



# Foreign and domestic multinationals' linkages in advanced, small open economies

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**Foreign and Domestic Multinationals' Linkages in  
Advanced, Small Open Economies:  
Do Foreignness, Regional Origin and Technological Capability matter?**

Scott-Kennel, Joanna  
Giroud, Axèle  
Saittakari, Iiris

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**Abstract**

*Purpose:* International business (IB) theory suggests that multinational enterprises (MNEs) seek to internalise resources embedded in local firms to complement their own through inter-organisational relationships, yet little is known about whether and how these business linkages differ between foreign (F)MNEs and domestic (D)MNEs. In this paper, we explore linkage differential between DMNEs and FMNEs operating in the same single-country contexts, and examine whether foreignness, regional origin and technological capability make a difference.

*Methodology:* The study is based on a unique firm-level data set of 292 MNEs located in five advanced, small open economies (SMOPECs). We analyse the benefit received – in the form of technical and organisational resources and knowledge – by DMNEs and FMNEs via backward, forward and collaborative linkages with local business partners.

*Findings:* We find FMNEs benefit less from linkages than DMNEs; and FMNEs originating from outside the region especially so. However, our results also show technological capability mitigates this difference and is thus a game changer for FMNEs from outside the region.

*Originality:* The paper differentiates between FMNEs and DMNEs in their propensity to benefit from resources received from different local partners, and explores the influence of regional origin and technological capability. Despite the advanced and internationally oriented nature of SMOPEC, DMNEs still gain more benefit, suggesting either liabilities of foreignness and outsidership persist, or FMNEs do not desire, need, or nurture local linkages.

**Keywords**

Linkages, MNEs, SMOPEC, Technological capability, regional origin, Liabilities of foreignness and outsidership

## 1. Introduction

Scholars have called for greater understanding of knowledge connectivity and complementarity between multinational enterprises (MNEs) and their exogenous environments (e.g., Buckley, 2018; Cano-Kollmann *et al.*, 2016; Meyer *et al.*, 2011; Mudambi *et al.*, 2017; Narula and Santangelo, 2012). Whether at home or in a host context, it is generally accepted that MNEs seek to learn from and internalise local resources to complement and augment their own (Baraldi *et al.*, 2018; Ferraris, 2014; Mu *et al.*, 2007; Rašković, 2014; Un and Rodriguez, 2018). Relationships or *linkages* with local suppliers, customers and collaborative business partners involving exchange and transfer of resources can contribute to the knowledge advantages of an MNE or its foreign subsidiaries (Le Bas and Sierra, 2002; Kimino *et al.*, 2014). Yet few studies consider whether external linkages differ between foreign (F)MNEs and domestic (D)MNEs operating in the same country context (but see Castellani and Zanfei, 2006; Cozza *et al.*, 2021 for Italy). This paper addresses these gaps, building on prior discussion in the *Multinational Business Review* and elsewhere that ‘investigates the complexities and tensions incumbent in MNE subsidiary embeddedness’ (Rugman, 2014), by focusing on foreignness, regional origin, technological capability and local linkages (Cepeda and Arias-Perez, 2019; Ho, 2014; Ferraris, 2014; Kimino *et al.*, 2012; Rašković, 2014). Specifically, we examine whether DMNEs and FMNEs operating in the same advanced, small open economies (SMOPEC) differ in terms of their perceived benefit from resources received via linkages formed with different local business partners, and whether for FMNEs, origin within or outside the SMOPEC region, and technological capability, matter.

