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Place-making in the Mersey Dee before and after Brexit and COVID-19 disruption: A typology of companies and their engagement with their localities and key actors

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Place-making in the Mersey Dee before and after Brexit and COVID-19 disruption: A typology of companies and their engagement with their localities and key actors.

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Key Words: place-making; firm typology; peripheral economies

Abstract

The purpose of this paper is to develop a typology of firms operating in a peripheral economy. A three-way typology is presented which builds on previous studies, distinguishing between the ‘pure agglomeration’, ‘industrial complex’ and ‘social network’ models. This typology is refined and applied to the Mersey Dee area, a cross-border region within the UK with a dispersed, segmented economy. Two case studies of firms located in the Mersey Dee are explored to test the typology and examine how these firms related to their places and to other firms and institutions, in the context of rapidly changing market conditions due to Covid-19 and Brexit.

The findings confirm the typology and establish a clear contrast between firm types operating in a peripheral economy such as the Mersey Dee, providing relevant insights into the contributions they can make and how balanced regional development policies could support the heterogeneity and richness of their place-based economies. These approaches will differ from the traditional agglomeration or cluster model, typically advocated to build sustainable economic centres.

Further research is recommended through comparator case studies of similar regions internationally, within the typology presented.

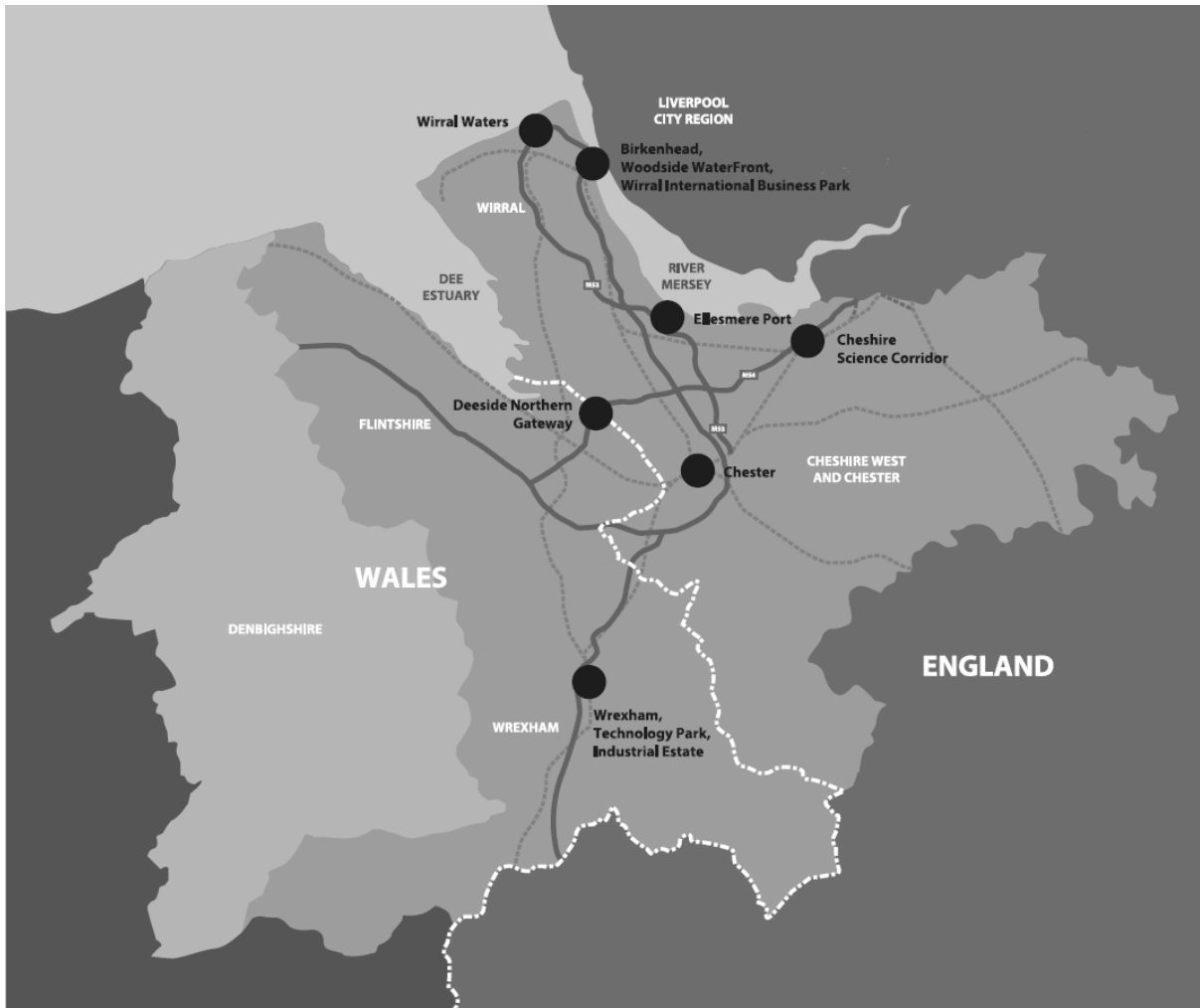
1. Introduction

This study will explore a dynamic typology of what characterises firms based in a peripheral but functionally connected region, how they engage with key actors and realise local economic potential. Much of the UK Government’s rhetoric about place has been focussed on cities, city-regions or on sector-based clusters, even within the context of its Levelling-Up Agenda (HMG 2022). Yet not every ‘place’ contains such agglomerations and, even if they do, these are not necessarily the most appropriate ways to understand place (Coffey et al., 2023). This paper addresses this gap, redefining ‘place’ in the absence of such foci and whether studying firms in peripheral places can provide valuable insights into place and inform place-based policy, in the context of significant recent disrupters to the business environment.

