasoning to understand the process of co-location in industrial districts by MNEs and thus unfold the potential of the location factor.

2. Industrial districts, clusters: potential gains and losses

In the industrial district and cluster literature there is a recognition of the fact that most of industrial districts and clusters are connected within global value chains (e.g. Amin and Thrift, 1992; Harrison, 1994; Bellandi and De Propris, on this same special issue; Belussi, on this same special issue; Sedita *et al.,* 2013), i.e. they are local nodes in global networks (Amin and Thrift, 1992). These connections or external linkages are sources of knowledge from outside the industrial districts, clusters or regions (e.g. Gertler and Levitte, 2005; Hervas-Oliver and Albors-Garrigos, 2008). According to Andersen and Lorenzen (2007:5), the concept of *global pipelines* (Bathelt *et al.,* 2004), more related to clusters, takes its origin from the fact that new knowledge could come from outside the cluster, and so encourage firms to establish pipelines to global clusters of excellence. These *non-local sources of knowledge* (Gertler and Levitte, 2005) or *external linkages* (Hervas-Oliver *et al.,* 2008) are usually connected with the MNE subsidiaries which operate in a cluster and convey knowledge in a two-way street through their internal MNE channels (Cooke, 2005; Nachum and Keeble, 2003ab). These subsidiaries usually act as knowledge diffusers and transfer knowledge from cluster to cluster or from the local to the global level. From this geographical local-level perspective, on the one hand, it is recognized the fact that the MNE subsidiaries bring and diffuse knowledge to the industrial districts (e.g. Belussi and Sedita, 2010). Opening industrial districts is a way to reduce lock-in (Bathelt, *et al.,* 2004) and thus the external linkages are knowledge-changing mechanisms which expand and upgrade the cluster's existing capabilities (Bell and Albu, 1999) which complements and get combined with the local buzz. On the other hand, the interaction between the local externalities and the inward FDI has a synergistic effect which promote the location-based regional growth, due to the multiplicative effects in the region from receiving FDI (e.g. De Propris *et al.,* 2005; Bellandi, 2001; Driffield and Munday, 2000; Cantwell and Piscitello, 2005).

Nevertheless, MNE are receiving but also transferring knowledge (e.g. Shaver and Flyer, 2000) because of the existence of information spillovers so that the overall net effect of unintended knowledge outflows could be perceived by the firm to be negative and prevent it from localize in the cluster, due to the fact that MNE firms in the cluster could perceive that knowledge outflows can benefit rivals industries and reduce their own competitive advantage so that try to prevent unintentional knowledge flows. This is related to the *adverse selection* problem (e.g. Chung and Kalnins, 2001, Shaver & Flyer, 2000). The reasoning of the latter idea, as Shaver and Flyer (2000) posits, is that firms also contribute to the agglomerations by spilling over their technology and sharing their suppliers with local competitors. Overall, from the geo-

graphical local-level point of view, usually the co-location implies gaining access to the local resources from whatever form they present. Nevertheless, at the firm-level, considering the firm heterogeneity the opposite may happen. It is important to distinguish the level of the analysis. Moreover, it is crucial to understand the research gap on considering a *net effect* (with both gains and losses) when MNEs co-locate in industrial districts and clusters. This net effect is discussed below.

3. The role of the MNEs in industrial districts: dealing with the territory

Industrial districts offer a growing opportunity to disaggregate value-chain activities into fine-sliced parts due to their competitive advantage which arise from their agglomerations (e.g., Farrell, 2005) and the flexible integration of production (e.g. Becattini 1990, 2001 and 2002). The literature about the MNE learning process from locally embedded knowledge pools (McCann and Mudambi, 2004; Dunning, 2009; Jensen and Pedersen, 2011; Tallman and Chacar, 2011) is scant and recent. Only few studies have tackled the topic. For instance, Nachum (2000:375) examined FDI in US in the professional services industry pointing out that «agglomeration economies and location advantages together shape the location choice of MNEs in the US». Nevertheless, from the management literature, the local knowledge from clusters and how it is disseminated to affiliates abroad has been tackled (e.g. Miller and Shamise, 1996) and some ideas can be extrapolated to the industrial district. In addition, from the IB and management literature the knowledge creation and diffusion within MNEs in general, addressing the type of knowledge transferred between affiliates and their headquarters (e.g., Kogut and Zander, 1993; Solvell and Zander, 1998) has also been addressed, although the clusters or the industrial districts' resources have not been fully considered.