The context in which these benefits occur is important for our understanding of linkage differential between FMNEs and DMNEs (Aslesen and Harirchi, 2015). Advanced SMOPECs, defined as economies with populations of 4-20 million and per capita income greater than USD30,000, have consistently outperformed large advanced economies in terms of real GDP growth (Skilling, 2018; 2020). The relevance of a technologically and economically advanced SMOPEC lies in its acute global-local interface of international business activities (Kahiya, 2020; van den Bulcke and Verbeke, 2001). SMOPECs rely heavily on international activities, exchange and connections to access knowledge, where DMNEs and FMNEs can play important roles in the local and regional technology milieu (Crone and Roper, 2001; Chen *et al.*, 2004; Driffield *et al.*, 2002; Hogenbirk and van Kranenburg, 2006; Pearce, 2009). Advanced economic and technological development, where the potential for complementarity between foreign and domestic knowledge is high (Aslesen and Harirchi, 2015; Skilling 2018), coupled with reliance on regional economic activity make for a unique context in which to study the influence of technological capability and origin

of FMNEs on linkages.

Existing studies reveal several limitations which we seek to address. First, it is generally accepted that domestic MNEs (DMNEs) will hold stronger positions in their home-country environments than FMNEs facing liabilities of foreignness and outsidership (Johanson and Vahlne, 2009; 2020; Forsgren, 2016), yet this assumption has rarely been tested. Focus to date on the embeddedness of foreign subsidiaries (Ferraris, 2014; Garcia-Pont *et al.*, 2009; Nell and Andersson, 2012) has emphasized access to benefits from both home and host locales (Achcaoucaou *et al.*, 2014; Un and Rodriguez, 2018), rather than local linkage differentials between DMNEs and FMNEs, or FMNEs from within or outside the same region. Second, we know MNEs with higher technological capability have greater capacity to generate *linkages involving knowledge and resource transfer* (referred to as linkages henceforth) with local partners (Giroud & Scott-Kennel, 2009; Giroud *et al.*, 2012). Yet, focus on large developed, or emerging countries (Ghauri and Yamin, 2009) has rather neglected the issue of whether regional origin and technological capability mitigates disadvantages faced by MNEs in a SMOPEC context. Adopting a novel approach of delineating the study by country (rather than company) boundaries (Eden and Miller, 2004; Zaheer and Mosakowski, 1997), and drawing on a unique firm-level dataset of the largest MNEs in five SMOPECs, we provide a timely check and closer examination of these assumed rather than tested relationships.

Our paper makes two contributions. First, whilst literature demonstrates how MNEs build ownership advantages predominantly at home, and assumes that FMNEs face disadvantages due to foreignness and outsidership (Johanson and Vahlne, 2009; 2010; Un, 2011; 2016; Zaheer, 1995), few studies include comparison of FMNEs and DMNEs operating in the same environment. Our analysis lends support to existing theory and finds FMNEs benefit less from linkages than DMNEs. Although not unexpected in an emerging context (Franco *et al.*, 2019), we find differentials between DMNEs and FMNEs rather surprising in SMOPEC countries, given their advanced stage of development, openness and exposure to the international business environment. Our study enhances understanding of linkage differentials by demonstrating the importance of origin and leads to novel interpretations regarding the regional advantages of FMNEs in a SMOPEC context. Second, few studies address the technological context, where FMNEs learn from different types of linkages (Ghauri and Yamin, 2009); here, we find that FMNEs with greater technological capability benefit more from linkages, especially those originating from outside the region. In contrast to previous work, therefore, our study suggests that firm capability and to a lesser extent regional proximity, rather than country-specific knowledge matters.

## 2. MNE external network linkages

The nature and impact of “linkages” sustains a long tradition of studies dating back to Hirschman (1958) and continued by researchers in the fields of economics, economic geography and to a lesser extent international business (IB) (e.g. Chen et al., 2004; Driffield et al., 2002; Marin and Bell, 2006). Although the literature suffers from an absence of formal conceptualisation of linkages (Ray and Venaik, 2001; Giroud and Scott-Kennel, 2009) using different terms to describe similar constructs (e.g. inter-organisational relationships, business network ties, external embeddedness, etc), prior studies offer insights to the mechanics and firm-level outcomes of inter-firm relationships. Much of this work focuses on indirect competitive, demonstration and labour mobility effects, i.e. spillovers as externalities associated with ‘presence’ of foreign direct investment or MNE activities (see Narula and Pineli, 2019; Newman et al., 2020) rather than the direct effects of inter-organisational interaction, which are the focus here (Giroud and Scott-Kennel, 2009; Liu, 2014; Kimino et al., 2014; Ray and Venaik, 2001).

