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Vanishing value chains, industrial districts and HRM in the Brazilian automotive industry

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ABSTRACT

Industrial districts in the Brazilian automotive industry have facilitated just-in-time production, functional flexibility and compatibility of HR practices since the 1980s. However, this model has been threatened by global over-capacity and the rise of low-cost suppliers in South Korea and China. This paper develops literature on proximity dynamics though exploring the influence of global supply chains on HRM in industrial districts. The more specific research questions are: How viable are industrial districts in the context of global crises? And how is this viability bound up with the awareness of HR practices down the supply chain? The findings indicate that the industrial districts model is under threat. In the context of global supply chains, automotive majors have shifted costs onto their suppliers, disrupting established relationships, and moreover, they often lack knowledge of the employment practices of distant suppliers. Yet, in times of political and economic uncertainty, worker rights might be best served by geographical and cognitive proximity.

KEYWORDS

Industrial districts; proximity dynamics; supply chains; HRM; Brazil

Whilst the automotive industry has always been a global one, from the 1980s to the early 2000s the automotive majors moved towards leaner workforces, with a greater reliance on a closely integrated network of suppliers in close spatial proximity to major car plants. This enabled them to closely monitor quality, whilst simplifying employment relations, facilitating numerical flexibility and reducing direct labour costs, as well as Just-in-Time manufacturing. Local industrial clusters made for complementarities, a high degree of functional flexibility, and compatibility in human resource (HR) policies and practices.

The geographical concentration of competitors or firms operating in the same sector can be referred to as an industrial cluster, while industrial districts share similar characteristics but have a 'higher concentration of similar firms'

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(Belussi & Sammarra, 2010, p. i). Moreover, in the industrial districts literature, there tends to be a greater focus on the social relations underpinning and reconstituting firm networks (Vom Hofe & Chen, 2006). Given the long-established social networks linking generations of workers with spatially concentrated spheres of production – and the relationships between managers in firms encompassed by this study, the term 'industrial district' is more appropriate in this instance. However, many of the findings are relevant to the wider literature on industrial clusters, especially since the primary focus of this particular study is less on the effects of such personal networks and more on the shifting interrelationship between key firms as actors in their own right, and the associated consequences for human resource management. As Hervas-Oliver, Gonzalez, Caja, and Sempere-Ripoll (2015) note, the literature on industrial districts is quite heterogeneous and rooted in different disciplinary traditions, and this accounts for the very uneven attention accorded to HR issues.

In practice, few industrial districts adhere to an ideal type. Rather, they represent systems in flux (Paniccia, 1998). Moreover, relationships between firms, and with workers, may not always be characterized by high trust, but also by adversarialism and competition. Indeed, it could be argued that some players in industrial districts are in a much weaker position – and hence, more prone to internal disruption – than others (Rabellotti & Schmitz, 1999). The level of competence can also vary. As Pinch, Henry, Jenkins, and Tallman (2003) found, within industrial districts, knowledge may be concentrated at particular levels.

Local industrial clusters and districts attract multinationals in the first place owing to the advantages that they confer, including the absorption of new knowledge and capabilities, and the securing of cost production of standardized components, in a process characterized as exploitative offshoring. However, offshoring has become more explorative over time, as dominant firms seek to shift more knowledge intensive activities to lower cost countries (Belussi & Sedita, 2010). In coping with, and drawing from the knowledge flows that come from insertion in global value chains, local industrial districts may thus develop new activities and enhance their capabilities to secure their status and relevance (Belussi & De Propris, 2013).

The automotive industrial clusters model – even in the case of those that constitute full fledged industrial districts – has come under intense threat in recent years due to two developments. The first is a global over-capacity in the automotive industry. The second is through the entrance and rise of ultra-low cost suppliers of basic constituent components in South Korea, and, above all, China, albeit that, in the case of the latter, much value is captured by gateway intermediaries, rather than producers of low-cost basic components themselves (Dedrick, Kraemer, & Linden, 2009). This has disrupted dense clusters of established relations within local supplier networks, and made the monitoring of supplier quality and labour standards more difficult. As a result, the key aim of this paper is to develop the literature on proximity dynamics through assessing the influence of