The analysis in this paper builds on findings about how place, firms and institutions shape the Mersey Dee area (Hildreth, 2021), a dispersed cross-border functional economy straddling across North-East Wales and North-West England comprising medium-sized conurbations, smaller towns and villages and a large rural hinterland. Figure 1 shows the Mersey Dee, with the central area marked in dark grey

being the area represented by the Mersey Dee Alliance (MDA) in 2022. Denbighshire (in light grey) was a member up to 2015.¹

Figure 1 Map of the Mersey Dee



Source: This Figure is reproduced with the permission of the Mersey Dee Alliance

Drawing from the same firms case study research (Hildreth, 2021), Hildreth and Bailey (2023) analyse three propositions that address the foundational character of place, the nature of its particular mix of firms and resulting processes of agglomeration, and what this means for the appropriateness of design of institutions, which are underpinned by three principles of place-based approaches (Barca, 2011; Barca et al., 2012; Hildreth and Bailey, 2013, 2014; McCann, 2016):

¹ The MDA grew out of a recognition of shared economic, social, and environmental interests across the area covering West Cheshire, Wirral, and North East Wales, with a partnership formed in 2007. Today, in addition to the local authorities of Flintshire and Wrexham in Wales, and Cheshire West and Chester in England, the MDA's membership also includes Chester and Wrexham universities, Coleg Cambria, Transport for Wales and the Welsh Government. Wirral also represents the Liverpool City Region.

1. That a key distinction between agglomeration-driven and place-based policy and institutional frameworks lies in their respective underpinning assumptions about the homogeneous and heterogeneous character of place.
2. That a distinctive character of place lies in its particular mix of types of firms and resulting combinations of processes of agglomeration, within and beyond the local economy.
3. That the particular mix of firms in the local economy presents choices for the operational design of institutions across different spatial scales.

Hildreth and Bailey (2023) develop this framework and examine underpinning evidence for these three propositions. Although complementary to that of our paper, their purpose is different since they consider in relation to proposition 3, whether the UK government's preferred institutional model of Combined Authority and elected metro-mayors is appropriate for areas lying beyond the metropolis. By contrast, our paper is specifically focussed on evidence linked to proposition 2, drawing on two additional detailed post-Brexit and post-COVID case studies undertaken in 2022, not available to Hildreth and Bailey (2023).

Proposition two is that a distinctive character of place lies in its particular mix of types of firms and resulting combination of processes of agglomeration that apply within and beyond the local economy. This proposition arises from exploring how the localness of an economy might be understood by investigating how its firms relate to place, other firms, and institutions. Whilst a place might contain a particular clustering of firms, there may also exist a diversity of firms that respond to different processes of agglomeration for their location in space. To consider a broad range of companies, three models of firm networking described by Gordon and McCann (2000), as '*pure agglomeration*', '*industrial complex*' and '*social network*', are applied to the case studies in this paper. This opens access to a wide range of relevant and more recent literature about firms from different perspectives (Hildreth, 2021; Hildreth and Bailey, 2023).

Theories about clustering and agglomeration contribute to understanding firms' locational behaviour in relation to place. Some studies have presented evidence that firms choose to locate close to other firms, so that any observed pattern of clustering might be rationally explained (Duranton and Overman, 2005, 2008; McCann, 2013). A generalised industrial sectors approach which does not test for knowledge in local circumstances has been central to sub-national economic policy in England and Wales (HMG, 2017; Welsh Government, 2017). Another approach has been to focus on the role of external economies within urban agglomeration frameworks (Serwicka and Swinney, 2016).

These frameworks are not particularly helpful to interpreting the clustering of firms in the peripheral economy of the Mersey Dee. The area lacks identifiable clusters, despite sectoral strengths in aerospace, automobile and engineering, energy, finance, and professional services (see Table 1). Neither does it have an observable urban agglomeration economy. While Chester has a mature service economy and

Wrexham shows potential for developing one, little evidence was found that urban agglomeration factors have shaped firm location patterns or the character of inter-firm relations in the Mersey Dee. An alternative approach is to acknowledge that the area is characterised by a segmented economy, differentiated by a variety of larger (mainly MNEs) and smaller (mainly privately owned and often indigenous) firms. This local differentiation is not centred on sectors (or clusters), even though sectoral relationships were identified both within and beyond the area. Rather, the Mersey Dee firms were found to be differentiated first, by the nature of their ownership, and following this, by their customer, supplier, and institutional relations with other stakeholders, which are impacted by different processes of agglomeration. These are in turn shaped by the consequences of long-term geographical, historical, cultural, and institutional change within and beyond the area (Markusen, 1994, 1996; Massey, 1995; Hildreth, 2021).

Table 1 Mersey Dee Area Key Statistics

Population	1 million
Employees	413,000 (77% also resident within Mersey Dee area)
Dominant sectors	High value manufacturing, energy, aerospace, automobile and engineering, energy, finance, and professional services.
GVA	£22bn
Loss of economic activity during Covid 19	15%, compared with UK average at 9.9%
Export dependency profile	80% to EU, 20% rest of the world
Governance model	Cross-border functioning economy (England and Wales), four local authorities – Wrexham, Flintshire, Cheshire West and Chester and Wirral
Infrastructure	Lagging behind rest UK for public transport and digital connectivity

Source: Mersey Dee Alliance, 2023

Following a presentation of a hypothesis for a typology of firms found in peripheral economies such as the Mersey Dee, drawing on a study of 46 firms (Hildreth, 2021), this paper will examine two case study companies in depth. The aim of these case studies is to determine how they match the theoretical models in the typology, in order to test its robustness and further build understanding. Furthermore, the paper will explore whether the recent disruptions of Brexit and COVID-19 have led to any paradigm shifts in the descriptors underpinning the typology, so to what extent it is stable or dynamic. In the concluding section, the findings are discussed, and suggestions are made for further research.