Direct external network linkages can be further distinguished by type, scope and quality (Giroud and Scott-Kennel, 2009). *Type* can be vertical, supply chain backward linkages with suppliers or forward linkages with agents and customers (Baraldi and Ratajczak-Mrozek, 2019; Franco, et al., 2019; Jordaan, 2011; Kimino et al., 2012), or horizontal, collaborative linkages across industries with alliance or developmental partners (Giroud and Scott-Kennel, 2009). *Scope* can range from arm’s length transactional relationships involving local sourcing and supply of goods and services (Hynes et al., 2020), to relationships involving sharing of technical, innovative or R&D resources (see Cozza et al., 2021; Rodrigues et al., 2020). *Quality* indicates intensity or extent of interaction between firms, support provided, resource and knowledge exchange and collaborative development that occurs (Franco, et al., 2019; Giroud and Scott-Kennel, 2009). In this study, linkages are defined as direct, purposeful or ‘voluntary’ arrangements between MNEs and local buyers (or customers), suppliers and other business partners in host economies that involve, ‘exchange, sharing, or co-development of products, technologies, or services’ (Gulati, 1998, p.293) as well as transfer of other technical, human or organisational resources and knowledge to the MNE, thus encompassing *type*, *scope* and *quality*.

The MNE network perspective - although tending to focus on internal relationships and impact on the wider MNE (Forsgren & Johanson, 2014; Johanson and Vahlne, 2009; 2020; Bartlett and Ghoshal, 1998; Hedlund, 1986) - acknowledges the potential for knowledge creation, transfer and diffusion, and subsequent inter-organisational learning based on social and economic ties with business partners in countries where MNEs operate (Cuyper et al., 2020;

Baraldi and Ratajczak-Mrozek, 2019; Andersson et al., 2002; Forsgren et al., 2005). Recent research on subsidiaries' embeddedness examines these relationships from a sociological viewpoint, including how MNEs source, share and exchange resources (Achcaoucaou et al., 2014; Albis et al., 2021; Cheng and Huang, 2020; Ferraris, 2014; Ferraris et al., 2020), then develop organisational capability around the process of (dis)embeddedness within MNE and/or local networks (Garcia-Pont et al., 2009; Ho, 2014; Iurkov and Benito, 2018; Meyer et al., 2020; Nell and Andersson, 2012; Rašković, 2014; Un and Rodriguez, 2018). Although both MNE network and dual embeddedness literatures provide insights to external relationships, they often fail to capture the type, scope and quality of different linkages empirically (Narula and Santangelo, 2012; Narula and Pineli, 2019), relying on rather subjective, socially-constructed measures of embeddedness, such as 'trust' or mutual dependence on external partners (Rodrigues et al., 2020; Ho et al., 2018). It is important to note for this study that unlike social relationships or strictly arm's length transactions (characterised by simple pecuniary exchange for goods and services), direct linkages – as defined above - may also involve resource and knowledge transfer, exchange and development with other business actors, and that type, scope and quality is both observable and able to be measured more objectively (Johanson and Vahlne, 2009, p.1415; 2020).