3.1. Agglomeration and co-location: an IB approach

The IB literature has usually addressed the fit between the firm off-shored and the host destination implicitly referred to the firm level, instead of the activities (e.g. Rugman *et al.,* 2011) and the geographical national-level, instead of the specific locations within the country. IB literature has focused basically on the idea of clusters more than industrial district, although most of the conclusions could be adapted to the industrial district assuming a certain flexibility. In fact, really few studies from the IB literature have pointed out the geographical location to the specific clusters, such as Nachum (2000:375) who examined FDI in US in the professional services industry pointing out that «agglomeration economies and location advantages together shape the location choice of MNEs in the US». Similarly, Nachum and Keeble (2003a,b) have also stressed this fact when describing how the film industry from the US co-located in Central London in the Soho media cluster. The research on the spe-

cific concept of industrial district is basically neglected in this line of the literature, so that I will try to assimilate, as far as possible, the results for clusters to the industrial districts. The interesting point on addressing specifically the industrial districts in which MNE subsidiaries co-locate is the fact that there are agglomerations which offer attractive potential resources to tap into, as aforementioned in section 2, are frequently not available in other parts of the host country.

Once the types of industrial districts or clusters, and the externalities they offer are evaluated in each territory, it is central to understand the fit between the off-shored business activities and the attributes of the different industrial districts chosen to co-locate. Rugman *et al.* (2011) argue that each subsidiary's value chain activity vary in their integration-responsiveness positioning due to the subsidiaries' internal resources and the external ones available in the host location. Thus, Rugman *et al.* (2011) integrates the association of the four major FDI types (natural resources, market, efficiency and strategic asset seeking (Dunning 1993) with specific activities that the subsidiaries perform in their value chains (innovation, production, sales and administrative activities). In all, each subsidiary can present a different value chain pattern depending on the type of FDI sought in each activity off-shored. In this sense, it is worthy to notice that the stress is made at the activity level rather than the subsidiary level, as Mudambi and Venzin (2010) state. Similarly, this idea is reinforced by Jensen and Pedersen (2011) which posit that firms are not off-shored but activities are, gaining prominence the fit between the off-shored business activities and the attributes of the different destinations.

The focus on the national-level, instead of the local-regional geographical space, the explicit lack of attention to the local agglomerations hamper the IB literature advance and deprive the IB from addressing fully the regional-global phenomenon. Therefore, the IB literature should make explicit (1) the specific local-regional agglomerations as one of the key reasons to understand why MNEs co-locate; and (2) the way in which agglomerations' characteristics fit with the off-shored activities. An example of the sources of agglomerations, in this case the skilled labour pool found in the Soho media cluster (from Nachum and Keeble, 2003b:466) illustrate better the aforementioned idea of agglomerations in section 2 (when interviewing a director from a US subsidiary in the film industry co-located in the Soho cluster, London):

> «here [in Soho] we can find the best employees. There is a very large pool here from which we can choose. [...] they are all here around, and we can hire new ones whenever a need arises. There is no point in trying to find employees elsewhere ...».

Similarly, the description of a wider set of sources of agglomerations in Soho is expressed as follows:

> «We buy most skills locally. All external facilities we need are here [in Soho] —the highest concentration in London. It is convenient to have everybody within 5 minutes walk. [...] we have minimum links outside Soho, let alone outside the UK. [...] all that we need is within reach of our office» (2003b:467).

Eventually, the specific activities that the US subsidiaries find in Soho are mainly post-production:

> «our external purchases, that is post-production, printing, re-production, take place mainly locally, but sometimes we buy specific skills overseas if it is better/cheaper. For example, we use printing services in Germany. Only about 5% of the external purchases are from overseas, but these can sometimes be very important...» (2003b:467).

Nevertheless, as previously stated, the heterogeneous firms also face *adverse selection* (e.g. Shaver and Flyer, 2000) and its consequent net effect addressed above. This means that MNEs co-locating may suffer from knowledge spill over to their competitors and the general idea that agglomerations benefit local firms may be misleading in certain circumstances, which is possible in this type of IB literature but is rather incompatible with the point of view of the industrial district. The rational of this idea is based on the fact that there are firms which contribute more than others to these external economies (Chung and Kalnins, 2001). Shaver and Flyer (2000) pointed out firms possessing superior technologies, human capital, training programs, suppliers, and distributors have the incentive to locate distant from other firms, avoiding the negative, in this particular case, agglomeration effects. Nevertheless, the latter work refers to «entire firm» location, without distinguishing between its different activities, in part due to the industry used in that study, the lodging industry in Texas, and services are more difficult to disaggregate into fine-sliced parts. We think that it is more appropriate to use activities rather than firms, as Jensen and Pedersen (2011) suggests.