2. Relating firms to place in the local economy

Reflecting proposition 2, this paper considers how place-making may be understood through a typology of companies and their engagement with their locality and key actors. The analysis presented here is evolved from three foundational models of the firm presented by Gordon and McCann (2000) and

developed by Iammarino and McCann (2013) as *'pure agglomeration'*, *'industrial complex'* and *'social network'*.

The pure agglomeration model is where firms benefit from external economies of scale through matching, sharing, and learning, created within the space around them (Duranton and Puga, 2004). Sharing is the ability to share inputs, supplies, and infrastructure. Matching is the capacity to access a wider pool of labour skills. Learning is the potential to learn from others and from within the surrounding (urban) environment. This form of industrial clustering is essentially urban in character, where entry by a new firm is feasible by simply meeting the local rent or property purchase costs. The firm joins a market that is characterised by a high density of competitors, in which firms have limited market power to impact the competitive well-being of another firm locally. Regarding relations with other actors, the pure agglomeration model presumes that the only cooperation that takes place between the firm and other players is in the interest of the firm, in an *'atomised and competitive environment'*. Little sense of loyalty or other kinds of stable relations will be found between firms, beyond those of a transactional nature (Gordon and McCann, 2000; Lyon, 2000).

The second model is the industrial complex. These firms usually form part of a multinational enterprise (MNE) structure. They may coincidentally co-locate with other industrial complex firms to maximise internal economies of scale by minimising location factor and distance transaction costs (McCann, 1995; Parr, 2002a, b). To enter the complex, firms are likely to be large and make significant long-term physical capital investments in machinery, infrastructure, and real estate, making it difficult for a new firm to enter the industrial complex. The firm will then form part of the international and stable chain of trading production relations with other plants within the same company nationally and internationally. Transfer of knowledge in the industrial complex model is internal to the vertical structure of the complex through its relations across company plants, its suppliers, and customers. High barriers of entry to the industry and significant costs in site development reinforce the internalisation of knowledge within the firm's complex. Given their propensity to retain internal control of knowledge, they may have limited local associative institutional relationships, involving no sharing of tacit knowledge outside the industrial complex (Lyons, 2000). Unlike the pure agglomeration and industrial complex models, the third type, the socially networked firm does not draw on economies of scale type arguments. Instead, its roots lie in managerial sociological literatures about the embeddedness of firms within a spatial context that is shaped by social relations with other actors. Here the key factor that underpins these individual or collective social relationships and firms' embeddedness in place is trust. Trust-based behaviours between firms and with institutions may include joint lobbying, joint ventures, informal alliances, and other forms of reciprocal relationships (Granovetter, 1985; Harrison, 2007; Oinas, 1997; Markusen, 1994; Gordon and McCann, 2000).

Whilst Gordon and McCann (2000) described the social network as a single model, Iammarino and McCann (2013) subsequently divided it in two: trust-led firms versus competence-based firms. Trust-led firms are likely to manufacture customised products such as textiles, footwear, or furniture. In this case, knowledge is accessed externally from the firm, but internally within the sector that it operates. Thus, knowledge will tend to be codified, mature and transmitted through localised networks of industry related firms, utilising long-term trust-based customer and supplier relations. The competence-based variant, on the other hand, is more likely to be found among those engaging with science-based and general-purpose technologies. They access knowledge both external to the firm and the sector within which it is located. This is by working with other firms and/or universities on collaborative projects. Therefore, competence-based firms are more likely to be found in fields applying general purpose technologies, with a dynamic of uncertain and disruptive change.

3. Methodology

A recent study of how place, firms and institutions shape the Mersey Dee cross-border economy included results from 46 firm interviews, reflecting the primary industrial sectors found within the Mersey Dee area, including aerospace, automotive, chemicals, food, nuclear, renewables, financial services, ICT, and tourism (Hildreth, 2021). A structured process to select, arrange, conduct, and transcribe interviews was followed in each of the five local authority areas. A semi-structured interview format was applied, to both enable consistency between case study interviews, whilst allowing additional probing questions to draw further elucidation. One to two-hour interviews were held face-to-face on company sites, with Managing Directors or other senior managers (Stake, 1994; Flyvbjerg, 2006, Yin, 2014). These interviews were conducted pre-Covid and pre-Brexit, primarily between 2014 and 2016. They sought to understand firms' perspectives of their relationship with other firms and institutions locally and in the wider economy, as well as reasons for their location within the Mersey Dee today. The interviews drew on the framework of firm models originally compared by Gordon and McCann (2000) as described in this paper, and an approach to build evidence on a firm-by-firm basis in place outlined by Markusen (1994), across sectors and different ownerships. Efforts continued to test interviewee and other research data in interactive ways over the period 2015 to 2019. These included: seeking feedback from interviewed firms on interview results, giving presentations to different institutional audiences and receiving feedback from interviewed companies regarding the results (Hildreth, 2021).²

Subsequently, the results were further tested through two in-depth case studies conducted in 2022, each offering clear examples of one of the two predominant firm types which had been identified in the

² An explanation of the research methods applied in this research may be found in 'Chapter 4 – Researching a place-based framework' in Hildreth (2021: 79-116), which is an open access document available in UCL Discovery at: <https://discovery.ucl.ac.uk/id/eprint/10130797/>

Mersey Dee area. The objectives of these two case studies were: first, to determine to what extent the case study companies continued to fit the theoretical models in the typology in order to test their robustness and further build understanding; second, to explore whether the recent disruptions of altered trading relations post Brexit and the global shock of COVID-19 have led to any discernible shifts in the descriptors underpinning the typology, since the original study of 46 firms within the MDA preceded these disrupters. It is relevant to gauge the impact of these significant disrupters which were still unfolding when the two in-depth studies were carried out. Kellogg's represented an example of the industrial complex so part of an MNE structure on the one hand, and Unimaq represented the indigenous SME or 'networked' firm on the other hand. The two firms were selected, taking account of the broader sample of 46 firms in the larger study (Hildreth, 2021) as well as practical considerations such as their willingness to participate in more in-depth work and access to senior staff.

