

Cross-border Innovation Activities of MNEs

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The two foregoing chapters have presented different perspectives concerning the development of cross-border innovation activities of multinational enterprises—one is written from the perspective of mature MNEs (often located in developed economy markets) and the other is based on the perspective of relatively new MNEs from emerging markets. The difference in vantage point is important for at least two reasons: Mature MNEs have often co-evolved their innovation capability with their home economy institutions; and, their R&D capability has been honed over several decades of innovation experience and R&D management. New MNEs, on the other hand, are newcomers to the international arena and although their rise has been spectacular it has not always been based on innovation. Indeed, the R&D budgets of these firms are small (but increasing) and they have lesser experience with large scale R&D management than their developed economy counterparts. Despite these differences, it is interesting that the globalization of the last three decades has presented cross-border innovation opportunities for both sets of firms and the two chapters have given us a very good understanding of how the two groups of MNEs have responded.

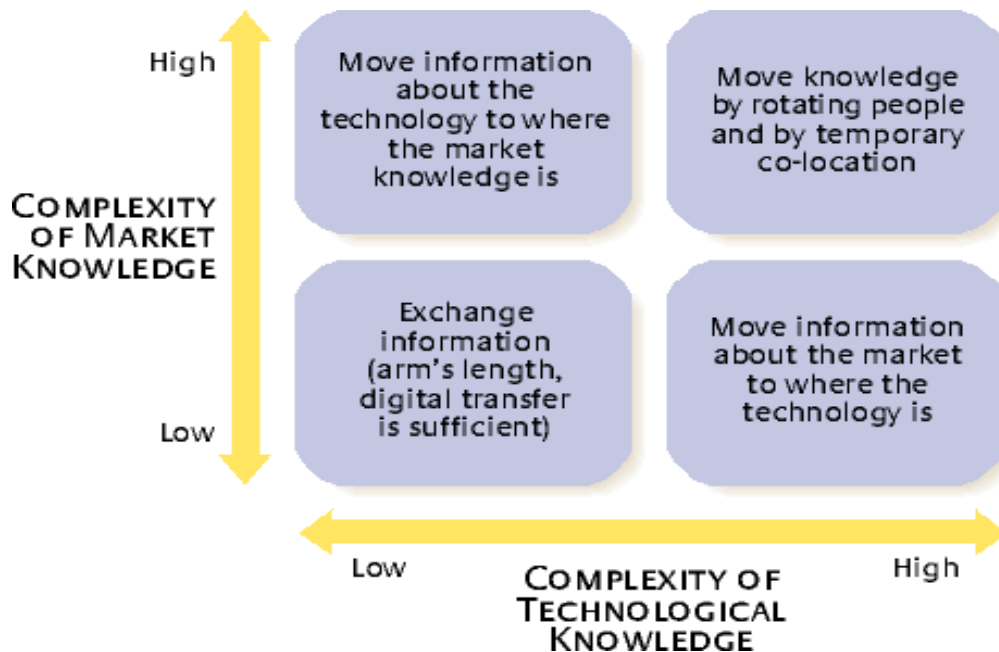
Cantwell and Marra describe the evolution of technological capability in the MNE (captured in Figure 1 of their chapter) and highlight four distinct organizational phases, each marked by

the increasing potential for knowledge recombination.¹ Exploratory R&D subsidiaries have given way to competence-creating subsidiaries that were able to effectively combine MNE knowledge resources with local knowledge in technology hotspots. However, as the scale of R&D internationalization has grown, the large number of MNE subsidiaries has morphed into a largely internal global production network, with research and production subsidiaries occupying specialist positions within an internal division of labour. In their view, the shift from hierarchical MNEs in the science-based mass production age towards networked MNEs in the information age is a phenomenon of general applicability to all MNEs, not simply those with a longer history. Since this shift is only visible in companies that moved from one type of organization to the other over a long period of time, we tend to associate it with mature MNEs. Eventually, these internal MNE networks have grown to encompass local networks (via subsidiaries in particular locations). The driving forces for looking inward and outward, emphasized in this chapter, are the increasing potential for knowledge recombination when internal knowledge is combined with the external and the enabling role of ICT technologies, which have allowed an increasing specialization of R&D within the MNE, as communication between MNE units has become so much easier.