global supply chains on HRM in industrial districts. The more specific research questions are: How viable are industrial districts in the context of global supply chains? And how is this viability bound up with the awareness of HR practices down the supply chain? The Brazilian automotive industry is used for illustrative purposes. In Brazil, the industry is characterized by major car firms and key suppliers co-existing in close proximity; Tier 1 suppliers may be major conglomerates in their own right, with activities spanning many sectors. Indeed, Belussi (2015) argues that whilst industrial districts are often depicted as self-contained entities, they are closely involved in the globalization of production networks, with their fortunes closely bound up with the strategies of the multinational as a whole. The developmental outcomes of industrial districts also depend on the relative position of local firms within global value chains (Belussi & Sammarra, 2010), since global value chains connect industrial districts with external agents (Oliver, Garrigós, & Porta, 2008), and firms need to use the international fragmentation of production to secure both sustainability and upgrading (Belussi & Sammarra, 2010). As Oliver et al. (2008) argue, the viability of industrial districts also relies on the nature and extent of external ties, an issue that is often neglected within the industrial districts literature.

Industrial districts and proximity

The classic Marshallian model defines industrial districts as areas that are characterized by a sectoral and spatial focus, close relations between firms, and a link between production and social life, with a strong notion of communitarian identity. However, intense global competition and less closely knit local coherence have arguably undermined this model. In the Italian context, for example, successful players looked externally, and as suppliers were sought from further afield, local relationships became significantly less close. In other words, inter district supplier relationships undermined intra district ones (De Marchi & Grandinetti, 2014). Similarly, in looking at Spain, Pla-Barber and Puig (2009) found that industrial districts faced threats from two directions. Closer integration in the global economy diluted the advantages of spatial proximity, while competition was intensified as a result of global sourcing. Against these trends, arguably the only durable counterweights are structural barriers to the mobility of labour, and, as recent institutional theory alerts us, the embedded and group specific nature of developed cognitive capabilities (Aoki, 2010). Thus, the industrial districts most capable of dealing with external shocks from abroad are the ones that are most capable of innovating, building on internally developed relational capital, and absorbing new capabilities from abroad (Molina-Morales & Martinez-Fernandez, 2006).

The type of supply chain, and proximity to other firms, might also influence the nature of interaction within supply chains. Through imitation and interaction, firms located in industrial districts develop adaptive capabilities. However, whilst all supply chains are distinct in how they combine learning and adaption, the

complexity of the products produced and environmental turbulence moderate the effects of this distinctiveness (Giannoccaro, 2015). In turn, adaption represents the product of coordination strategies that promote both flexibility and coherence; adaptive supply chains are characterized by closed loop systems that are both dynamic and allow for feedback (Surana, Kumara, Greaves, & Raghavan, 2005). The French Proximity approach, moreover, suggests that the closer interactions and better communication that comes with spatial proximity equips firms better to cope with structural uncertainty (Bouba-Olga, Carrincazeaux, Coris, & Ferru, 2015). Proximity allows for the better use and dissemination of local implicit knowledge and more closely integrated systems; hence, the contraction and integration of supply chains may ultimately allow for advantages and efficiencies that outweigh the benefits of cost efficiency and specialization that may come with greater distance (Hameri & Paatela, 2005). Bouba-Olga et al. (2015) argue that the jury is still out on the matter, but suggest that it is specialization rather than cost that might allow more distant players to outcompete firms in closer proximity. At the same time, local creativity may help to reinforce district competitiveness against threats from abroad (Bellandi, 1996). Hence, the French Proximity approach links geographical proximity with proximity in terms of institution, regulation, embedded knowledge and capabilities. The latter are not easily replicable, but may provide the ultimate foundation of competitiveness in the face of a rapidly changing external environment.

The persistence of industrial districts is also bound up with the practice of HRM. Broadly compatible HR policies within and between organizations in a district may support the development and husband local capabilities within the firm; at the same time, such developed capabilities may be insufficient to withstand competition from goods produced by ultra-low cost labour. Relative resilience, in turn, will not only reflect the relative nature of this cost advantage, but also internal proximity dynamics. Close spatial proximity in industrial districts facilitates not only the development and circulation of a pool of skilled labour, but also a greater compatibility in HR policies and practice (c.f. Humphrey & Schmitz, 1996). This compatibility facilitates both ease in contracting and the optimal use of local skills (Crouch & Le Galès, 2004). Hence, key firms are likely to be closely and intimately aware of how their spatially near partner firms manage their people; inevitably, in the case of more remote suppliers, such knowledge is likely to be more limited.