In preparation for interview, the two case study companies were provided with a synopsis of the theoretical framework and the objective to better understand the contrasting characteristics and needs of different types of firms within their local economy. Permissions were obtained to disclose the identity of each company in an academic paper. The interview methodology was via semi-structured questionnaires and free-flow discussion, involving the senior leadership at each organisation's location. Interviews were recorded and transcripts were reviewed for accuracy by interviewees prior to further analysis.

4. Results from the study of firms in the Mersey Dee

A key finding from the initial study of 46 firms was that the Mersey Dee may be characterised as a segmented firm economy. The local differentiation was not centred around sectors or clusters, even though sectoral relationships were identified within and particularly beyond the area into North Wales and North West England. Mersey Dee firms were found to be differentiated first, by the nature of their ownership and following this, by other relational characteristics. In this context, firms with industrial complex and social network characteristics dominated, with very few illustrations of pure agglomeration characteristics, limited to urban centres such as Birkenhead and Chester.

The industrial complex firms expose the Mersey Dee to the global economy, since it was found that how these firms evaluate their location factor and distance transaction costs was central to their decisions to locate and retain investment in place. This is because plants enter in competition for investment within vertical company complex structures (Phelps and Fuller, 2000; Iammarino and McCann, 2013). They are exposed to their firms' global production networks (GPNs), where local economic potential is shaped not just by local conditions e.g., quality of labour markets, but also as a result of wider GPN firm, institutional and market relations. The strategic coupling of GPNs and regions involves an interface of institutional activities across different geographical and organisational scales (local, regional, national, and supra-national). Local and regional development is therefore dependent

on the capacity of coupling to enable processes of value creation, enhancement, and capture, which cements the position of a local plant within the industrial complex GPN (Coe et al, 2004; Coe and Yeung, 2019).

Findings from within the Mersey Dee illustrated how such differences may be reflected in the history of local investment by MNE firms. Thus, firms with longer histories of local investment and production reinvestment were found to be relatively more central to firms' production networks. Those inwardly investing more recently, particularly post-1980, were more likely to be peripheral in their firm's production networks. The extent to which industrial complex firms were delegated responsibility beyond production (e.g., for product innovation), impacted on how relationally they were engaged in the local economy. This was illustrated in the depth of their firm-to-firm supplier relationships, the level of skills recruitment and their institutional relationships. Thus, it was found that MNE firms that had been longer established in the area, were provided greater devolved responsibilities, were more likely to form local to regional networks of suppliers (e.g., in aerospace, nuclear and energy sectors), recruit at graduate as well as school-leaver level and engage in deeper institutional relationships. By comparison, more recent MNE investments to the area tended to exercise more restricted local responsibilities, were more likely to have none or few local or regional suppliers, recruit only at school-leaver level and have limited local institutional relationships.

Also, as a consequence, differences between more embedded and less embedded firms in their institutional relations reflected contrasting approaches to maintaining local factory competitiveness. The more recently arrived firms tended to emphasise their local identity, for example in their local workforce, site history or community engagement. Whilst this has limited consequences for the local embeddedness of the firm, it formed a part of local plant strategy to enhance competitiveness within the industrial complex, with labour productivity being the crucial element. By contrast, the longer-standing companies sought to retain their competitive differentiation within the company complex, by establishing strategies to build on their delegated responsibilities for product innovation. As a result, they tended to engage in trust-like behaviours more commonly. This was evident through trust-based relations with universities, to collaborate on product innovation. Such conduct was more common than the associated literature might suggest (Iammarino and McCann, 2013). Thus, the picture of firm to institutional relations was more diverse and complex than purely an emphasis on anchoring and competition for investment. These contrasts in the Mersey Dee also illustrate that historical path dependency in the evolution of the local economy plays an important role in shaping firms' relations with place (Bailey et al., 2016; Coe et al., 2004; Coe et al., 2004; Coe and Yeung, 2019).

Therefore, the study confirmed other academic findings that the spatial patterns of employment and the integration of firms' relationships in the local and regional economy, reflect how production is organised spatially within the industrial complex. Markusen (1996) distinguishes between the satellite,

with its shallow local firm relationships, and the hub-and-spoke, with its more integrated engagement within the local and regional economy. Massey (1995) identifies differences in the spatial division of labour between company plants depending on how control over processes of production is devolved in different locations by the company complex. In addition, Yeung (2020) has recognised that company plants will vary in how central or peripheral they will be within MNE global production networks (GPNs), depending upon international decisions to retain or enhance site investment and the individual site's value within the complex. This study has contributed to these academic observations by illustrating how, within the Mersey Dee spatial context, such differences were reflected in the history of investment by MNE firms in the area (Bailey, et al., 2016; Coe et al., 2004; Coe and Yeung, 2019; Hildreth, 2021).

The Mersey Dee was found to have a more locally centred (or indigenous) firm economy. All the indigenous companies shared in stronger 'place' ties than evolved and incoming MNE firms. Territorially, all those firms are locally rooted. They were founded within the Mersey Dee – as a new start-up, related diversification, or take-over – by owners with place connections. Often, these ties were very local, for example with personal commitments by their owners to Ruthin, or Wrexham or Wirral. Part of this might be family connections, reinforced in some cases by historical association by the firm to a particular location. For some companies, it was due to immovable equipment. For others, it was because of their dependence on the availability of specialist skills in a local labour market. Examples included the legacy of optical expertise from Pilkington's at St Asaph and heat tracing skills from BICC at Helsby. For others, their company branding was associated with their location. As a result, these firms were largely immobile with their close ties to 'place'.

