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Editorial

Territorial servitization: Conceptualization, quantification and research agenda

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ABSTRACT:

Territorial servitization is the analysis of how manufacturing firms and knowledge-intensive business service (KIBS) sectors collaborate in working towards a renaissance of manufacturing competitiveness within regions of developed economies. This editorial note provides four insights. First, it sums up the existing body of knowledge on the topic. Second, it quantifies and maps the territorial servitization activity in Spanish regions. Third, it presents and reflects on the collection of five papers in this special issue, which bring new insights into how geographical proximity, innovation systems, and KIBS heterogeneity benefit our understanding of territorial servitization. Finally, the study provides a number of yet unresolved topics that deserve further academic attention.

KEYWORDS: Territorial servitization; knowledge-intensive business services (KIBS); manufacturing; regional development.
JEL CLASSIFICATION: L26; O14; R58.

Servitización territorial: Conceptualización, cuantificación y agenda de investigación

RESUMEN:

La servitización territorial es el análisis de cómo las empresas manufactureras y de servicios intensivos en conocimiento (KIBS) colaboran para el desarrollo de nuevos modelos de negocio basados en el servicio que llevan al renacimiento de la competitividad industrial de las regiones ubicadas en países desarrollados. Esta nota editorial proporciona cuatro ideas. Primero, resume el cuerpo de conocimiento existente sobre la servitización territorial. En segundo lugar, cuantifica y mapea la actividad de servitización territorial en las comunidades autónomas españolas. En tercer lugar, presenta los cinco trabajos originales publicados en este número especial. Dichos trabajos aportan nuevos conocimientos sobre cómo la proximidad geográfica, los sistemas de innovación y la heterogeneidad de KIBS benefician nuestra comprensión de la servitización territorial. Finalmente, el estudio proporciona una serie de temas aún no resueltos que merecen más atención académica.

PALABRAS CLAVE: Servitización territorial; servicios intensivos en conocimiento; manufactura; desarrollo regional.
CLASIFICACIÓN JEL: L26; O14; R58.

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1. Introduction

Since the 1980s, multinationals have changed production processes. Manufacturing processes have gradually gone from being a local occurrence to a global phenomenon. These changes have increased the productive capacities of manufacturing firms from emerging countries, making it necessary to reinvent the competitive advantage of manufacturing firms in developed countries (Baldwin, 2016). A recent study by Buckley et al. (2020) shows that emerging countries have been able to replicate manufacturing capabilities, but have not yet been able to imitate higher value-added activities related to the use of digital technologies to add value-generating services to the product offering. This process of reinventing the business model of manufacturing firms has been extensively studied in the literature as the servitization of manufacturing (Bustinza et al., 2017; Crozet and Millet, 2017).

As in other European economies, the productive fabric in Spain is dominated by small and medium enterprises (SMEs). SMEs do not have the internal capabilities to develop service-based business models, so they need to collaborate with other firms within the economy. Territorial servitization is the outcome of the symbiotic relation between knowledge-intensive service (KIBS) sectors and manufacturing firms which, in turn, generates superior territorial resilience, manufacturing renaissance and competitiveness, as well as regional development (Lafuente et al., 2017, 2019).

The literature on territorial servitization has great relevance for the regional studies community on two fronts. Firstly, it has important connotations towards the development of cluster policy (or industrial districts), so popular in Spanish regions such as the Basque Country (Aranguen et al., 2014). The introduction of KIBS companies in the environment of such industrial clusters seems inevitable, with an obvious consequence: the creation of multi-industry clusters and local hybrid value-chains (Bellandi and Santini, 2019; Lafuente et al., 2019; Sforzi and Boix, 2019). Second, the literature on territorial servitization contributes to an increase in the literature on how knowledge-based sectors are determining factors in the creation of employment (Lafuente et al., 2017) and the economic and social development of cities and regions (De Propris and Storai, 2019).