Changes in the global automotive industry

The automotive industry was synonymous with the Fordist production paradigm, characterized by repetitive but well paid work up until the 1970s. Since then, Fordism has been replaced by more flexible production methods, and a shift of production from vertically integrated large car plants to more federalized production arrangements, involving first-tier suppliers to a much greater extent (Frigant, 2009). Although this has meant that present-day automotive plants have much

leaner staffing, this has gone hand in hand with well paid and rewarding work, with relatively high degrees of responsible autonomy (Benders & Van Hootegem, 1999), often carried over to first-tier suppliers. At the same time, first-tier suppliers have developed more intricate and closely interconnected supply chain relations in their own right; this has enabled leaner staffing, greater flexibility and better sharing of risk (Frigant, 2009).

The location of suppliers geographically near to the motor manufacturing or assembly plant is, in part, a function of this shift, where the manufacturing plant holds almost no stock of parts and relies on their original equipment manufacturer (OEM) suppliers to deliver the right components direct to the production line at precisely the right time. However, there is a trade-off between the risk reduction strategy of dual (or multiple) sourcing, and the simplicity and cost reduction accruing from single sourcing (Xanthopoulos, Vlachos, & Iakovou, 2012). Moreover, an over-reliance on a single supplier can leave the firm exposed in the event of a quality failure (Wagner & Bode, 2006, p. 301); this means that the debate around single and multiple sourcing was never closed, especially in terms of basic components that do not require much proprietary knowledge. On the one hand, the automotive industry in Brazil has moved towards much closer integration with Tier 1 suppliers. On the other hand, the findings of this study reveal that this has also been associated with the unwinding of relations further down supply chains.

Industrial districts and the Brazilian automotive sector

The automotive industry in Brazil has internationalized and become more technologically advanced over time. Up until the 1950s, Brazil relied on imported cars, although some companies used a system called 'completely knocked down', constructing cars using imported parts. Government incentives during the 1950s were intended to lead to import substitution; following this, and up until the 1980s, there was a movement towards semi knocked down production, entailing the use of some Brazilian made automotive parts such as springs, wheel hubs, batteries and tyres, and providing a major impetus for the development of a local components industry, including many multinational components firms. Gradually, the automotive industry moved towards local production of all components within the supply chain. Until the 1970s, the automotive sector was oriented towards supplying national demand. However, the government's 'Biefex' plan encouraged further integration into international markets. By 1980, more than a million cars were exported per year (Scavarda & Hamacher, 2001).

By the 1990s, the Brazilian automotive industry had gradually moved towards a higher proportion of locally sourced skills, more advanced production systems, and diversification of supply chains for different products (Scavarda & Hamacher, 2001). However, in the 1990s, economic stagnation in Brazil led to a fall in local demand and foreign investment; Japanese manufacturers invested in Europe

and the United States, rather than in Brazil. A serious crisis of competitiveness forced closer cooperation between local players, leading to more closely integrated industrial districts (Meyer-Stamer, 1998). The government initially stuck by a local content requirement of 60% (Humphrey, 2003), but ameliorated the costs through incentives for new investments at the state and municipal level, and reduced taxes for some internally produced vehicles. This increased local demand (Scavarda & Hamacher, 2001). Backtracking somewhat, from 1996 to 2000 the government also allowed the import of automotive components at lower rates (Humphrey, 2003). This was associated with around US$10bn being invested in Brazil in autoparts and $15bn in car manufacturing, leading to new entrants, new plants, and diversification of products (Humphrey, 2003; Scavarda & Hamacher, 2001). During the 2000s, the government introduced various incentives for local context and investment (Pascoal, Candido, Ugo, Delamaro, & Tsukada, 2014) and regional employer federations, under the umbrella of the National Confederation of Industry, took a more proactive role in the development of state policies and support services (CNI, 2015). However, the automotive majors faced renewed difficulties of overcapacity, and in 2014, companies were operating at only 50% capacity (Barros, 2015), in part due to cheap imports from China and South Korea. The Brazilian Ministry of Labour estimated that around 38,700 jobs were lost in sectors linked to the automotive industry in the first six months of 2015 (Versiani, 2015).

In terms of the development of industrial districts, historically, whether suppliers or automotive majors, Brazilian automotive firms were highly vertically integrated and imported a high number of auto parts, owing to shortfalls in local supplier capabilities, and dominant strategies of internalizing production wherever possible (Meyer-Stamer, 1998). In line with common global practice, in the 1990s Brazilian automotive majors worked closely with a network of suppliers within industrial districts (condominiums) (Humphrey & Salerno, 1999). Subsequently, some first-tier suppliers became responsible for assembling automotive parts, and this was developed further, when modular consortia were developed by companies such as Volkswagen. Since the supplier was responsible for assembling the module on the manufacturer's assembly line, this implied closer and longer term relationships (Collins, Bechler, & Pires, 1997). However, new industrial districts were often not very well conceived or constructed and followed out-of-date urban standards (Humphrey & Schmitz, 1996; Mevin, 2014). Moreover, there was often insufficient planning for future growth, leaving little room for the construction of new factories or the extension of old ones (Mevin, 2014). Sustainable industrial districts also depended on a complex web of institutional arrangements and associated social relations, interlinking national and local government, educational and training institutions, employer federations and the labour movement, and other local actors. However, as an emerging market, institutional arrangements in Brazil remained less closely coupled than they would typically be in more

mature institutional contexts (c.f. Cooke, Wood, & Horwitz, 2015; Crouch & Le Galès, 2004).