Second, indigenous firms also have relational ties with other firms. Some firms illustrated competence-based characteristics and others trust-based features. Trust-based firms demonstrate close customer relations, through which they collaborate to innovate. They also seek loyal, and where possible, local suppliers. Both firms identified in the study pursued specialist knowledge through their industry and recognise that technological change is an incremental rather than a step-change process. By comparison, the stand-out competence-based firm worked with heat-tracing technologies. Its innovation involved close horizontal relationships with other firms and universities on a diverse range of product applications. Beyond these three, indigenous firms normally illustrated relations that were suggestive of the social network type, although less demonstrably trust-based than the above examples. In particular, it was common for indigenous firms to approach innovation as a collaborative activity to undertake in response to their customers' needs and challenges. It was also shown in their preferences to source locally, particularly through long-standing local relationships. Urban Wirral firms and those associated with Chester provided the only exceptions to these patterns of conduct, from having usually just atomistic relations with their suppliers and customers, a feature of the pure agglomeration model

(Gordon and McCann, 2000). However, even so, they retained a common loyalty to being in ‘place’, with their strong personal identification with the Wirral or Chester.

Findings also have implications for institutional relations of indigenous firms. There was a focus on participation in business networks in Wrexham, Deeside and Chester that provided a function in generating and sharing stories about how the local economy was situated in the wider economy in England and Wales. There was identification of being part of a local community that might be underpinned by support for local institutions, such as schools. Indigenous firms were engaged in collaborative relationships with universities, for example through participation in knowledge exchange partnerships, or sponsoring a University Chair or post-graduate research and Board membership. There was also a recurring theme that these firms preferred knowledgeable personal engagement with local and central government. They were consistently critical of contracted out or digitally delivered business services, or what they perceived as poorly informed top-down public sector interventions. These firms were prepared, if encouraged to do so in their own way, to contribute to a bottom-up process of enabling innovation and supportive interaction in the local economy (Amin and Thrift, 1994, 1995).

This study suggests that for the Mersey Dee, the pure agglomeration model currently has weak application, the industrial complex model has been central to the area’s industrial evolution and the social network model has growing relevance going forward. The resulting governance challenge for this mixed urban and rural area is threefold. First, to strengthen the contribution of its towns and cities to the local economy. Second, to respond to a transition from the area’s historical dependence on MNE inward investment. Third, to enable and integrate a stronger indigenous local economy, when the quality of firm to institutional relations is of growing importance for developing the local economy (Ridgeway, 2020). In addition, these challenges are situated within a multi-level spatial and governance context, in which different processes of agglomeration coincide together in the context of place (Hinfelaar and Hildreth, 2019; Hildreth, 2021; Hildreth and Bailey, 2023).

5. Results from the two post-Covid and post-Brexit case studies of firms and place

This section presents results from the two in-depth case studies as introduced in Section 3, each offering clear examples of one of the two predominant firm types which had been identified in the Mersey Dee area. Kellogg’s represented an example of the industrial complex so part of an MNE structure on the one hand, and Unimaq represented the indigenous SME or ‘networked’ firm on the other hand.

These case studies explore: first, to what extent the case study companies continued to fit the theoretical models in the typology in order to test their robustness and further build understanding; second, whether the recent disruptions of altered trading relations post Brexit and the global shock of COVID-19 have led to any discernible shifts in the descriptors underpinning the typology.

Industrial Complex Firm - Findings

Kellogg's is a US company which established its first UK manufacturing facility at Manchester in 1938. The Wrexham plant was added in 1978, to increase capacity in the growing British market for cereals. This enabled an expansion of Kellogg's product range over a number of years. 50% of production output is for the UK market; the remainder mostly goes to European countries.

The new factory in Wrexham was only 50 miles from the Manchester factory, creating practical advantages with design and planning. Even though the North Wales plant was set up before Wales became a devolved nation within the UK in 1999, there were distinct advantages to choosing Wrexham; the Regional Development Agency (RDA) offered funding to bring manufacturing to North Wales which might replace employment in coal mining and steel production. This meant that there were attractive subsidies on offer for the construction phase, as well as an available workforce with technical skills.

Even though the investment decision in favour of the Wrexham location was originally driven by RDA support with set-up cost in the late 1970s/early 1980s, the reasons for staying were very different. Arguments cited during interviewing were the 50% customer base in the UK for Kellogg's products manufactured at the Wrexham plant, and, crucially, the quality and loyalty of staff locally. Exit costs would also be very high. However, this business case must constantly be proven within the MNE complex. Quarterly reviews were carried out by Kellogg's Global involving site visits, looking at various performance indicators e.g., production efficiency, demand, supply and sourcing.

"I would say on a monthly basis we look at whether a location is still the best place to produce particular products from, strategically. But I can still say we are definitely in the right place, particularly when you look at the demand profile. With 50% of the consumer base being in the UK, it makes sense to be located here."

"We have a brilliant asset here at Wrexham – the end-to-end production flow is excellent, one of the best in the world. It would be very difficult to replicate that somewhere else – a huge capital outlay."

"The role of this plant is to convert raw materials into finished products, so the food and the packaging, as efficiently, quickly and cost effectively as possible. Within the Kellogg's network that is what we need to deliver."

Source: M. Hinfelaar, interview notes, Kellogg's, April 2022

The Kellogg's plant at Wrexham found itself at the 'satellite model' end of the spectrum so trading occurred through the MNE, although it also bore some hallmarks of being embedded within the local economy. Raw materials for core production of cereals were sourced globally. R&D and product innovation also happened within the global organisation, usually in the US; market research would subsequently take place at the European level. Product ranges and standards were set centrally, informed by national guidelines such as reduced salt and fat content. Local technical teams would only be involved at the feasibility and production trial stages for relaunched cereals products, not the development stages. However, all packaging materials came from UK suppliers, and some were procured locally. Local contractors were engaged for cleaning and specialist maintenance functions.