The mature MNE, today, presents as a unique network where subsidiaries act as nodes in knowledge flows from local environments to other units and the centre. However, as the authors note, more research is needed to move the network perspective from being purely metaphorical by studying what knowledge the network transfers, the centrality of subsidiaries, the parent in technology flows, and also the bridging role (if any) played by particular MNE sub-units.

¹ The canonical references to each type of organisational form is described in Figure 1 and I do not repeat them here.

Figure 1: Global Innovation Strategies



Source: Santos, Doz and Williamson (2004)

Somewhat less evident in the literature reviewed is the ultimate purpose of the external search for knowledge in mature MNEs. Does the external search kick in to compensate for some sort of obsolescence in the internally generated technological knowledge in the MNE? Or is the case that globalization of innovation is born from a particular need to respond to different market environments? As Santos, Doz and Williamson (2004) emphasize, recombining technology alone in new ways is unlikely to create successful innovations. Companies also need to combine technological knowledge with marketing knowledge, with the latter being an area where subsidiaries may have much more to offer. So they argue that the optimum strategy for mobilizing knowledge should be based on the mobilization of market and technological knowledge in the manner shown in Figure 1 (from their article). Co-invented patents, which are used as a measure of external and internal collaboration in many studies on MNE innovation do not (usually) distinguish the type of knowledge that is exchanged. Put differently, except for the bottom left, all the other quadrants are consistent with co-invented

patents. Thus, we cannot learn the purpose of the recombined knowledge through such studies.

A scholar interested in technology strategy will also find the chronology of organizational evolution presented in the chapter interesting because of the oscillating nature of the focus on outward and inward searches in the organizational evolution of the MNE R&D structure. This raises several tantalizing questions about R&D management in the mature MNE which I briefly sketch out here. First, is newly sourced external knowledge difficult to recombine within the MNE? Pioneering studies by Almeida and Phene (2004) and Berry (2014, 2018) suggest that radical innovation is more likely to be a result of combining external and internal knowledge, but it is also well accepted that all technological knowledge is ‘sticky’ to its local/original context (Von Hippel 1994), and the transfer of knowledge from innovative subsidiaries is difficult to achieve (Gupta and Govindarajan 1991, 2001). Second, is this difficulty of recombination caused by managerial capability required to manage such R&D? Montiero et al. (2008) and Montiero (2015) emphasize that managerial perception and cognition are important constraining factors in intra-MNE technology exchanges. However, as Kuemmerle (1999) notes, sourcing R&D externally needs a different kind of managerial capability (the kind of manager who can attract star scientists) rather than sourcing knowledge from within organizational borders (which needs a manager experienced in different aspects of the R&D business). Does the oscillating focus perhaps highlight this need for different managerial capabilities?

The emphasis on technological capability and accumulation of resources in the MNE, outlined by Cantwell and Marra, relies upon the dynamic capabilities literature, the foundational basis of which is the resource based view of the firm. In this view, a firm’s product diversification and its direction can be predicted by the availability of slack resources. Pitelis (2004:524) summarizes the original Penrosian view thus:

Penrose described the firm as a bundle of human and non-human resources, under administrative and authoritative co-ordination, producing products for sale in the market for a profit. She suggested that the interaction of human resources and between human and non-human resources gave rise to knowledge creation within firms through specialisation and the division of labour, learning and teamwork. Importantly, this engendered 'excess resources', as increased productivity could lead to less time being required to perform a given set of activities. 'Excess resources' could be put to profitable use at zero marginal cost. This represented an important incentive to management to innovate and expand. In this sense, firm growth is the endogenous outcome of perennial intra-firm knowledge creation.