Research methods

The findings reported here are from case study research within foreign-owned automotive subsidiaries, consisting of five OEMs, five first-tier suppliers, one second-tier supplier and representatives from the broader institutional context. The findings are part of a larger project that examined automotive and textiles companies within South Africa and Brazil. The data reported here are from 30 in-depth interviews carried out in 2014 with CEOs, accountants, HR managers, supply chain managers and production managers within companies as well as the CEO of a national employer federation, manager of a regional employer federation and a regional development bank. Details of participants are provided in Table 1. The interviews varied in length, but ranged from half an hour to over two hours. The topics covered in the interviews with automotive firms included: background information on the region, company and interviewee; information on their supply chains (customers, direct suppliers and second-tier suppliers and beyond) and the nature of their relationships with them; HR practices and accounting practices; and awareness of the HR practices within their suppliers. In addition, we used both predetermined and spontaneous prompts and probes. When negotiating access to automotive firms, we explained that we wished to interview available participants within HR, accounting and finance, supply chain management and purchasing. We used semi-structured interviews, and the broad themes indicated above were covered in each interview. Due to the concentration of firms in certain areas, we focused on three main cities in Brazil, and their environs: Recife, Sao Paulo and Curitiba. Each of the industrial districts had been in operation for over 25 years, and in each district, there were concentrated and specialized local areas with the co-location of car assemblers and suppliers. The suppliers were not, in any of these cases, working exclusively for one car manufacturer. Given the limited number of OEMs in Brazil and the need to preserve anonymity, the region for each firm is not indicated in this paper.

All interview transcripts were fully transcribed, and many were translated from Portuguese then checked by members of the research team. Analysis of qualitative data was undertaken using NVivo. A hierarchical coding frame was developed by the study's Principal Investigator, in consultation with two other members of the research team and through reference to the literature. The coding frame included a small number of overall themes (which broadly followed the themes outlined above), and various levels of sub-themes. Following input of fully transcribed data, coding took place using open coding and then the constant comparative method in order to refine and merge categories (Glaser & Strauss, 1967).

Table 1. Case study companies and research participants.

Case study code	OEM/first-tier supplier	Car/ motorbike	Participant code	Participant job role
BrAutoA	OEM	Car	Scm1	Supply chain director
			Scm2	Supply chain director
			Scm3	Supply chain director
			Mgr1	Production manager
BrAutoB	OEM	Car	Acct1	Accountant/finance (Director)
			Acct2	Accountant/finance (Director)
			Scm1	Supply chain director
BrAutoC	OEM	Car	Acct1	Senior accountant
			Acct2	Senior accountant
			Hr1	HR director
BrAutoD	Second-tier supplier	Car	Ceo1	CEO
			Acct1	Senior accountant
BrAutoE	First-tier supplier	Car	Ceo1	Director
			Hr1	HR director
			Pm1	Production manager
BrAutoF	First-tier supplier	Motorbike	Acct1	Accountant/finance director
			Hr1	HR director
BrAutoG	First-tier supplier	Car	Scm1	Quality manager-supply chains
			Acct1	Accountant/finance director
BrAutoH	First-tier supplier	Car	Hr1	HR director
			Scm1	Logistics manager
BrAutoI	First-tier supplier	Car	Ceo1	General manager
BrAutoJ	First-tier supplier	Motorbike	Hr1	HR director
			Mrkt	Marketing director
			Acct1	Accountant/finance director
			Acct2	Accountant/finance director
			Scm1	Supply chain/quality director
Employer Org1	Employer federation – national	N/a	Ceo1	Director of employer federation
Employer Org2	Employer federation – regional	N/a	Mgr1	Manager of employer federation
Development Bank1	Regional development bank	N/a	Mgr1	Planning manager

Findings

The findings cover two main areas: the nature of localized supply networks in the Brazilian automotive industry and awareness of HR practices down the supply chain.