Our knowledge on territorial servitization is currently limited. In the present monograph, we offer new research to uncover new nuances on territorial servitization with a focus on the cases of Spain, Italy and Latin America. In the selection of papers, we uncover important issues such as the importance of geographical proximity between manufacturing companies and KIBS, the role of regional manufacturing strength and territorial economic systems in developing the KIBS sector, and existing heterogeneities in KIBS.

The remaining of this introductory paper is as follows. Next section will summarize the key papers in the literature. Section 3 will quantify the phenomenon of territorial servitization in Spain, so we can visualize its recent evolution. Section 4 provides a summary of the contributions published in this monograph. Section 5 finalizes with some unresolved issues that remain as avenues for future research.

2. Background literature

The provision of knowledge-intensive services is recognized as a driver of highly innovative economies (Horváth and Rabetino, 2019). This is sustained on a process of servitization were manufacturing firms implement value-adding services into their operations (Bustinza et al., 2017), shifting product-oriented systems towards outcome-oriented product-service systems. The implementation of services is heterogeneous across servitized manufacturers, but is increasingly popular throughout most developed economies (Buckley et al., 2020; Crozet and Milet, 2017).

The presence of a dynamic KIBS sector results in the renaissance of local manufacturing industry (Sforzi and Boix, 2019). KIBS firms are both sources and carriers of knowledge that inject advanced services across manufacturing firms. KIBS firms therefore positively influence territories by enhancing the

TABLE 1.
Key papers on territorial servitization

Authors & (year)	Journal	Key result	Key focus		
			KIBS Focus	Manuf. Focus	System Focus
PANEL A. BEFORE THIS SPECIAL ISSUE					
Lafuente, Vaillant & Vendrell-Herrero (2017)	*International Journal of Production Economics*	There is a virtuous circle between manufacturing and KIBS activity that generate employment			X
Vendrell-Herrero & Wilson (2017)	*Competitiveness Review*	Detect a growing relevance of KIBS in mainstream servitization literature	X		
Kamp & Ruiz de Apodaca (2017)	*Competitiveness Review*	Industry-level collaboration with KIBS associated with larger exports		X	
Lafuente, Vaillant & Vendrell-Herrero (2019)	*Regional Studies*	Integrative model of territorial servitization			X
Bellandi & Santini (2019)	*Regional Studies*	Territorial servitization analysis based on multiplicity of know-hows, transaction costs and the entrepreneurial drive			X
Gebauer and Binz (2019)	*Regional Studies*	Servitization generates employment and improves technology allocation in regions.			X
Sforzi & Boix (2019)	*Regional Studies*	Uses territorial servitization to conceptually reframe Marshallian districts		X	
De Propris & Storai (2019)	*Regional Studies*	Product-service spatial proximity shapes the value chains of manufacturing activities		X	
Liu, Lattemann, Xing & Dorawa	*Regional Studies*	Framework explains how manufacturing multinationals collaborate with KIBS		X	
Horváth & Rabetino (2019)	*Regional Studies*	Regions with an entrepreneurial ecosystem have higher KIBS formation rates.	X		
Wyrwich (2019)	*Regional Studies*	Strengthening the industrial base in peripheral regions could induce KIBS activity.	X		
Gomes, Bustinza, Tarba, Khan, Ahammad (2019)	*Regional Studies*	There is a connection between larger levels of KIBS deepening and the percentage of servitized manufacturers.		X	