3.2. Co-location is not enough: embeddedness is needed

On the one hand, the «cluster» resources a MNE subsidiary can access in specific locations is consistent with the «resource bundling» theory of the MNE (Meyer *et al.,* 2011), which claims the uniqueness bundling of internal and external resources which determine the subsidiary's strength. On the other hand, co-location does not mean instant access (Kogut and Zander, 1992; Sorenson *et al.,* 2006). The reason to understand the latter idea is the fact that most of the knowledge flows exchanged in industrial districts (also in clusters) are based on face-to-face interactions (buzz: Storper and Venables, 2004) and it implies *embeddedness* in local networks. The IB literature has also recognized that new knowledge is created and developed in relationships, to the extent that it is pointed out that a firm's success in accessing overseas markets requires to be established in one or more networks, becoming and insider to develop its relationships to build trust and commitment in order to learn, avoiding being an outsider and thus suffering from the *liability of outsidership* and foreigness (Johanson and Vahlne, 2009). In this sense, recent empirical evidence has revealed that firms can learn by participating in their customers' networks and thus overcoming information asymmetries (Fjeldstad and Sasson, 2010). This explicit recognition of the *outsidership* by the IB literature, addressing directly the necessity to be embedded in the place, is one of the most important and traditional milestones of the economic geography and industrial districts literature.

In order to illustrate better this idea of embeddedness by focusing on MNEs in industrial districts, we use a quote from Nachum and Keeble (2003b:465) recogniz-

ing specifically this fact when describing an American MNE subsidiary co-located in the Soho cluster in London:

> «People give work to those they know [...] There are about 100 companies producing TV commercials, and we take those we know. Why deal with strangers? [...] Commercial and social relations are mixed—this industry is about whom you know. You are not judged on your skills you need personal contacts. [...]A base in Soho helps hiring the "right people". They are all around, you get to know them, you get to know other people who know them. The managing director of a US advertising agency similarly expressed the view that [...] it is a very social business. [...] Networking is the key to the business» (2003b:465).

Nevertheless, as Tallman and Chacar (2011) make explicit, the necessity to the locally connected is mainly for accessing the local tacit knowledge, due to the fact that most of explicit knowledge comes from the MNE internal networks, but when addressing *tacit knowledge, foreign affiliates are dependent upon local linkages in a similar manner to indigenous firms* (Nachum and Keeble 2003a: 185). The importance of the local conditions to access knowledge that is not available from the headquarters means that the affiliate needs to rely on local specific resources, implying a strongly embedded behaviour (Prahald and Doz, 1987; Barlett and Ghoshal, 1989; Birkinshaw and Hood, 2000) which has been explicitly recognized in the IB literature (e.g. Andersson, and Forsgren, 2000; Nobel and Birkinshaw, 1998) and thus increasing the subsidiary dependence on local generated (tacit) knowledge (Kogut and Zander, 1993; Solvell and Zander, 1998).

3.3. Each industrial district is different: context matter and the «knowledge distance»

Context or the specific division of labour and the networks in an ID are influencing the informational environment of the co-located firms and their individuals, providing a reference point (Storper, 2009:13).

As Tallman and Chacar (2011) states, all knowledge has at least some *tacit* aspects. Tallman and Chacar (2011) presents a model which point out the fact that each cluster as a specific type of knowledge which provide the common assumptions an understanding for the co-located firms. This *architectural knowledge* is derived from common practice and provides the understanding or language to absorb related component knowledge effectively (see Henderson and Clark, 1990; Pinch *et al.,* 2003; Tallman *et al.,* 2004). That model is based on the idea that the architectural knowledge (common understandings which define a community of practice; Henderson and Clark, 1990) is the framework which allows the exchange and mobility of tacit (component) knowledge within communities without codifying and decoding such component knowledge. In MNEs the key sources of locally developed high-tacit content component knowledge arise from subsidiaries' insertion in local communities of practice that are embedded in local networks of practice, as Tallman and Chacar point out.