In this tradition, the seminal contributions of Teece (1982) and Silverman (1999) analysed the role of technology—a fungible asset capable of conferring significant economies of scope—in defining the boundaries of the multiproduct firm (also often an MNE). From this shared starting point, the literature on R&D internationalization and product diversification in MNEs has moved in quite different directions. In the product diversification literature, Helfalt and Eisenhardt (2004) draw the important distinction between scalable resources (such as technology) and not scalable resources (such a managerial resources) and suggest that the latter constitutes the real constraint to product diversification. Barosso and Giarratana (2013) use this framework to show the constraints imposed by marketing costs. The Helfalt and Eisenhardt (2004) paper has not had a big influence on the analysis of international R&D diversification but perhaps it should. In explaining the direction of international R&D diversification, the role of slack resources deserves deeper investigation.

The presence of slack R&D management capability and resources may explain the puzzle of why R&D internationalization has usually encompassed few locations and why in those locations networks may be important. R&D management is a scarce resource and, unlike

scientific talent, cannot be hired in the short term. It is very likely that the firm makes a conscious decision to invest in this resource in geographical areas of technological munificence. At the same time, local networks in the same location may enable an easing of the managerial constraints when the lack of scalable resources begin to bite in expanding R&D investments. This is a radically different interpretation of what networks mean in the context of R&D internationalization but not a novel interpretation in the context of MNE subsidiary relations. Andersson and Forsgren (1996) have long recognized that local embeddedness enables mutually-dependent, relationship-specific, investments to take place between the subsidiary and its local partners and could encompass the full range of functions viz. marketing distribution, procurement, and technological cooperation.

Mukherjee, Makarius, and Gaur draw our attention to the cross-border innovation efforts of Chinese and Indian MNEs. A shorter history (relative to mature MNEs) of undertaking own R&D and the presence of significant institutional disadvantages predispose many of these firms to looking outward for access to technological resources. Indeed, one of the factors that has facilitated the emergence and growth of EMNEs from South Korea and Taiwan was their ability to join and participate in global production networks that included mature MNE partners. The early role of internationally networked relationships in the development of innovative capability by firms in the Four Dragons, described by Hobday (1995) through the reverse product cycle or by Matthews (2002) through the linkage, leverage learning model, provide examples.

Mukherjee, Makarius, and Gaur note the home institutional environments of EMNEs from China and India “*create knowledge capabilities as well as capability gaps*” which, consequently, creates a dual motive for EMNEs to explore and exploit such knowledge investment.. The authors take a broad view of institutions, including in the ambit of institutions’ home knowledge infrastructure, managerial capabilities, and networks, and

distinguish between institutions that are ‘sticky’ to a location and those that are not. This allows them to produce four broad strategies for cross border innovation viz. Local Knowledge Adoption through Internal Expansions, Global Knowledge Access through International Partnering, Global Knowledge Acquisition through M&As, and Global Knowledge Access through Inward International Alliances (of the sort discussed in the context of MNEs from South Korea and Taiwan). This is a much broader vector of strategies than those considered by Cantwell and Marra, and in keeping with the snapshot rather than evolutionary framing of cross-border innovation.

Chaterjee and Sahasranamam (2018), in their comprehensive bibliometric analysis of the innovation literature on Chinese and Indian MNEs, show that there is a dearth of understanding of the innovation activities of emerging market MNEs from India and the literature is much more focussed on the innovation activities of Chinese firms. Mukherjee, Makarius, and Gaur do well to draw on canonical examples from India, and create an organizing framework, but in the rapidly evolving competition for markets, innovation stars appear to rise and die quite rapidly in both countries. In India, the touted innovation successes of the Tata Nano and Godrej’s Chotukool were neither national nor international successes. Generic pharma producers that were such a ray of hope for an internationally competitive Indian pharma sector have now mostly been bought by developed economy MNEs. Similarly, in China, while Huawei has been successful in developing 5G technology, it is more the exception than the rule. Companies like Suntec and Alibaba, which tried to keep away from the State, have run into trouble. Process innovations may have been more successful in both countries but we know very little about their nature and the extent to which they may have contributed to productivity growth.