TABLE 1. cont.
Key papers on territorial servitization

Authors & (year)	Journal	Key result	Key focus		
			KIBS Focus	Manuf. Focus	System Focus
PANEL A. BEFORE THIS SPECIAL ISSUE					
Castellón-Orozco, Jaría-Chacón & Guitart-Tarrés (2019)	*Journal of Regional Research*	Most profitable firms tend to servitize more		X	
Bustinza, Gomes, Vendrell-Herrero, Baines (2019)	*R&D Management*	Collaboration with KIBS increase firm performance for servitized manufacturing firms		X	
Bellandi & Santini (2020)	*International Journal of Business Environment*	Place leadership key factor to establish product-service system			X
Vendrell-Herrero, Darko & Ghauri (2020)	*Journal of Knowledge Management*	In developing economies, collaboration with KIBS generates productivity gains for exporters but has the opposite effect for non-exporters.		X	
PANEL B. PUBLISHED IN THIS ISSUE					
Araya, Horváth & Leiva (this issue)	*Journal of Regional Research*	Quality of the local environment is positively associated with KIBS creation.	X		
Seclen-Luna & Moya-Fernandez (this issue)	*Journal of Regional Research*	KIBS proximity increases probability of achieving product innovation in manufacturing firms.	X		
Opazo-Basáez, Narvaiza Cantín & Campos (this issue)	*Journal of Regional Research*	Manufacturer-KIBS relationships more efficient when both companies are geographically closed		X	
Marino & Trapasso (this issue)	*Journal of Regional Research*	There is a path dependency in territorial servitization and therefore policies in lagging regions need to be focusing on developing manufacturing fabric first.		X	
Zubiaurre-Goena & Sisti	*Journal of Regional Research*	Differentiates among technical (T-KIBS), computer-related (C-KIBS), and the professional (P-KIBS) services. Stronger regional innovation system enhances the creation of T-KIBS and P-KIBS.	X		

value of manufacturers' supply of product-service bundles (Lafuente et al., 2017). The presence of KIBS firms in the territory reduces the manufacturer's internal cost of offering advanced services (Vendrell-Herrero and Wilson, 2017). Besides, it alleviates operational weaknesses linked to their liability of both newness and smallness (Gebauer and Binz, 2019) and expands international competitiveness (Kamp and Ruiz de Apodaca, 2017). As such, the territorial servitization domain refers to the meso-level territorial benefits of the co-location between manufacturing companies and KIBS firms within the same territory. KIBS firms tend to agglomerate together with manufactures, developing informal networks and formal strategic partnerships, opening up a virtuous entrepreneurial circle, which in turn positively influence the renaissance of manufacturing (Lafuente et al., 2017). The literature of territorial servitization is emerging. Table 1 provides an up-to-date and exhaustive list of the studies analysing the phenomenon. Table 1 divides those studies published before the present monograph and studies published in the current special issue. It also divides studies based on their focus. Some studies within this domain analyse KIBS deepening within regions, some other studies analyse territorial servitization from a manufacturing perspective.

Finally, most conceptually-based studies have a more integrated and systemic view of territorial servitization, analysing the mechanisms behind manufacturing-KIBS' economic enhancement. The servitization of regions is expected to relaunch growth and sustain long-term competitiveness. As such, placed-based territorial servitization not only enables the upgrading of traditional manufacturing competences, it intrinsically brings new technological capabilities within regions (De Propris and Storai, 2019), enhancing industrial resilience and more sustainable economic growth and prosperity (Bellandi and Santini, 2019).