Cozza et al. (2021) argue that specific combinations of advantages, challenges and opportunities facing MNEs will impact on the type of linkages created and the effects of linkages. Linkage effects may include receipt of specialized knowledge and complementary resources sought by the MNE (Collinson and Narula, 2014) and stronger interorganizational partnerships and routines (Baraldi and Ratajczak-Mrozek, 2019). Over time, these effects may lead to learning and upgraded resource capability (Cheng and Huang, 2020), technical advantage (Cozza et al., 2021) and enhance the innovative performance of the MNE subsidiary (Albis et al., 2021; Ferraris et al., 2020; Un and Rodriguez, 2018; Halaszovich and Lundan, 2016). Collinson and Narula (2014) note linkages benefit the MNE by contributing to its capacity to augment advantage through receipt of partners' tangible and intangible resources. Indeed, access to the resources and knowledge of local partners can be a crucial factor contributing to an MNE's success (Andersson et al, 2002 Cepeda and Arias-Pérez, 2019; Mudambi et al., 2017; Mu et al., 2007). Yet, empirical research is largely silent as to how benefits might differ by type of linkage, despite this relationship being key to understanding direct linkage effects. Accordingly, there is a need to expand the theoretical scope of the 'linkage' term to look at the type of relationships likely to have beneficial impact on the MNE, specifically those linkages that involve transfer and exchange of knowledge and resources.

### *2.1 Foreign vs. domestic MNE linkage differential*

Within individual locations, we know that cross-fertilization of ideas and technologies occurs when MNEs work with local business partners (Le Bas and Sierra, 2002), and these relationships or ‘linkages’ can impact upon firms’ competitive advantage and performance (Andersson et al., 2002; Chetty et al., 2017; Johanson and Vahlne, 2009). What is less known from the literature, however, is how DMNEs compare with FMNEs in the same country in their propensity to benefit from these different linkages. Comparative research of DMNEs and FMNEs operating in single location focusses on the impact on local firms and finds foreign subsidiaries generally exert an inferior impact. For example, Castellani and Zanfei (2006), who studied MNEs in Italy, find fewer linkages and beneficial effects from foreign firms. Franco et al. (2019) also find foreign firms in Vietnam source a low level of inputs from local producers, provide less support and transfer fewer resources than their domestic counterparts. Hayes et al. (2020) find Irish firms are not only more likely to purchase from domestic suppliers, but also to encourage backward linkages by foreign firms.

Both FMNEs and DMNEs can learn from different locations and contribute to the global MNE’s competitiveness (Mu et al., 2007), but it is the difference in the linkage-related resource transfer between F/DMNEs in the same locale that interests us – i.e. a comparison of MNEs based in the same country. However, propensity for MNEs to benefit from resources via different types of linkage creation has not been disentangled from a foreign/domestic MNE perspective. This makes it difficult to ascertain the degree to which ownership really matters with regards to the types of linkage formed by MNEs in a single country and the benefit from resources and knowledge received via those linkages (Castellani and Zanfei, 2006; Cozza *et al.*, 2021; Nachum 2010; Scott-Kennel and Saittakari, 2020). This research gap can be attributed to the strong emphasis on foreign subsidiaries rather than domestic MNEs (Meyer *et al.*, 2020) in recent literature, and on intra-firm interdependencies of MNE units across borders (Rabbiosi and Santangelo, 2013) rather than inter-firm network linkages within a country.

There are a number of reasons, however, why FMNEs and DMNEs might exhibit different linkages in a single location. From the DMNE perspective, local ownership is associated with higher levels of embeddedness established through both formal and informal linkages, which confer benefits of knowledge exchange and resource-sharing in the home economy (Forsgren *et al.*, 2005; Johanson and Vahlne, 2009; 2020). DMNEs benefit from an enhanced understanding of local environmental factors, which in turn is associated with inter-firm linkages. Further, home-based linkages with geographically and culturally close actors have greater potential for firm development (Sölvell and Zander, 1995). DMNEs, particularly those that are larger or who act as lead firms in dynamic business areas or industrial clusters, are

better able to establish and maintain relationships with business partners (Benito *et al.*, 2002). We also know from prior research that the home market continues to be the main source of proprietary advantage for the MNE, and activities core to its development, such as research and development (R&D) and innovation (Awate *et al.*, 2015), tend to remain close to headquarters (Rugman and D’Cruz, 1997; Castellani and Zanfei, 2006; Dachs *et al.*, 2008).