In this chain of thought, when subsidiaries are locally embedded, the local interaction with local firms and organizations can create particular firm-specific ad-

vantages (FSA) based on location-bound knowledge or activities, which may benefit the subsidiary in a particular location (Rugman and Verbeke, 2001) due to the specific agglomeration effects. This location-bound FSAs in the subsidiary repository of knowledge is tacit and context specific (locally embedded) and therefore is a knowledge difficult to diffuse internally to the head quarters due to mobility barriers (Nelson and Winter, 1982). In order to absorb knowledge from industrial districts, the co-located subsidiaries need to share the same common understandings and knowledge from the industrial district and understand its specific context. In the same way, facilitating the diffusion of knowledge in an industrial district by MNEs will require to share the common understandings and context of the industrial district.

4. Empirical case

4.1. Introduction and methodology

The empirical case presented in this section represent an attempt to test the theoretical framework developed, in order to offer a real-life case which considering both components, industrial districts and MNEs, illustrate the theoretical integration. The case is based on the close connection between the Castellón ceramic tile industrial district (Valencia, Spain) (hereafter, for synthesis, Castellón) and the Italian counterpart in Sassuolo (Emilia-Romagna, Italy). Both territories have been connected for the last 20 years through different events (international trade fairs, congresses) and especially from their own MNEs which have co-located in both industrial districts trying to tap into each district specific agglomerations.

The research methodology used in this study is qualitative, exploratory and holistic in nature (Eisenhardt, 1989; Yin, 1994). Our empirical base comprises primary data (interviews with managers and panel of experts) and secondary sources (case studies, industry reports, analysis of firms' webpages and specially their international branches and firm databases from Bureau Van Dijk, Amadeus). The interviews were done to the most important five MNEs in Castellón and to the board of directors from ANFFECC (frits-glaze trade association in Castellón, in the summer of 2011). In addition, we also conducted clarifications and extended interviews to a panel of 10 experts (5 university professors, 2 representatives from the industrial districts' institutions and three middle executives from consulting firms specialized in the ceramic industry). We achieved triangulation of data through specific questions with interviewees, discussion with experts in the industry and policymakers and also comparing results with secondary data (e.g. Baxter and Eyles, 1997).

4.2. Introduction to the industrial districts of Castellón and Sassuolo

In the ceramic tile industrial districts, the value chain is formed mainly by the following central actors: clay atomizers, ceramic producers, frits and glazing indus-

try (chemicals), and equipment manufacturers. Ceramics production worldwide is concentrated in just a few countries, and mainly formed by industrial districts. The most important industrial districts in Europe are Sassuolo in Italy (ISTAT, 2006) and Castellón in Spain (Boix and Trullén, 2011).

Castellón is one of the leading the ceramic tile industry in Europe according to production figures and has been recognised as an industrial district phenomenon (Meyer-Stamer *et al.,* 2004; Hervas-Oliver and Albors-Garrigos, 2007), representing roughly the 90% of the Spanish production. Besides Spain, Italy represents one of the strongest ceramic industries in Europe and plays a leading role in the world of ceramic design. Around 80% of Italy's ceramic tile production is concentrated in Sassuolo. Castellón and Sassuolo together account for roughly 80% of the European production (used to be 90% in 2000).

The auxiliary industry also displays a different composition in both industrial districts due to their different roles in the world ceramic industry. Castellón enjoys a prominent position in the glazing industry as illustrated by the 26 local frits-glazing (chemical) firms employing 3,200 workers (ASCER, 2010), while Sassuolo is more focused on the ceramic equipment industry, represented by 171 firms employing 6,000 workers (ACIMAC, 2010). Put differently, the world-class knowledge for ceramics in Castellón is chemistry and the one in Sassuolo is equipment. These two differing knowledge bases have traditionally influenced the type of growth in each industrial district and the disruptive innovations occurred at both places.