Collaboration with educational institutions was focused on skills training in mechanical and electrical engineering, through Welsh government sponsored apprenticeship schemes. There were career progression opportunities for staff who originally joined as apprentices. A strong sense of pride about how the Wrexham plant had operated during challenging times was evident; it had won internal awards within the MNE for how it demonstrated corporate values. Significant corporate social responsibility work was being done, e.g., food donations to local charities during COVID and career orientation events for youngsters. An ethos of collaborating with local authorities and public services throughout the MNE was cited. One senior manager interviewed was involved with Wrexham Football Club in voluntary roles and sat on the Wrexham Civic Leaders Group – a platform comprising various CEOs and managers from the private, public, and voluntary sectors which informally advised the local authority on town regeneration schemes. This could be described as an activity seeking to achieve a collective approach to 'place representation' and 'leadership', which does not fit in the typology of the industrial complex firm operating to a satellite model. However, membership of the Wrexham Civic Leaders Group was not necessarily viewed as a strategic move at the corporate level so was dependent on the individual. There had been no engagement with the local authority about the lack of public transport to the Wrexham industrial estate, even though that was perceived as a barrier to recruitment of contract workers.

"As a global blue-chip company, we try to plug in to local needs, hospitals, schools, clubs, advocacy groups – closely aligned with local government, MPs and also the national perspective."

"Degree apprenticeships are a real talent pipeline, and the colleges/universities help the company recruit into that local pipeline."

"Where government could help is with the lack of public transport links in NE Wales. This might need some funding to get it off the ground."

Source: M. Hinfelaar, interview notes, Kellogg's, April 2022

Brexit has led to supply chain challenges for many MNEs with a presence in the UK. Kellogg's had faced significant logistical obstacles driven by more complex regulations for food exports and imports, country of origin rules and taxation. However, the company responded strongly through the creation of a UK-based task force to ensure preparedness. It was reported that a consultancy firm had deemed Kellogg's to be among the best prepared large UK-based companies.

Brexit had not altered Kellogg's place in the typology but actually confirmed and deepened it; the need to continue to prove and articulate the rational business case for the UK manufacturing base had become even stronger. There was also a sense of determination and resilience in the face of evolving regulations and barriers to trade, at escalating cost. Service standards and deadlines had become more challenging but were not missed.

The COVID-19 pandemic had been equally challenging. During the first lockdown in 2020, when little was known about the virus and vaccines had not yet been developed, the plant had to focus on keeping production going as an essential food manufacturer and on keeping employees safe. There was instantaneous engagement with local charities to organise food donations, and with Welsh Government and public health authorities in the area. Engagement with the FE college and university for skills training and development continued as before; this accelerated as the company was striving to recruit more female apprentices to help fill vacancies and was looking to the educational institutions for joint promotion.

The Wrexham plant won the Kellogg's global corporate Values Award in 2021 for how it had responded to the pandemic. Staff pride and motivation were cited in this context. It appeared that the sense of Kellogg's Wrexham plant as a location with a strong culture and identity and engagement with the community during COVID served to move the company further along the spectrum of embeddedness with its place – and being recognised as such within its MNE complex structure.

“With all these local and global disruptions, shipping across countries is becoming more and more difficult. It does still make sense with the amount of sourcing in the UK and sales in the UK to retain our manufacturing capability here.”

“The pandemic hit us as a shock and had a big impact on the company. Straight away we had to focus on keeping people safe within the plant, even though we didn't know much yet about what Covid was, what the risks were and how to mitigate them. We had to continue to operate 24/7 to supply food to our customers and to donate into charities.”

Source: M. Hinfelaar, interview notes, Kellogg's, April 2022

Socially Networked Firm - Findings

Unimaq is a company producing specialist machines for printing labels on drinks cans. It was set up in the early 1990s and is still under its original ownership. It has been operating out of Wrexham since 2000, at its present location on a large industrial estate. Unimaq's original business was refurbishing machines used for printing in the can industry, and subsequently the company developed capacity to produce its own machines, as one of only three firms in the world. It is export-focused, with between 75-95% of outputs going abroad. There may be different growth patterns across geographical areas around the world, depending on capacity needs. The move away from plastics has helped to grow demand for the can-making industry.

The decision to choose the Wrexham location had been due to availability of a sub-supply chain nearby. In addition, most of the materials were sourced in the UK except for products with patents in their countries of origin (i.e., Germany and the US). However, the genesis of the company and its location decision was on different grounds than the decision to stay. The key rationale became the available expertise and the likelihood that people would not relocate.

Unimaq had evolved from being a service business to a producer of machines in their own right. They were therefore conscious of the need to continue to innovate and were experimenting with new technologies e.g. laser-cutting and microwave curing; this would lead to transformative change in production methods to help the company to retain its global market position. They had worked with three different universities in recent years to develop solutions and innovations in an iterative manner. This included small improvements to existing products and processes as well as more fundamental step change. For instance, they were implementing immersive VR technology for skills training to speed up efficiency in using their can-printing machines, in a partnership with the local university. This new method was expected to cement business relationships and create significant competitive advantage.

“In the last 22 years there have been two particular times when I had to take the decision whether to stay here or to relocate. If we had had a production process that was highly automated, it would have been easier to set up shop somewhere else. But we have a knowledge-based workforce here and if we went somewhere else, we would almost have to start from scratch. The people wouldn't all relocate. The first time there was an option to move back to Holland (my native country) in the early days of the company; the second time there was an option to relocate within the UK, around 2015 when there was a downturn. But it is more about the people than the machines (the skills and expertise). There is a lot of competition to attract the right people.”

“We are a traditional engineering company at heart, and you have enormous capacity, capability and knowledge here still for this type of engineering.”