By contrast, FMNEs often experience disadvantage relative to local firms (Hymer, 1976; Kindleberger, 1969). This disadvantage, conceptualised as the *liability of foreignness*, encompasses the idea that foreign firms encounter greater costs than, or are denied benefits available to, local firms (Zaheer, 1995; Mezias, 2002a, b; Barnard, 2010; Nachum, 2012). Some explanations for why FMNEs experience such liability include the distance between subsidiary and headquarters in spatially distant countries (Zaheer, 1995), as well as country-level factors and interactions with local business partners. Emerging theory suggests that from a network perspective, foreign firms also suffer a *liability of outsidership* and may occupy less well-embedded positions (Andersson and Forsgren, 2000; Johanson and Vahlne, 2009; 2020) with fewer and weaker ties to local business networks, government actors and regulatory agencies (Eden and Miller, 2004). Developing and managing network linkages to overcome market unfamiliarity (Denk *et al.*, 2012) may be further impeded by situations such as insufficient information about local business potential and practices, unfavourable attitudes of local stakeholders (e.g. potential discrimination against foreign firms), weaker institutional environments that discourage resource exchange (Gaur *et al.*, 2019), or lack of legitimacy with regards to local competitors or foreign firms operating locally. As a result, foreign firms may hold peripheral network positions vis-à-vis local actors (Johanson and Vahlne, 2009; 2020), resulting in linkage differential between the two.

Yet the advanced SMOPEC context is conducive to linkages, more so perhaps than emerging or developing economies that are often the focus for studies on linkage effects (Albis *et al.*, 2021; Jindra *et al.*, 2009). A dynamic business environment, institutional development and international competitiveness of local firms in SMOPEC raises the potential for benefit from complementary resources from foreign firms (Benito *et al.*, 2003; Kahiya, 2020; Scott-Kennel, 2007; Skilling, 2020; Van Den Bulcke & Verbeke, 2000). In this environment, DMNEs are not only forced to be internationally competitive (Aslesen and Harirchi, 2015), but must take full advantage of learning through both foreign markets and local linkages (including those with FMNEs) (Oladottir *et al.*, 2012). Equally, there is incentive for FMNEs to decrease their liabilities of foreignness and outsidership by developing linkages based on trust, commitment and opportunity; enabling them to exploit local institutional infrastructure, specialist skills and knowledge (Johanson and Vahlne, 2009; Pearce, 2009; Petersen *et al.*, 2008). Local linkages may serve to complement and extend

resource horizons, to improve insidership status in local networks, and to offset costs of operating not only for DMNEs but also FMNEs (Scott-Kennel and Saittakari, 2020).

Although empirical work is scant, based on theoretical arguments presented above, we argue that DMNEs tend to derive their competitive advantages at home and are more embedded locally and institutionally, and will therefore benefit more from knowledge linkages than FMNEs, including backward, forward and collaborative knowledge linkages. By contrast, FMNEs can experience liability of foreignness and it may take time for them to become insiders in local business networks. Our first hypothesis, therefore, seeks to examine D/FMNE linkage differential in advanced SMOPECs. We propose therefore, that holding firm and country factors constant:

*Hypothesis 1.0: FMNEs will benefit less from linkages with local a. suppliers, b. buyers (or customers) and c. other business partners, than DMNEs operating in the same SMOPEC.*