Also noticeable are the differences observed in both industrial districts regarding the institutional infrastructure. The local university in Castellón, Jaume I University (UJI), offers a ceramics chemical engineering degree unique in the world. The University also has links with the Ceramic Technological Institute (ITC), a local ceramics R&D centre with a worldwide reputation and employing more than 100 researchers. The Italian counterpart, the Ceramic Centre (CC) does not conduct the type of research done in the ITC and only employs around 20 researchers. The close ITC collaboration process with the UJI has been deemed to work better in Castellón (e.g. Meyer-Stamer *et al.,* 2004). The glazing industry is the main user of the ITC and is the sector at the heart of the industrial district, which undertakes most of the R&D, transferring its knowledge through its interrelationships and connections with the tile companies. At the same time, these linkages are strengthened by the support given by the ITC to the tile companies as well as the hiring of experienced technicians throughout the various industries. All this entails a fluid circulation of tacit and explicit knowledge, based on the use of a common language, culture, understanding and personal relationships among local workers, who are implicitly working towards the same targets. This innovation system has not been observed in the case of the Italian CC, although communication between ceramic equipment producers and ceramic tiles forms a productive interaction (Meyer-Stamer *et al.,* 2004; Russo, 2004) reinforcing the Italian industrial district.

4.3. Analyzing data

The sample used to conduct the work was based on information provided by trade associations in both industrial districts (ANFFECC in Castellón and ACIMAC in Sassuolo) and especially from the guide provided by ANFFECC during the interviews. We have verified the constituents of the secondary data retrieved from Bureau Van Dijk database Amadeus and SABI. Our sample is almost the total population of glazing firms in both industrial districts, 20 (out of 26) in Castellón and 18 (out of 20) in Sassuolo. Methodologically, the study of the secondary data complementing interviews consisted of extracting from *SABI* and *Amadeus (Bureau van Dijk* databases) information provided by the trade associations about the firms located in Castellón and Sassuolo for each industrial district in the frits-glazing industry according to location and SIC (Standard Industrial Classification). This way, the method retrieved information sorted by industry, the nationality of the parent company, or the main shareholders, as well as their subsidiaries or foreign branches.

We focused on the Castellón frits-glazing firms and their subsidiaries in co-located Italy, as well as on the Italian frits-glazing firms from Sassuolo and its branches located in Castellón. As a result, we can analyse the role of the indigenous firms in the industrial districts, and discover if these firms are also represented through foreign branches or subsidiaries in both locations. Then, by crossing databases with the standard industry classification (SIC) we can establish if the subsidiary is simply commercializing, or represents a production plant or extension of production facilities. The database information was more limited for other countries. Moreover, other limitations need to be pointed out. If a firm has opened a foreign affiliate that does not belong to the parent or holding company because the shareholders have made the investment as a separate firm, then this new firm does not appear as a foreign subsidiary. We only can identify and monitor those subsidiaries that have a minimum ten per cent parent company shareholding —as mentioned by Nachum and Keeble (2003a). Nevertheless, this limitation represents the exception to the general pattern— according to informal conversations held with various directors. All in all, these 46 firms are the most active ones in frits and glazes for ceramics in the global industry. Once the process of co-location in each of the two industrial districts is analyzed, we proceed with showing the main findings and then contrasting results in the interviews accomplished, in order to validate and extend qualitatively results and thus generate implications.

4.4. The Glazing industry in Castellón

With 2010 data from ANFFECC (2011), which is the frit-glazing trade association, Castellón has 26 firms specialized in frit, glaze and colour industry, including 3,200 direct employments. This is equivalent to 70% of the Spanish firms and 90% of the employment in the industry. Most of the firms in the industrial district

(21 firms) belong to the ANFFECC association. The firms of the industrial district are distributed in a small geographical area of 25 Km of radius. In the figure 1 is showed their distribution. The Castellón sample contains 20 firms, which account for 77% of the population, with a global average of 151 employees by firm —40% having less than 100 employees, 40% with between 100 and 200 employees, and 20% with more than 200 employees. Nevertheless, according to the consolidated accounts several business groups have more than 600 employees internationally. Overall, some 80% of the glazing firms in Castellón are indigenous firms and some 20% are MNE subsidiaries, mainly from Sassuolo, except for one firm with a parent company in the United Kingdom and another from USA. Around 65% of the glazing firms have subsidiaries in foreign countries, while the others are exclusively located in Castellón.

For the Italian industrial district, the sample consisted of 18 glazing firms (90% of population). Some 60% of the sample firms had less than 100 workers, while the rest had between 100 and 200. The average payroll size was 78 employees —firms being smaller than in Castellón. Overall, ten of the firms were considered as indigenous, belonging to an Italian parent or holding company— and eight were identified as MNE subsidiaries, directly from Castellón. Four companies of the ten Italian indigenous firms have foreign branches —and the remaining were local firms with no direct international presence. The four companies with operations abroad are, all of them, located in Castellón and especially one is important: Colorobbia, due to its leading role in Castellón together with the indigenous ones.