Source: M. Hinfelaar interview notes, Unimaq, February 2022

The company had multiple links with the local university, progressing from joint innovation vouchers with modest funding to a full knowledge transfer partnership at a value of over £200K. The business owner sat on the Industry Liaison Board with the university. Welsh Government funding schemes for innovation partnerships were seen as an enabler, despite extensive paperwork requirements.

During interviewing, Unimaq expressed positive views about regional business networks, but also offered critical reflection on attitudes in the region amongst its business community and the general population. The degree of ambition and innovative spirit locally was perceived as being less compared with a nearby metropolitan area. There was therefore a need for the ‘place’ to learn to compete better. The business owner regularly participated in business networks alongside the university (Deeside Business Forum, Chamber of Commerce, Mersey Dee Alliance business breakfasts).

However, the company did not demonstrate structured engagement to achieve a collective approach to ‘place representation’ or ‘place leadership’ as predicted in the theory –the networking was informal. That was not to say such engagement was ineffective, but there was no evidence of “joint lobbying” behaviour.

“VR is obviously a very new technology, and it helps to do skills training, but the real goal is to increase productivity. This is the context of changing the setup of a machine 4, 5 or 6 times a day for a different label [to print on the cans]. That is something similar to what you see in Formula 1 when they do the tyre change.”

“It is always a two-way process between the company and the university, and it is a very exciting process to discover new opportunities.”

“We need to consider the history (I mean the last 30 years). If you see 20 years ago – North Wales had a dirty mining industry, in decline, and Liverpool already was a metropolitan place, very international, shipping to the US – bringing a different dynamic.”

Source: M. Hinfelaar, interview notes, Unimaq, February 2022

Unimaq’s markets were largely outside the EU so the company was already prepared as regards documentation required for export from the UK as a third country to the bloc. It simply meant that processes and procedures for trading with clients inside the EU were being treated on the same basis as those outside. With the product being highly technical and specialist, and only a few machines being delivered to different countries each year, there was not much disruption from Unimaq’s perspective

and they had been able to pass on cost increases to clients. There was therefore no discernible impact from Brexit on Unimaq's place in the typology.

The COVID-19 pandemic was a helpful development at one level, since it had increased demand for the product due to pubs and bars around the world closing temporarily and the consumer buying more canned drinks from supermarkets. As a manufacturer, Unimaq was able to continue operating on site except for a brief period during the first lockdown. However, the disruptive impact on manufacturing from the pandemic and associated lockdowns had been significant; it brought slow-downs in the supply chain and in the completion of financial transactions. These factors brought uncertainty to the company for a time about whether it would be able to survive and overcome cash-flow challenges.

Additionally, the company noticed a marked reduction in informal business networking opportunities since COVID-19 which had not yet recovered. An eagerness to re-engage with such networks was expressed during interviewing. Notwithstanding this, the company was more determined than ever to innovate and engage in university partnerships, utilising government funding schemes. Concerns about loss of talent from the region were voiced strongly and the need for the area to be more ambitious was reinforced, particularly in the context of global disruption.

"I sent our dispatch coordinator on a Brexit course for SMEs, and he got really bored – we already had everything in place for exports to treat France similar to China. It was not difficult for us at all."

"We almost feel less part of the MDA and other networks, because meetings are not happening anymore and you don't meet people. Attendance at online seminars offered by business fora tends to be poor."

"From an industry point of view we need to compete on the world scale and I think there's a gap there, especially in North Wales. It is to do with ambition and with the history – how people were brought up before."

Source: M. Hinfelaar, interview notes, Unimaq, February 2022

6. Discussion and conclusions

This paper has developed and tested a typology of firms operating in a peripheral economy that illustrates how a distinctive character of place lies in its particular mix of types of firms and resulting processes of agglomeration. This section first summarises the key features of the two predominant firm types in the Mersey Dee area identified in the study involving 46 firms. Next, they are cross-referenced

with the two in-depth case studies undertaken subsequently, testing the robustness of the typology, firstly, through comparing the predicted characteristics with the findings and secondly, through placing them in the context of significant external disrupters (Brexit and Covid-19) which happened after the original framework had been developed. These results are summarised in Table 2. Implications for how peripheral economies are understood and how they may be better supported through government policy are then discussed.

Predicted characteristics of industrial complex firms are that they are MNEs taking investment location decisions based on transaction costs. Market entry takes place via infrastructure investment, and economies of scale are generated internally. There is a vertical structure within the industrial complex and its suppliers and customers, creating stable relations. Engagement with universities for R&D is only likely if this is linked to the GPN; relationships involving skills development or knowledge transfer partnerships may exist if the branch plant operates at the local level only. However, the distinction between satellite or hub-and-spoke models, reflecting the degree of embeddedness of industrial complex firms within their local economies, may be dynamic as their longevity in a place evolves and other circumstances change.

Predicted characteristics of networked firms are that they are SMEs whose needs and loyalties keep them anchored in the local economy. They have trust-based relationships with other firms and institutions in the area, facilitating joint lobbying or joint ventures. They produce customised or competence-led products which may be subject to technological change. In order to be resilient and to be able to respond to change, the networked firm accesses external knowledge through various collaborative networks and long-term relationships, including with universities.

Thus, the networked SME firm exhibits richer relationships than the individual plant within a complex MNE; engaging in collective approaches locally, building trust and creating a shared context for 'place representation'.