3. Quantification: the case of Spain

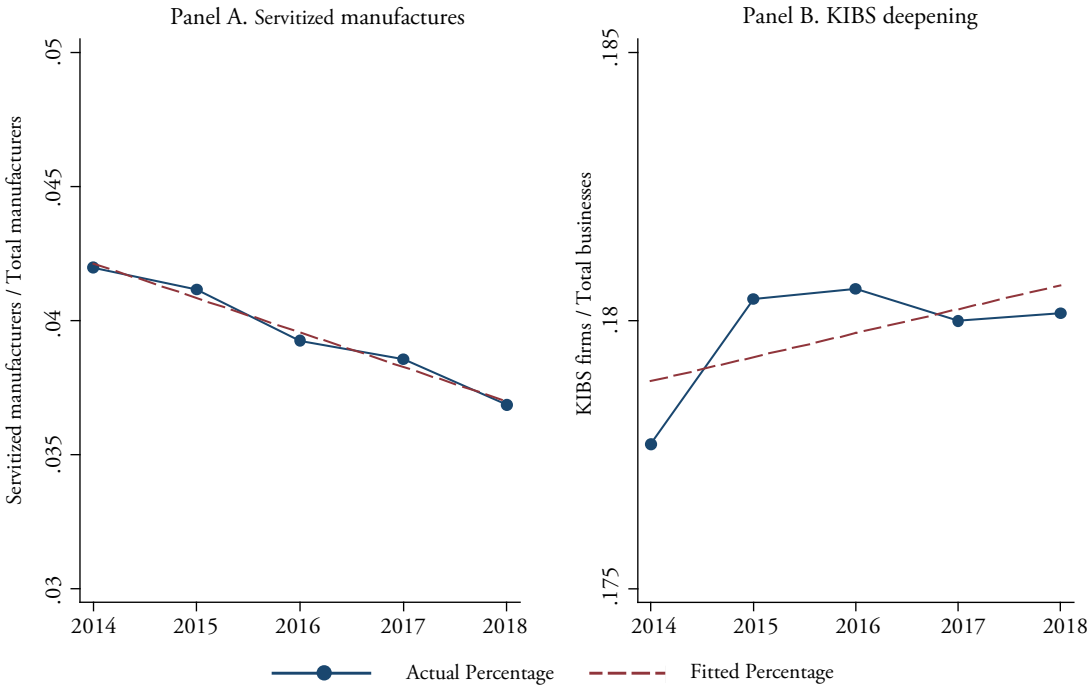
To analyse the Spanish geography of servitized manufacturers and KIBS deepening we construct a database using ORBIS (BvD). The data contains information for the 17 Autonomous communities for the period 2014-2018.

We follow the approach of Gomes et al. (2019) to compute relevant variables: *percentage of servitized manufacturers* and *percentage of KIBS deepening*. The former consists of identifying the number of manufacturing firms in a region/year and the number servitized manufacturers as those firms with secondary sector in the knowledge-based service sector.[1] With this information, we compute the percentage of servitized manufacturers as the ratio of those variables (i.e. servitized manufacturers over total manufacturers). The later consists of identifying the number of KIBS firms as the ones with primary sector in the knowledge-based service sector, and dividing them by the total number of firms in the region/year (i.e. number of KIBS over total businesses in the region). With these two variables, we derive three stylized facts on the development of the Spanish service-based economy.

1. The number of servitized manufacturers is gradually decreasing over time, moving from 4.2% in 2014 to 3.7% in 2018 (see Panel A Figure 1), whereas the number of KIBS deepening is increasing; reaching 18% of total businesses in 2018. The decrease of servitized manufacturers can be caused by many reasons that go beyond the aim of this research. However, taking both results together, one could argue that manufacturing companies are outsourcing the service function to more specialized companies, being consistent with the rise in KIBS, and the postulates of territorial servitization.

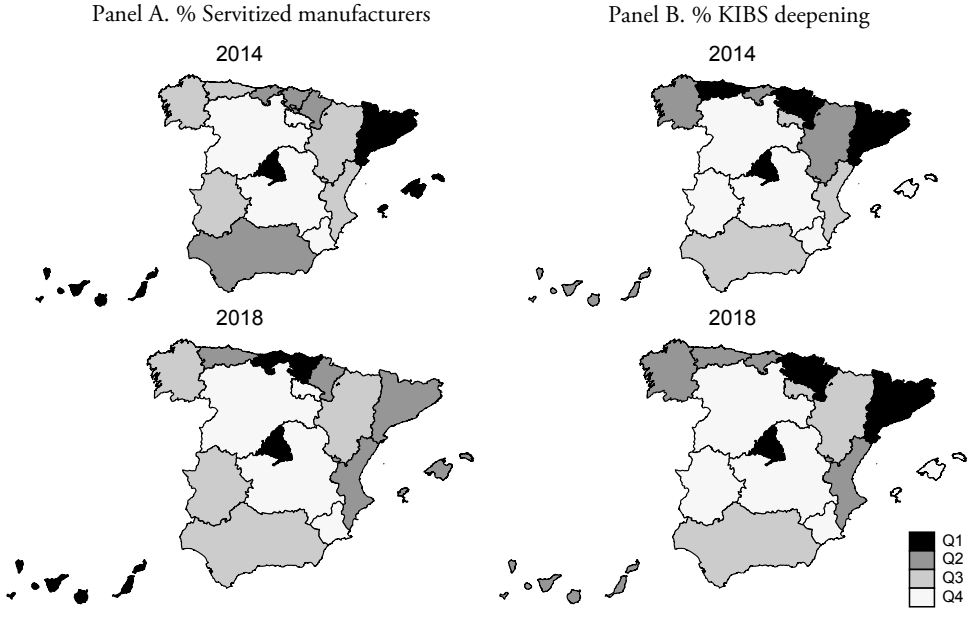
[1] Following standard practice used the following secondary NAICS codes to identify knowledge-based services: 518 "*Data Processing, Hosting, and Related Services*"; 519 "*Other Information Services*"; 54 "*Professional, Scientific, and Technical Services*"; 56 "*Administrative and Support and Waste Management and Remediation Services*"; and 811 "*Repair and Maintenance*".