According to the informants, the glazing industry in Castellón contains three types of firms: those which only work for the domestic market (small frits-glazing firms), those which export to international markets and provide technical assistance in the destinations and, thirdly, the most «global» group which is formed by 5 MNEs which act as *international* companies (Barlett and Ghosal, 1989 classification) which exploit the parent company knowledge through diffusion and adaptation, exporting and also off-shoring parts of their value chains depending on the industrial district they co-locate. The latter group contains 5 world-class companies in the field: Colorobbia (Italian firm based in Castellón), Torrecid (Spanish), Esmalglass (Spanish), Endeka (Spain + United Kingdom) and Ferro (Spain + USA). Colorobbia is indigenous from Italy, with research and innovation, production and sales activities in Castellón and the rest are indigenous from Castellón with fully Spanish equity (Torrecid and Esmalglass) and also with equity from UK (Endeka) and USA (Ferro, listed in the New York stock exchange). All companies are located in Castellón and contribute with the 70% of the Castellón international commerce of frits and glazes.

Castellón, in general, represents around 40% of the world production share of frits and glazing. Basically, the international group of 5 companies represents around 50% of the Castellón production of frits and glazes and 30% of the world production of frits and glazes. The 5 companies have subsidiaries in all countries where the production of ceramic tile is important. For instance, Esmalglass has affiliates in

Italy, UK, Portugal, Russia, Brazil, Indonesia and China. Similarly, Colorobbia has affiliates in the same locations plus Taiwan, Turkey and Mexico. Torrecid has also affiliates in the same locations that Colorobbia has plus Thailand, Vietnam and India. Those companies, as well as the rest of the industrial district, present the main production and research facilities in Castellón province.

All of them have been off-shored step by step following the incremental (Johanson and Vahlne, 1990) Scandinavian model, following first a typical process of internationalization which started with exports, then permanent subsidiaries for technical assistance and support, and finally wholly owned subsidiaries with production abroad. The latter form, the production subsidiary, with two models. First model of commodity production, and the more sophisticated second model, consisting on fusion frits, which are the components which present the most knowledge-intensive stage of the production process and the one which add more value, incorporating nano-technology in the frits incorporated in the tiles. All interviewees recognized that, in general, these firms only co-locate in industrial districts, due to the fact that the industry is mainly formed by industrial districts (see Meyer-Stamer *et al.,* 2004).

Therefore, the first impression we got from these figures reinforce the fact that the glazing industry in Castellón is mainly indigenous, although industry companies have expanded overseas with 63% having branches in Sassuolo. In addition, some 40% of Sassuolo firms are also located in Castellón. It can therefore be shown how Castellón is leading the glazing industry by judging the number of firms and workers involved and the co-location patterns. In the next section we proceed with interview to clarify exactly why this process and what it means. Despite recognizing the fact that those firms also co-located in other industrial districts (in Brazil, Indonesia, and Turkey, for instance), this paper is focus on the Spanish-Italy relationship as a way to set a specific scope for practical purposes. According to the interviews, it is confirmed the complementary links between ceramic tile in Castellón (Spain) and Sassulo (Italy). And it was specially pointed out the fact that off-shoring to other industrial districts, requires insertion of the local knowledge, networks and ways of understanding the industry. For instance, one of the interviewees stressed the fact that:

> «Going to Italy (Sassuolo) to is not only for following up our customers abroad [...] it is an opportunity to learn from the mechanical process they have implemented using frits and glazes and also to get to know what's new on production equipment which can upgrade our services [...] It is impossible to sell design in Italy, they know much more than us, so our technical service is based on the chemical components of the product and never on the aesthetics or more symbolic forms of design [...] no way there».