Table 2 Case studies mapped against the firms typology

Kellogg's – "Industrial Complex" model	Unimaq – "Social Network" model
<i>1.1 Predicted basic characteristics</i>	<i>1.1 Predicted basic characteristics</i>
Part of an MNE with stable vertical structures.	Embeddedness in location with trust-based relationships.
<i>Findings</i>	<i>Findings</i>
Location advantages on setup in North Wales, under constant review by HQ against performance indicators. Evolving business case for staying has remained.	Under original ownership, reliance on local workforce and high degree of specialisation. Global customer base. Eagerness to engage in local networks.
<i>1.2 Predicted relations to place</i>	<i>1.2 Predicted relations to place</i>
Satellite model trading through the MNE complex. Limited branch administration or control. No local role in innovation.	Customised or competence-led products, accessing local and regional networks.
<i>Findings</i>	<i>Findings</i>
Raw materials for core production sourced globally by parent company. Product standards and innovation developed centrally and then applied locally. Some CSR and community engagement by local team.	Significant product development and innovation to retail global market position. Knowledge partnerships with local university. Critical reflections on regional business networks and culture.
<i>1.3 Predicted relations to institutions</i>	<i>1.3 Predicted relations to institutions</i>
Strategic coupling at global MNE level only; engaging with local skills providers.	Collaborative projects with universities and other firms in the context of a changing market, creating a shared context for 'place representation'.
<i>Findings</i>	<i>Findings</i>
Collaboration with educational institutions is focused on skills training and apprenticeships. Some engagement with local authorities. Strong sense of pride about quality and ethos at Wrexham-based plant within the wider MNE.	Innovation projects with academic institutions have underpinned product and process transformations. Championing impacts of knowledge collaborations through business and government networks.
<i>1.4 Impact from disruptors – Brexit</i>	<i>1.4 Impact from disruptors - Brexit</i>
Major logistical obstacles and more complex regulations, driving up cost. Even stronger need to prove business case for North Wales base. Typology characteristics deepened.	Customer base outside EU so minimal impact on operations. Some cost increases driven by general business climate. Typology characteristics unchanged.
<i>1.5 Impact from disruptors – Covid</i>	<i>1.5. Impact from disruptors – Covid</i>
Status as "essential" food producer under temporary Covid regulations. Strong workforce morale reported. Deeper engagement with local community, moving towards more "embedded" characteristics on industrial complex spectrum.	Production continued and global market opportunities increased, but general business operations climate extremely challenging. Stronger desire for innovation partnerships with knowledge institutions and networks. Typology characteristics deepened.

The case study findings confirmed the typology for both the industrial complex MNE firm and the networked SME firm, being the dominant firm types in the Mersey Dee. The case studies provided rich examples which helped to enhance our understanding of the typology, with each firm matching their descriptors in terms of (1) basic characteristics, (2) relations to place and (3) relations to institutions. Kellogg's was an example of a plant branch within an industrial complex firm, towards the less regionally embedded end of the spectrum. Unimaq was an example of a socially networked firm with competence-based relational ties. Both collaborated with educational institutions, local authorities and other firms in the area, but the nature of such collaborations differed in line with the predicted characteristics. The supply chain disruptions of COVID-19 and Brexit put the typology into even sharper relief, posing business operations challenges but creating a stronger focus on the MDA as their distinctive place where they had a local identity. The typology therefore appeared to be robust and of continuing relevance, even as trading circumstances changed fundamentally, and some business sectors were faced with entirely new paradigms.

Both firms had a global footprint even though their asset base was strongly rooted in the locality of the MDA, and there was evidence of a strong conviction that this location was appropriate for their requirements and helped them to perform. This commitment was despite some shared concerns about the region, for instance current labour scarcity (not unique to the Mersey Dee area) and the responsiveness of local or national government. However, it was mainly the networked firm that was critical of the level of ambition shown in the region; the industrial complex firm did not engage as deeply with local stakeholders and did not express a view about competitiveness of the area more generally.

These case studies, alongside the analysis in Sections 4 and 5, illustrate how the Mersey Dee, as part of a relatively peripheral region, is segmented in its firm economy. Contrasts have been illustrated between industrial complex and networked firms. In earlier decades, the area was an economy centred on an industrial complex model of local economic development, dependent on attracting and retaining inward investment. Going forward, it is on the one hand vulnerable to the consequences of shifts in local to global trends in how MNEs, within their own GPNs, respond to global shifts in location factor and distance transaction costs. On the other hand, the area can realise the potential of networked firms that may be of increasing relevance in the future, particularly in an era of geopolitical shifts. Institutionally, the challenge is to concurrently focus on the contribution that urban centres may make to the local economy, respond to a transition of historical dependence on inward investment, whilst enabling and integrating a stronger network firm economy across the wider region. This is not just a local challenge for a mixed urban and rural area; such challenges occur within the context of a wider multi-level context that extends locally to nationally, shaped by how the interaction of different processes of agglomeration

come together in the context of place. This is how, within a place-based framework, it is not appropriate to assume a single characteristic of clustering and why bottom-up investigation is so vital.

Our study has therefore contributed by demonstrating that it is important to gain a better understanding of the nature and quality of business engagement with key local and regional actors in peripheral economies, which may be hyperlocal even when the customer and supplier base is global. The question “what is keeping businesses here” goes beyond transactional considerations, as firms relate to place in different ways through different processes of agglomeration. All regions wish to retain and attract investment, for the benefit of their populations. It is essential to grasp the differences between types of firms, how they operate, take business decisions and what policy enablers they are looking for. This is epitomised by the MNE and SME case studies explored here. The distinctiveness and heterogeneity of place economies and the types of enterprises established within them must be understood well by policymakers in an era when the importance of supporting more sustainable and balanced regional development is a key plank of government policy. And yet, up to now, this has not been a focus in sub-national policy analysis. There would be an opportunity for local and regional authorities to use the analytical tools presented here when developing and resourcing local economic development policies.

Further research is recommended, applying and testing the typology of firms presented in this paper. Methodologically, this research could be replicated through the development of additional case studies of companies in other locations which share characteristics with the Mersey Dee area, in that they have a segmented firm infrastructure across the SME-MNE spectrum covering a wide range of sectors, and at the same time find themselves at the periphery of their national economies. It would be particularly helpful to build a picture across international comparators, adding to the body of knowledge and informing regional economic policy development. This would be relevant at two levels: government economic policy development on the one hand, and place-based economic strategies within specific localities on the other hand.

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