FIGURE 1.
Servitization and KIBS deepening evolution in Spain (2014-2018)



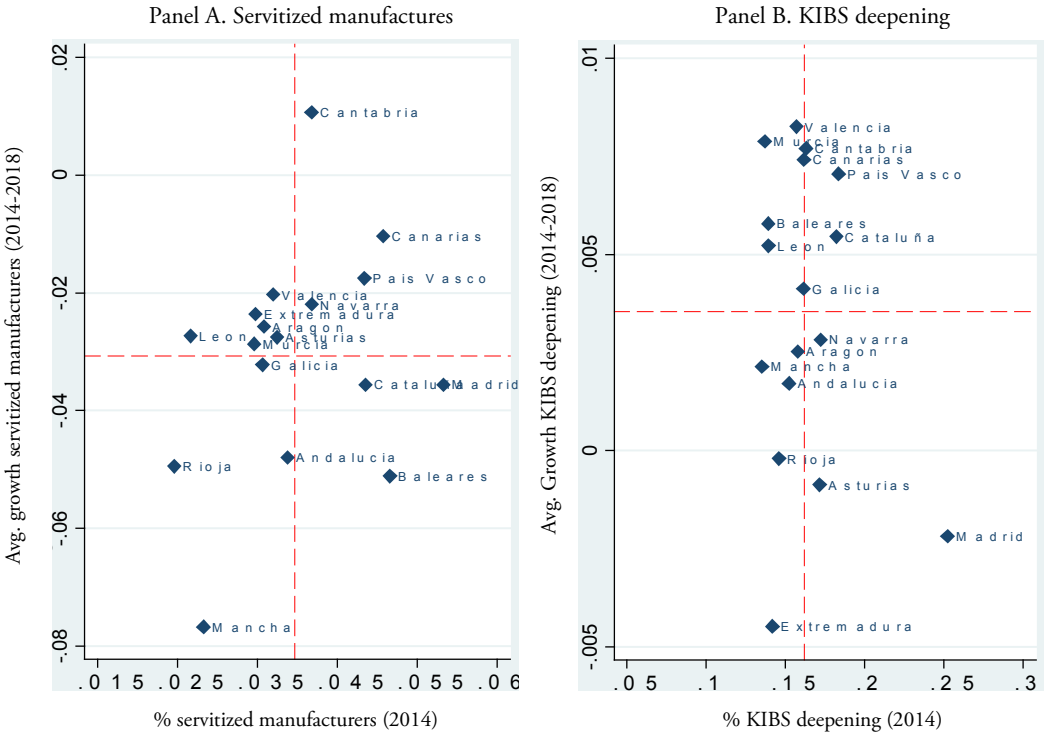
2. Servitization of manufacturing and KIBS fabric seems to occur in the same Spanish regions that normally are described as leaders of manufacturing, innovation and entrepreneurship (Gonzalez-Pernia et al., 2012). Regions as Madrid, Basque Country, Catalonia and Navarre are consistently in the top two quartiles in both periods (see Panels A and B, Figure 2). Some regions traditionally lagging are also top performers, this includes Canary Islands, Balearic Islands and Cantabria in the percentage of servitized manufacturers, and Asturias in KIBS deepening.