Tacit knowledge gained from operations and activities in Castellón is generated locally through local inter-industry interaction, including organisations, and this knowledge is partially transferred to Sassuolo in three ways. First, the glazing Italian firms (3 medium players except for the global-player Coloribbia) co-located in Castellón with headquarters in Sassuolo. Nevertheless, strikingly the R&D activities are conducted in Castellón, where all of them produce frits and glaze, profiting from a

more knowledge-rooted environment in chemical terms. Secondly, the Castellón exports of frits and glaze to Italy is supported by the Castellón MNE subsidiaries whose off-shored activities are basically technical and post-sale support, neither production nor R&D activities which are concentrated in the Castellón knowledge domain. Therefore, the tacit (component) knowledge created in Castellón is therefore disseminated gradually to Italy through the Castellón subsidiaries focus on technical support to assist the exports of frits produced in Castellón and through the Italian subsidiaries which report to the Italian headquarters. In the interviews the following assertion was made by a leading firm executive:

> «There is no reason to have production facilities in Italy. Exports work very well and our sales branch and engineers working there providing technical support reported us the latest news they have from there every week. Producing frits in Castellón has many advantages and it is a good way of getting synergies, experience and economies of scale. In addition, we (in Castellón) are more advance on this matter than the Italians and they are so close to us, so why being there?».

What was really interesting is the implicit idea that the board of directors at the trade association had about being in Sassuolo. Put differently, being there was the right thing, but the point is *how* the MNEs are there. Although they did find the right way of expressing their idea, we quickly realized that they were talking about modes of entry and, much more interesting, about which *specific activities* off-shored. One of them was really specific:

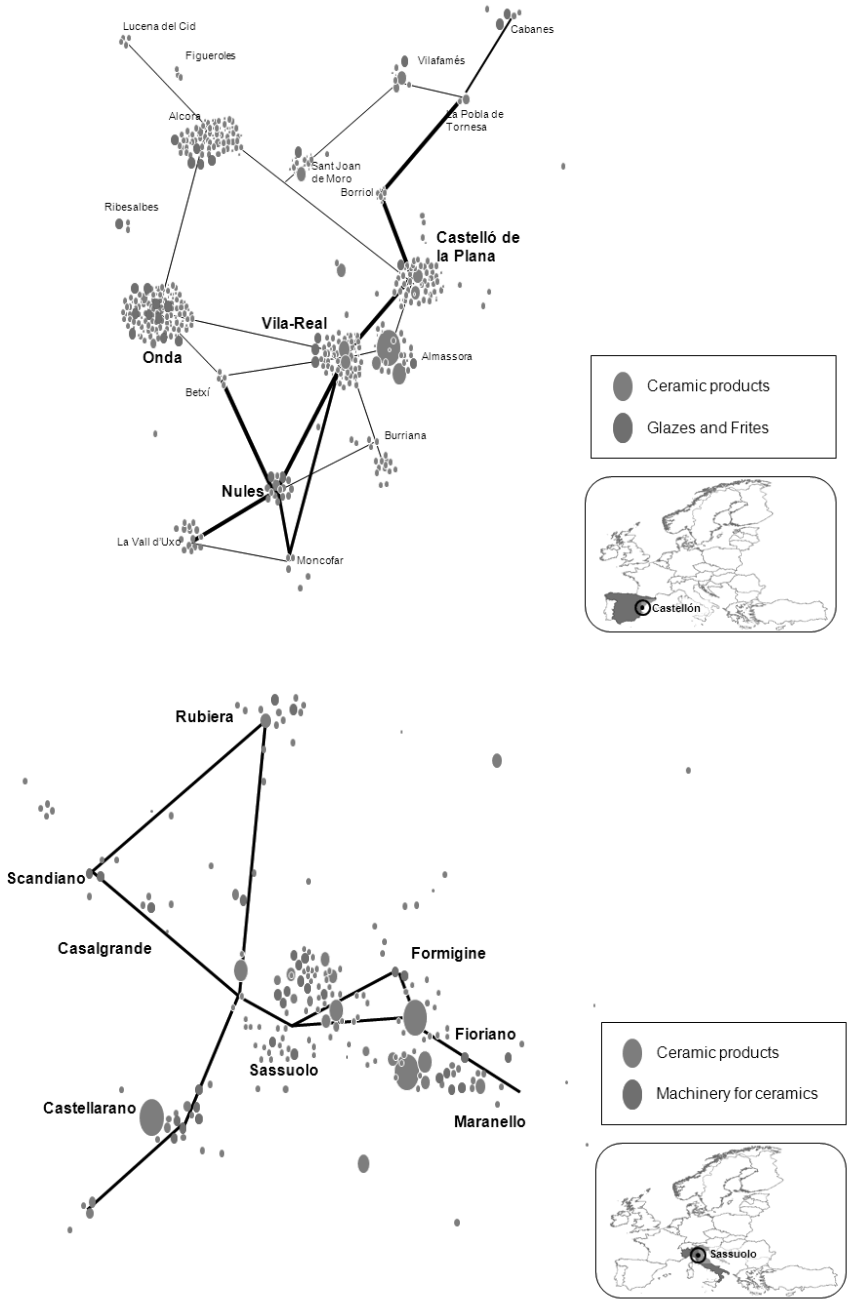
> «Taking there [off-shoring to Sassuolo] the support services is right. Our customers there have a door to knock on when they have a problem. Nevertheless, taking there the production of glazes, and mainly the fusion of frits, has no sense because we have too much to lose and really little chance to gain something. Glazing firms in Italy will have too much to gain and little to lose».