Localized supply networks in the Brazilian motor industry

In the 1980s, the automotive industry kept high levels of stocks to sustain operations due to high logistics costs and the need to provide a cushion in the event of plant failure or other disruption. Technological advances made automotive plants more reliable (Michalos, Makris, Papakostas, Mourtzis, & Chryssolouris, 2010; Nepal et al., 2007). Moreover, spatial proximity of, and close coordination with, suppliers had helped to keep logistics costs as low as possible. Just-in-Time manufacturing led to dramatic stock-level reductions for the manufacturers, although it shifted the supply responsibility to the OEMs.

In BrAutoI, the 'just-in-time' model persisted, but with some diversification. The company had a warehouse close to one manufacturer, and delivered some products within half a day, while the time was much delayed for another (BrAutoI_gm1). BrAutoH also maintained just-in-time production (BrAutoH_scm1). However, internationalization had extenuated their supply chain:

> We have long chains. We have suppliers that are from Brazil, that are more of a single supply chain, but we have suppliers that are from Asia, that are a little bit further … The longest chain is this one from Asia, because we need to make this cross docking in Europe, and it is about 51 days … it is a long chain. (BrAutoH_scm1)

In BrAutoA, there had also been changes over recent years:

> We [previously] had a condominium with 18 suppliers…I think there is a tendency when you have the same suppliers in the same condominium, there are several common things that you can share, and reduce the cost. And I think it is easier to exchange good practice … In a way it's like a marriage, you need to have a very good relationship for that condominium … because everybody knows that if one supplier goes down, the entire condominium would go down. (BrAutoA_mgr1)

Much of the 'good practice' centred around ways of organizing work, and associated HR practices, with a degree of mutual interdependence. However, these networks, and the associated ability to adapt, were increasingly open to disruption. Most suppliers were from Brazil, but firms now obtained supplies from North America and Europe, and, increasingly, Asia (BrAutoA_scm2; BrAutoA_scm3).

In BrAutoB there was a concern to sustain localized supply chains, and there were still suppliers located near the manufacturing site. They had worked with some suppliers since the 1980s, implying a large degree of dependency:

> And this is one of our needs and things that we are looking at all the time – to bring new suppliers close to us, or even in Brazil that can grow together with us and also participate in the total market. (BrAutoB_scm1)

It seems that the industrial districts had persisted, but they were under strain, with smaller tier players being driven under, largely through cost reasons, as was the case for BrAutoD. This company had around 130 suppliers, and most were located near to them. They used local suppliers of autoparts, plastic injectors and stamping companies, but also imported from Europe (10% of imported parts) and Asia (40%). The imports from Asia included finished parts from China and electronics for engines (BrAutoD_ceo1). The CEO explained:

> … we have a strong relationship with our supplier to double up growth and especially in Brazil. Three years ago we changed a little bit to this strategy: we produce the same kind of product in Asia, in North America and South America … We saw a product in Brazil yesterday. [The supplier] quoted for parts at 75% higher than we buy from Korea. [This is] paying a lot to localize. We need transportation, tax, all of that, so he's 75% more expensive. That's critical. (BrAutoD_ceo1)

In some cases, components were imported, and companies within Brazil would put the parts together, replacing manufacture with a high degree of local content with

assembly work. This was adversely affecting some local suppliers, and impacting on HRM:

> We have had a reduction of staff this year for the [OEM1] contract because of a change of [OEM1's] manufacturing requirements. They are importing pure components for some of their models, and manufacturing them locally in Brazil instead. Therefore they have had lesser requirement for part volumes through our premises. (BrAutoE_ceo1)

In turn, this gradually reduced the need for specific skills sets and capabilities locally. There had also been some changes to the localized supply chains in terms of outsourcing of logistics (BrAutoA). However, in Brazil, core services were not usually outsourced, due to union demands and government requirements (BrAutoE_hr1). Another important feature was the role of the parent company. In BrAutoC, for example, the parent company acted as a 'centre of consolidation', purchasing products from suppliers in Thailand, China and Japan then selling them to the subsidiary (BrAutoC_acct1).

These interviews reveal that whilst local managers of Tier 1s and automotive majors had strong personal and inter-organizational ties – and associated commitment – to local suppliers, HQs tended to be a great deal more dispassionate, with decision-making being weighted to a greater extent towards costs, rather than towards the advantages of locally accumulated human capabilities. The above changes diluted localized supply chains.