FIGURE 2.
Map of servitization and KIBS deepening by Spanish Autonomous Communities



3. Some lagging regions can converge to leading regions. Madrid, the leading region in both indicators, exhibit negative growth in both indications, whereas, lagging regions like Valencia and Cantabria increase KIBS deepening and have neutral growth in servitization of manufacturing, indicting some tendency towards convergence (see Panels A and B, Figure 3). Interestingly, not all regions are able to converge. Examples of that are Andalusia, La Rioja, and Castile-La Mancha for the case of servitized manufactures, and Extremadura for the case of KIBS deepening.

FIGURE 3.
Servitization and KIBS deepening: volume (2014) and growth (2014-2018)



4. NEW ADVANCEMENTS IN THIS SPECIAL ISSUE

The interrelations between manufacturing companies and knowledge-intensive service firms often dominate current territorial servitization discourse, and the papers published in this special issue share this common focus. The special issue contains five research articles that help us to develop further our understanding of territorial servitization. These articles are multidisciplinary and contain quantitative and qualitative evidence from Spanish, Italian and Latin-American regions. In sum, the monograph emphasizes the importance of evaluating the antecedents of KIBS formation, the analysis of KIBS heterogeneity, the significance of KIBS-manufacturing geographical proximity and the re-design of industrial policies in lagging regions.

4.1. ANTECEDENTS IN KIBS FORMATION

In this special issue, Araya, Horváth & Leiva (this issue) provide more nuances on the antecedents of KIBS formation. They evaluate the catalytic power of manufacturing industry to promote change in the rate of business service firms, which constitutes a relevant antecedent to territorial servitization. More specifically, their study analyses the impact of quantitative characteristics (size and relative weight) of the manufacturing sector, while acknowledging the potentially moderating role of local competitive conditions that may explain the different dynamics in the rate of business service firms across territories. Local

competitiveness level is measured by an index number that evaluates various competitive dimensions related to economic and social features of the territory. After employing panel-data models on a sample of 81 Costa Rican counties during 2010-2016, the findings are twofold. First, they demonstrate that structural change towards increased specialization in business services only takes place in counties with a large manufacturing base (a critical mass), while the relative weight of the industry within the local economy does not have an impact. Second, results indicate a substitution effect among the size of the manufacturing industry and local competitiveness: a competitive local environment can compensate the lack of a large manufacturing base, whereas a larger manufacturing base even in a low-competitive region can potentially contribute to increasing rates of business service firms.

A second contribution on the same domain is the article of Zubiaurre-Goena and Sisti (this issue). It uses a rich panel database covering the seventeen Spanish regions for the period 2000-2016 formed by merging secondary data from multiple sources (Spanish Statistical Office (INE), Eurostat, and BvD). Interestingly, the study recognizes KIBS heterogeneity by differentiating into three types: technical KIBS (T-KIBS), computer-related services (C-KIBS), and "traditional" professional services (P-KIBS). The results of the study suggest that KIBS antecedents depend on the type of KIBS analysed. Regions with stronger innovation systems are more likely to generate P-KIBS and T-KIBS, whereas regions with more manufacturing quality are more likely to generate C-KIBS.

4.2. Geographical proximity between KIBS and manufacturing firms

One of the premises of territorial servitization is that geographical proximity is important in developing strong partnerships between manufacturing and service industries; however, with the exceptions of Liu et al. (2019) this premise has not been evaluated empirically (Lafuente et al., 2019). In this special issue, two articles analyze this issue in-depth.

First, Opazo-Basáez, Narvaiza-Cantín & Campos (this issue) follow a qualitative approach to evaluate the importance of geographical proximity in the manufacturing-KIBS collaboration. They used two case studies in the Basque Country. In both cases, the manufacturing company is in the Basque Country. However, they collaborate with KIBS firms from different geographical areas, "inside" and "outside" the Basque region. Their evidence proposes that geographical distance plays a key role on the KIBS-Manufacturer relationship for servitization capacity, the greater the geographical proximity the better.