The interviewees agreed with the idea that is not about off-shoring the firm, but the specific activities. The highest-value adding activities, R&D and fusion frits, are located in Castellón because it is more efficient in terms of production and knowledge. On the contrary, off-shoring them to Italy will mean potential problems of contributing too much to the host with knowledge spillovers, apart of not using the local knowledge resources for frits-glazing in Castellón.

Apart of learning from the frits-glazing context in Castellón, the Italian subsidiaries also learn from the red-body tile context interacting with local tile producers. Similarly, the Castellón glazing firms also learn from the white-body tile context and mechanical context in Sassuolo, interacting with local tile producers. All the executives interviewed remarked the importance of being there but *being where things happens*, meaning the crucial importance of being locally embedded. Specifically, one of them suggested:

> «Our team of expatriates is always well connected. They attend seminars, conferences, visit frequently the customers and even developed local personal ties with locals from the industry. It is also important to engage with the leading firms in the Sassuolo ID, because they have always the best knowledge and are anticipated to the trends than finally are imposed in the ID, in terms of fashion and style, market tendencies, who is doing what or which is the last counterfeited product in China. This way we serve better our clients, in a virtuous cycle»

Figure 1. Firms in the ceramic districts of Castellón (Spain) and Sassuolo (Italy)



Source: Elaboration from Amadeus (Bureau Van Dijk), Boix (2009) and ISTAT (2006).

5. Conclusions

This paper is focus on understanding why multinational enterprises (MNEs) co-locate in industrial districts, stressing, unfolding and describing the potential of the local-level which permits MNEs to obtain additional sources of competitive advantage. Thus, this paper disentangles and clarifies how industrial districts have to be analyzed by MNEs in order to take advantage from the industrial districts resources in the co-location and off-shoring process. Thus, the paper expands the repository of decisions which may upgrade the MNE off-shoring process.

The paper has presented a real-life case study which permits reinforcing the theoretical propositions developed in the integration of both strands of the literature. It is empirically evidenced how the specific types of agglomerations found in each industrial districts and its agglomerations moderate the co-location decision by MNEs determining which specific activities better fit with the host location advantages in line with the general ideas of Jensen and Pedersen (2011), Rugman *et al.* (2011) and the specific facts of Nachum (2000). This idea has been pointed out when observing the differing off-shored activities in each industrial districts, depending on the specific sources of knowledge offered in each industrial districts, i.e. Castellón and Sassuolo. It is important to stress the fact that at the firm-level, the heterogeneity make also possible to consider the problem of adverse selection. In this case we want to refine what is known in the literature (e.g. Shaver and Flyer, 2000) about firm location decisions by specifically pointing out that these decisions are not at the firm-level but at the activity-level: firms can suffer from leakages in some activities and gains in others. Thus, the heterogeneity of activities and its fit to the local context is an interesting turf to be extended both theoretically and empirically. The net effect (gains vs spillovers) needs to be considered by MNEs, focusing only on offshoring those activities that better fit the local environment and lead to potential gains, while restricting those which are source of potential spillovers due to non-reciprocity by the local resources.

In addition, the different types of agglomerations are based on the different composition of architectural knowledge, i.e. context and its knowledge embedded, in each industrial districts, which determine the specific knowledge domain prevailing in each industrial districts and the opportunities for MNEs and more specifically the knowledge which can be tapped into by MNEs, as suggested by Tallman and Chacar (2011). Lastly, it is also recognized that the access to the diverse local resources by co-located MNE subsidiaries requires that the MNE subsidiary become integrated and inserted in the local networks, especially in order to access to local tacit knowledge, as remarked by Tallman and Chacar (2011).

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