## *2.2 Regional origin effects on FMNE linkages in SMOPEC*

Recent research has highlighted the importance of regional activities for MNEs, and suggests that regional-level factors may be as important as country-level factors in determining international activity and performance (Rugman and Oh, 2013; Oh and Rugman, 2014). FMNEs whose parent companies originate from within the same region can gain greater access to information and knowledge in neighbouring countries through existing regional business relationships - eg. regional trade – as most MNEs tend to have a regional sales orientation (Rosa, 2020). Regional connectivity, whether through knowledge or infrastructure, can also facilitate knowledge sharing and benefits for FMNEs located within the same region (Castellani et al., 2021). Familiarity with host country and regional environments enable FMNEs to leverage and adapt locally relevant knowledge, advantages and relationships in nearby markets (Kudina, 2012; Mathews, 2006; Oh and Rugman, 2014; Verbeke and Kano, 2016). Regional commonalities extend beyond geographic proximity to include administrative, government or institutional and economic dimensions (Rugman and Brain, 2003; Asmussen et al., 2015). Further, inter-organizational network structures at regional levels may raise the potential for sharing knowledge, as MNEs can more easily explore both location and non-location-bound FSAs without the need to adapt advantages to the same extent in regional markets (Lurkov and Benito, 2018).

Advanced SMOPEC offer considerable potential for knowledge, institutional and economic connectivity for MNEs operating within the wider region. SMOPECs are more connected and actively engaged beyond their own borders through exporting and outward FDI activities than many larger countries (Kahiya, 2020), with many SMOPEC

business activities characterised by a strong regional focus. SMOPEC adherence to regional agreements facilitates understanding of rules and minimizes institutional barriers for MNEs from the same region (Benito et. al., 2003; Van Den Bulcke et al., 2001; Van Hoesel and Narula, 1999). Further, dual pressures for institutional conformity to unique SMOPEC characteristics (eg. regulations, standards etc.), combined with a lack of critical mass in terms of both demand and supply markets can make a regional orientation to strategy and operations by MNEs more worthwhile.

Thus, FMNEs in SMOPEC may be better able to lower their liability of foreignness, pressures for isomorphism (Kostova and Beugelsdijk, 2021) and relative costs of gaining local legitimacy by adopting more regionalised approaches to strategy and engagement (Kudina, 2012). Greater embeddedness within regional networks favours the development of strong location-bound FSAs, increasing their propensity to configure their value chain activities within more proximate and familiar environments (Lurkov and Benito, 2018). For these reasons, we propose that FMNEs that originate from the same region stand to benefit just as much from local linkages as DMNEs, whereas those with origins outside the region are likely to experience fewer benefits because of the geographic, economic, cultural and institutional distance between their home country and the SMOPEC host country. Consequently, we propose the following two hypotheses:

*Hypothesis 2.0: FMNEs that originate from the same region benefit no less from linkages (e.g. with suppliers, buyers and other business partners) than DMNEs operating in the same SMOPEC.*

*Hypothesis 2.1: FMNEs that originate from outside the region will benefit less from linkages (e.g. with suppliers, buyers and other business partners) than DMNEs operating in the same SMOPEC.*

### *2.3 Technological capability and FMNE linkages*

We have thus far hypothesized that FMNEs – particularly those with parent companies outside the region - might benefit less from linkages than DMNEs, but does this hold still true where FMNEs are more technologically capable? Our third hypothesis is concerned with whether technological capability of FMNEs from outside the region mitigates their tendency to receive fewer benefits from linkages, relative to DMNEs.

Although MNEs have strong incentives to internalize firm-specific knowledge to prevent leakage to other firms, innovation and technological developments often occur through joint collaborative activity between the firm and external actors (Iammarino, Padilla-Perez, & Von Tunzelmann, 2008). Thus, rather than imitating local practices, or