Awareness of HR practices down the supply chain

As outlined above, the automotive industry is generally regarded as having good HR practices. Perhaps because of this, in most of the companies there was limited formal monitoring of the employment practices of suppliers (except for industrial action, health and safety, overtime and training) or the keeping of data on this, although interviews with managers revealed some informal knowledge of what went on within local suppliers. For example, in the OEM BrAutoA, supplier data was kept on the size of the workforce, pay, health and safety, training and working hours, but not on equal opportunities, leave, compensation for workplace accidents and redundancies (BrAutoA_scm1; BrAutoA_scm2). They did not actively monitor labour standards, forced labour, or child labour of suppliers, nor did they know if suppliers recognized trade unions (BrAutoA_scm3).

In contrast, OEM BrAutoB evaluated suppliers in order for them to be assessed and certified as a global supplier and sought to ensure that local suppliers followed legislation (BrAutoB_acct1), although they acknowledged that local suppliers were easier to monitor than more distant ones. However, there appeared to be limited intention to resolve suppliers' HR issues: 'Our involvement is more in relation to knowing what's going on, the consequence of it and how it can affect our production …' (BrAutoB_scm1).

In OEM BrAutoC, it was the purchasing and quality departments that liaised directly with suppliers, but their attention was focused on larger companies:

> Obviously there are carmakers that don't have such a great level of sophistication. They are one step behind, so to speak. But talking about the companies that are ahead of the segment, there is a great concern to monitor, to audit, certify, and make sure that the product you get is the best possible product. Problems exist? Of course they do. All industries do. But the technical base helps to avoid these things. (BrAutoC_acct1)

The company audited suppliers, but focused on quality and safety (BrAutoC_acct1). The same interviewee added that, 'the main suppliers are just as big as we are. They are global companies too, so I would say that it is hard to come across this kind of situation [for example, child labour] in this segment' (BrAutoC_acct1). In BrAutoD a second-tier supplier,

> It's like this: we stipulate in the contracts that they follow all the rules. But I do not keep an eye on it. For example, that level of information that you asked … I don't inspect that. For example, if they employ disabled workers, if they have the right quota, we do not monitor that. (BrAutoD_acct1)

The CEO of the same company (BrAutoD) stated that they had a code of conduct for child labour, but did not ask suppliers about training, and were not concerned with working hours, pay, number of temporary and permanent workers, or equal opportunities, although they did ask suppliers about safety. This was, however, different for service providers within the company since 'it's a huge risk for us, because in the court the employees put the company as the first level, in the second level us. In the end if the company doesn't pay, we need to pay' (BrAutoD_ceo1). There was variation among the first-tier suppliers. The CEO of BrAutoE explained how as a supplier they were required to be audited by their customer. Yet, when asked if they tried to ensure that their suppliers, in turn, followed international labour standards, the CEO explained that their main concern was compliance with legislation. He added,

> We make sure that we contract only recognised and respected and reliable subcontractors, so we're generally aware that they would comply with those standards. However, I'm not aware that we here in Brazil have actively audited any of our suppliers, corporate organisations. (BrAutoE_ceo1)

Similarly, BrAutoH did not appear to monitor suppliers' HR practices (BrAutoH_hr1), and in BrAutoI, there was also a lack of auditing or monitoring of suppliers, although they expected suppliers to comply with legislation (BrAutoI_gmr1). In contrast, BrAutoJ required information from prospective suppliers on their main clients and suppliers, and,

> … normally, both here and in the external market [imported products], we visit the companies to check their facilities … and if they will be able to supply us … This is the standard procedure … Obviously in China this [checking on HR practices of suppliers] is a bit more complicated, but we take care to check them carefully. We respect and prioritise those who we really notice that their way of supplying and working are close to what we have here. (BrAutoJ_scm1)

When asked if there had been any cases when they had stopped working with the supplier because of bad employment practices, he replied,

> From the ones we started with, we changed, at least, ten, either as I remember, due to quality problems or because we noticed that they did not have this care … This reflects almost directly the product quality and we notice this straight away. (BrAutoJ_scm1)

When asked which countries the suppliers with quality problems were from, he replied that they were 'all over China'. However, he also explained that some manufacturers in China worked with large European factories,

> so their quality standard is the same or better than ours – their quality and labour standards. I do not know in terms of payment if it is encouraging. But in terms of the way they treat the employees, they are very similar to ours … and there are companies in China that have product quality superior to the products we can find in Italy. (BrAutoJ_scm1)

Relationships with second-tier suppliers and beyond

Following questions about HR practices in their first-tier suppliers, companies were also asked about their relationships with second-tier suppliers. A supply chain manager in OEM BrAutoA expected first-tier suppliers to take responsibility for this:

> Normally we have our critical suppliers or key suppliers. They produce some complex parts [gave examples] and we normally do not contact with them but we have a close monitor with our first suppliers. Sometimes in between two or three months we make a short or informal survey of their suppliers, if everything is OK with the supply floor. Because our focus is to know if they could have any problems about capacity and buffers. So that is the normal process that you have … They [the first tier suppliers] need to frequently review the capacity of the second tier. Not with us directly, but they need to do that. I'm not sure of the frequency, but they need to do that. (BrAutoA_scm3)

However, it was suggested that they (BrAutoA) did not yet have much to do with their third- or fourth-tier suppliers: 'Raw material suppliers, for instance, don't share information and you have to live with it' (BrAutoA_scm_1).

OEM BrAutoB reported that they tried to know second tier suppliers, in order to be competitive (BrAutoB_scm1), while OEM BrAutoC certified both direct suppliers and tier two suppliers. Their financial director explained that a certain degree of control of second tier suppliers was important as:

> It will interfere in the quality of the product, you know? If they are … 'ah, they are perfect, but their supplier is shit' then you will not get good stuff here, there's no use, so we do audit the chain. (BrAutoC_acct1)

The second-tier supplier BrAutoD in contrast, had 'very little contact' with their own second-tier suppliers (BrAutoD, acct1), and this was also the case for interviewees from the first-tier suppliers BrAutoE and BrAutoH. Indeed, the supply chain manager from BrAutoH explained that 'it is not our responsibility' (BrAutoH_scm1). Although the HR manager admitted that their company was 'co-responsible', they admitted that no-one from their company was aware of the working conditions of second-tier suppliers (BrAutoH_hr1).

More generally, it seems that rather than being concerned about working conditions in supplier firms, the overriding imperative was, 'the capacity of production needs to be respected' (BrAutoA_scm3). In practical terms, this did entail encouraging suppliers to adopt particular approaches to the organization of work and quality; many of these would have driven upskilling (even if informal), safer working environments, and, potentially, better pay.

Discussion and conclusions

Although in some areas of the components industry there has been renewed emphasis on nurturing local networks of suppliers, in others, the existing industrial districts model has been challenged or undermined. Our findings indicate that automotive majors have been able to shift much of the cost cutting burden onto their suppliers, who have in turn, forced cost cutting further down the supply chain. This has disrupted established relationships, especially with those making relatively low tech components, which historically relied on proximity for competitive advantage. It also appears to have impacted on the monitoring of HR practices.

On the one hand, even in the absence of comprehensive checking of HR practices, there was close formal and informal contact within industrial districts. This promoted adaptability, and many suppliers proved capable of coping with rapidly changing external pressures, and also the development of suppliers down the supply chain. However, many of these advantages, which are traditionally conferred by industrial districts, are hard to quantify or accurately cost. The advantages led to local managers of automotive majors and tier one supplier MNEs being very sensitive to the needs of their local suppliers, with strong personal commitments to them. In contrast, HQs were less sympathetic, focusing on the readily quantifiable cost advantages that might be conferred from turning to lower cost suppliers further afield. Hence, the quality and depth of inter-organizational ties – and the viability of Brazilian automotive industrial districts at large – ultimately depends on both inter and intra organizational ties and power relations between dominant players in the value chain.

Successive Brazilian governments have instituted sets of policies to support the local automotive industry, historically by protectionism, and more recently by local content incentives. At the same time, policy interventions have been poorly coordinated, with insufficient attention being given to diversity within the industry, and the segmentation of supplier relations. Suppliers of basic components may only add a small proportion of value to the vehicle, but may be effective providers of jobs, husband skill sets, and contribute to the overall persistence of an industrial district ecosystem, with close and predictable relations between key players. Meanwhile, it may be attractive to pay high import duties if direct taxes on locally based firms are also relatively high. All of this mitigates against the deepening of a dominant production paradigm within industrial districts,

characterized by commonalities in HR practices, and complementarities between it, and the immediate institutional environment.