Second, Seclen-Luna and Moya-Fernandez (this issue) seek to evaluate to what extent the proximity to KIBS firms is beneficial to manufacturing firms' capacity to innovate. Drawing on the World Bank Enterprise Survey (WBES) for eleven Latin-American countries, they analysed 3,029 manufacturing firms, with the purpose to uncover the relationship between KIBS co-locations and the innovativeness of the manufacturing firms. Findings indicated that manufacturing firms' locations based on KIBS proximity, is a critical determinant of product innovation, which could facilitate the adoption of servitization strategies and introduce value-adding services into their operations.

To sum up, these two articles provide consistent evidence that geographical proximity needs to be considered as an important aspect for successful territorial servitization. Both studies recognize the value added obtained from collaborating with a firm that is within the same city/region.

4.3. Territorial economic systems and path dependency policies

Marino and Trapasso (this issue) present the last study in this monograph. Their work addresses a fundamental question: whether industrial policy is best designed based on the development of a knowledge intensive service economy having the same focus for all regions (one size fits it all) or if there are certain intrinsic characteristics that make it necessary for regions to customize their industrial policy. To respond this question, advanced and peripheral regions are considered (Wyrwich, 2019). The study analyses Italian regions for the period 2009 to 2014. It is found that the accumulation of capital and the ability to develop

the service economy are main drivers of regional competitiveness. This means that peripheral regions with fewer resources (capital) and capacities (services) must redirect their efforts in achieving the necessary pre-conditions of territorial servitization. In other words, there are sufficient and necessary conditions to be able to develop territorial economic systems with a strength in knowledge-based services. In the case of not having said conditions, policy makers should first prioritize the construction of the said conditions.

5. Research agenda

This special issue has focused on achieving a better understanding of the role of KIBS firms in the economy. It also has analysed how KIBS are changing business dynamics. To visualize these changing conditions, we paid particular attention to the case of Spain. It is interesting to see how the descriptive data indicates that there is a pattern where the synergies between manufacturers and KIBS seem to be more relevant than internalizing services in-house for the manufacturing sector, as the literature on servitization would invoke. It is also interesting to see how the peripheral regions in Spain are managing to converge to the leading regions such as Madrid and the Basque Country. However, the analysis offered in this introductory article is descriptive in nature and requires future work to characterize with greater rigor and detail the European dynamics in territorial servitization.

With this special issue, we know much more about the interrelations between KIBS and manufacturers and how geographic proximity can improve the effectiveness of these symbiotic relations. Even so, it is necessary to carry out studies that propose specific industrial policies that help state and regional governments to accelerate these servitization processes. This requires considering the joint effect of all industrial and fiscal policies and not evaluating each policy in isolation (Magro and Wilson, 2019). It is also necessary that the policies described have the same practicality and nature as the recommendations given in the practice of strategic management (Bailey, Pitelis & Tomlinson, 2020).

Another point of utmost importance is how the service-based knowledge economy is more resilient than the product-based economy (Ariu, 2016). In this sense, future research can take advantage of the economic disruption of Covid-19 to see the effects of economic resilience in regions with different degrees of territorial servitization. In particular, it will be important to assess the different trends in job destruction / creation in regions with different strengths of territorial servitization. It is important to remind that job creation is an intrinsic feature of territorial servitization (Lafuente et al., 2017) that has not yet been sufficiently studied.

Finally, a reflection on the dynamics of collaboration between KIBS and manufacturing companies. The existing literature does not seem to emphasize market power. On the one hand, KIBS companies may be dominant in some regions, contributing to accelerating the regional servitization process from the side of service innovation. In other regions, it may be manufacturers that have sufficient market power to set the territorial servitization process in motion based on enabling product innovation. Future studies should analyse these dynamics in detail and above all see to what extent they may be the focus of regional policy, or, on the contrary, they may be shaped by the productive dynamics of multinational companies (Buckley et al., 2020), which by re-locating may be able to change the processes of how a region is servitized.

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