Looking across the two chapters, I could not help wondering if we should regard the two types of firms—mature MNEs and the emerging MNEs—as simply different beasts inhabiting

the same world or (as a remarkable period of globalization looks likely to close) perhaps different beasts inhabiting parallel worlds? The question of whether mature MNEs and EMNEs are different beasts is one that recurs quite commonly in the IB literature, whenever a new source of MNEs first becomes established. For example, Kojima, Kiyoshi, and Ozawa (1984) and Kojima, (1989) claim Japanese MNEs were a distinct species from American and European MNEs, with their own unique micro and macro characteristics—a claim which would be hard to make today². Or, could we reasonably regard today's emerging market MNEs as somehow harking to a nascent stage of the mature MNE as envisaged in Ramamurti and Singh (2009)? These are not simply philosophical questions; rather, they also have significant implications for research design and the frameworks that we may choose to use when studying cross-border innovation in these two types of firms.

If we think emerging MNEs are wholly different beasts inhabiting the same world, some of the issues that were raised earlier with regard to understanding the internationalization of the mature MNE should be asked seriously about the cross-border innovation activity of the emerging MNE as well. These include being explicit about the market focus of the innovative activities of EMNEs. Do they seek technological advantages for a cost leadership strategy in an international market or do they seek technological resources to provide a differentiated product in their (sometimes large) domestic markets? What are their Valuable, Rare, Inimitable, and Organizational (VRIO) resources that give them sustained competitive advantage? Which of these resources are scalable and which are not? Given the relative immaturity of EMNEs, is it simply cheaper for them to acquire knowledge which does not need to be further developed? What are the relative costs of buying technology—arm's length—versus developing technology by embedding themselves in superior institutional

² I would like to thank John Cantwell for pointing this out to me.

environments? My impression is we have not even uncovered the tip of the iceberg in understanding such questions.

If, on the other hand, we think that emerging MNEs somehow hark to a nascent stage of development of the mature MNE, then economic history should play a more important role in informing theory and there should be greater focus on comparing organizational forms underlying the EMNE. In this context, the work of Wilkins and Schroter (1998) on free-standing companies provides a useful starting point. The majority of British foreign direct investment, up until World War I, was founded as free-standing company investment. FDI by other European companies was also of the free-standing nature until World War I. The free-standing company was a type of overseas investor that raised equity funds in one country but operated a manufacturing, extractive, or service enterprise in another. Some degree of control had to be exerted or potentially exerted by the parent for the firm to be a free-standing international company, as contrasted with a portfolio investment that has financing based in one country but has total control based in the other (host) country. For this reason, this type of company was an early forerunner of the modern MNE. Free-standing companies contracted out for engineering skills, management skills, and other necessary capabilities. Their investors in the home country were largely institutional investors seeking attractive projects through the London capital market, plus entrepreneurs who sold the idea to potential financial backers.

Like the EMNE, the free-standing company challenges the traditional multinational enterprise concept by showing that a firm can be established with no home-country experience in producing its product or service, but then can function as a foreign investor to successfully operate a mine, factory, or railroad in another country. It is also remarkable that most European MNEs in the inter-war period were holding companies that only pooled financial resources and were able to run operations by contracting everything else out,

including technical activities. Though many died out, some survived and the paths that led them to becoming a modern MNE could induce theory about the cross-border innovation activities of emerging MNEs—see for example Athreye and Godley (2009) who attempt such theorizing in the context of Indian pharmaceuticals. If EMNE parents behaved more like free standing companies, they would also be more entrepreneurial and less coordinating—again a story about MNEs with Penrosian hues (Jones and Pitelis, 2015), albeit without the network elements.

Whichever path the reader goes down, the menu of research options is rich and varied, offering a sumptuous feast of ideas—some with our favourite flavours and others with a surprisingly delectable fusion.

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