While institutional mechanisms are nested at international, national, regional and local level within emerging and transitional settings, they will tend to be more loosely coupled, and this is associated with unevenly aligned regulation (Boyer & Hollingsworth, 1997; Lane & Wood, 2009). National government ambitions to strengthen the automotive sector sit poorly with uneven local planning and support for the development of local industrial districts. Conversely, local level efforts to assist suppliers may be undermined by changes in national tax and excise regimes. This has meant that the Brazilian automotive industry is being pulled in a number of different directions. Historical protectionism led to a large number of automotive majors and their suppliers establishing plants in Brazil. Such players have a first mover advantage owing to local brand awareness, a more in-depth knowledge of customer tastes and local market trends, and thicker ties with their industrial and commercial partners. However, drives to cut costs undermine such ties, challenging the position of more vulnerable and easily substitutable suppliers of basic components. Offloading of the cost-cutting agenda down the supply chain means that local workers for majors and first-tier suppliers may be spared the risk of wage cuts, particularly where unions are proactive, but they may still face threats to employment security where cost-cutting is associated with outsourcing. This, in turn, can have implications for product quality (Cooke, 2001).

This study has implications for theory and practice. At a theoretical level, the literature on industrial districts has tended to develop broad taxonomies based on the experience of the developed world. In emerging markets, where institutional arrangements are weaker or more fluid, local institutional fixes may assume greater importance (Wood, Dibben, Stride, & Webster, 2011; Wood & Frynas, 2006; c.f. Hancké, Rhodes, & Thatcher, 2007). In other words, if national level institutions do not provide the coordination and support that local players may require, they will devise their own institutional compromises, either through bottom up institutionalization based on formal and informal understandings, and/or through reaching accommodations with national level institutional arrangements to suit local needs (c.f. Boyer, 2006). Yet, the process of institution building and maintenance may be a fragile one, and dependent on the persistence of dense ties between key actors (Thelen, 2009); any disruption to the latter may undermine the basis of the institutional coverage of existing industrial districts, and hence, ultimately leave all players worse off. If the basis of exchange relations becomes less uncertain or predictable, there will be a tendency to shift towards arms length and more abstract contracting both with workers and beyond the firm. In turn, workers and suppliers will have weaker incentives to build their knowledge and capabilities that are specifically aligned to a particular organization. Moreover, while more remote supply networks may cut costs it may lead to quality shortfalls that are difficult to detect or remedy (Wagner & Bode, 2006). As the literature on proximity dynamics alerts us, close intra-regional and inter-regional relations

down supply networks can enhance organizational performance. However, this article highlights how remote suppliers may be able to compete on the basis of extremely low costs, even if closer partners may be better at fostering innovation on the basis of better labour standards, productivity and organization specific human capital (Oerlemans & Meeus, 2005). Yet, whilst shifting to ultra-low cost remote suppliers about which little is known may accord a lifeline to automotive plants and tier 1 suppliers facing intense competitive pressures, this may lead to longer term costs of reduced innovation and sustainability. Of arguably greater importance, it may also lead to a lack of knowledge of the HRM practices of suppliers, with implications for worker rights and firm reputations.

At an applied level, the study reveals the increasingly close relationship between how firms manage their people and how they manage their suppliers. The previous shift to leaner staffing within core firms led to an increasing range of functions being fulfilled by first-tier suppliers. In turn, this led to closely integrated relationships, centring on a shared production paradigm, tight inventories and a close coordination of production, often between players in close spatial proximity. More recently this model has begun to unwind, driven by global over-capacity within the automotive industry and the entry and rise of new low-cost automotive component suppliers in Asia. Within the industry, HR practitioners in the major and the first-tier suppliers have had to contend with the challenges of reconciling downsizing with a production paradigm that remains centred on high levels of responsible autonomy and mutual commitment. Although it has been possible to alleviate some of the negative consequences of downsizing through compensating workers via historically high wage levels, this may be more difficult to sustain in the future as competitive pressure tightens, particularly in the context of Brazil's political and economic crises. External pressures can lead to the value of the human capabilities of suppliers lower down the chain being discounted; whilst the latter – and associated formal and informal HR systems – may be central to high-quality production, this does not mean that they are immune to external pressures. HR managers are in the unenviable position of having to respond to these challenges; there is little doubt that any solutions may be experimental and ad hoc, but will need to be carefully calibrated so as not to further undermine existing relationships and implicit understandings.

Suppliers in Brazil, and indeed, many other emerging markets in Latin America and Africa, are unable to compete with China on the basis of low wages; hence, any alternatives should centre on the revitalization of HR models that compensate for wage premiums with high productivity and quality. This would centre on the use of high levels of codetermination. Although this is already widespread in the automotive sector, there is always ample room to refine such systems in line with advances in technology, and ensuring that suppliers adhere to good employment practices without losing proprietary technological advantages. In the end, this path remains contingent on the automotive majors according more attention to accurately costing the worth of social networks and ties down the supply chain,

and associated mechanisms for ensuring that optimal ways of managing people are sustained.

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