forcing foreign practices to fit local contexts, technologically capable FMNEs may benefit more from exploiting their own advantages alongside co-development of knowledge and resources at the local firm level (Zeng *et al.*, 2019). New knowledge creation often reflects specific skills and technologies that MNEs have that are complementary to those of local businesses (Cantwell, 2009; Un and Rodriguez, 2018). By strengthening their local technological capability (Un, 2011; 2016; Yildiz and Fey, 2012) through receipt of technology and innovation-based resources from host-country partners (Benito *et al.*, 2003; Chen *et al.*, 2004; Kimino *et al.*, 2012; Mu *et al.*, 2007), FMNEs may learn, adapt and perform better in the host market (Nachum, 2010). Further, MNEs with higher technological capability have the capacity to generate higher-quality linkages with their local business partners (Giroud *et al.*, 2012) and thus, are more able to develop and benefit from linkages than those without such capabilities (Andersson *et al.*, 2001; Cohen and Levinthal 1990). Such firms tend to possess the competences needed to recognize valuable external knowledge of host-country partners, and may complement and recombine this with their own internal knowledge through learning and adaptation (Cepeda and Arias-Pérez, 2019; Gaur *et al.*, 2019; Rugman, & Verbeke, 2001).

The SMOPECs in this study rank highly in terms of technological development and innovation (GCF, 2009; GII, 2019) – with some caveats. Due to their size, SMOPECs are not central to global market or production strategies, but play host to increasingly truncated value chains typically focussed on early or late stages of the chain (i.e. innovation and distribution rather than manufacturing or marketing). In this environment, individual firms are more likely to specialise and excel in fewer industries, technologies and value-added activities (Hogenbirk and van Kranenburg, 2006, p.65), where competitiveness is enhanced through localised inter-firm collaboration and international connectivity (Kahiya, 2020). SMOPECs with specialized skills and resources may be more attractive to FMNEs, where such knowledge can either be acquired, or accessed through local collaborative partnerships. Development of specialized or niche areas of knowledge may offer a path towards a virtuous cycle of competitive advantage for both FMNEs and DMNEs operating in SMOPECs, particularly where complementary technology underpins linkages involving knowledge-sharing.

In sum, by strengthening their local technological capability (Un, 2011; 2016; Yildiz and Fey, 2012) through receipt of technology and innovation-based resources from host-country partners (Benito *et al.*, 2003; Chen *et al.*, 2004; Kimino *et al.*, 2012; Mu *et al.*, 2007), FMNEs can learn, adapt and perform better in the host market (Nachum, 2010). Firm technological development provides an indicator of local capability or absorptive capacity (Cohen and Levinthal, 1990), and potentially increases the benefit from local knowledge (Gaur *et al.*, 2019) further underpinning D/FMNE linkage differential (as hypothesized earlier). Although recent studies have pointed to the heterogeneity of foreign

firms' linkage activities in host economies (Giroud *et al.* 2012), it still remains unclear whether more technologically-capable FMNEs in the SMOPEC context (eg. specifically those from outside the region) will gain greater benefit from the knowledge and resources of local partners.

Network and embeddedness literatures stress the importance of proximity for linkages, where distance – including that between subsidiary and headquarters (Zaheer, 1995) - is assumed to create barriers to collaboration, interaction and social connectivity (Rašković, 2014; Un and Rodriguez, 2018). Foreign firms have different developmental trajectories, and their capabilities and resources are not expected to be completely isomorphic with local firms (Kostova and Beugelsdijk, 2021). Further, they may exhibit advantages arising from unique technology and R&D capabilities arising from collaborative activities (Un, 2011; 2016; Yildiz and Fey, 2012). The SMOPECs in this study are institutionally, economically and technologically developed, such that local capability combined with foreign technology has the potential to be complementary (Cozza *et al.*, 2021; Jindra *et al.*, 2009; Jordaan, 2011; Un and Rodriguez, 2018), thus effectively mitigating distance between home and host economies. Further, technological capability raises a firm's ability to engage in reciprocal asset-augmenting relationships (Jindra *et al.*, 2009; Jordaan, 2011; Un and Rodriguez, 2018), where distinctiveness of said technology may also help overcome distance and barriers to, or encourage development of, local linkages. Thus, we propose that technological capability enables the FMNE from outside the region to bridge the gaps created by greater geographic and institutional distance:

*Hypothesis 3.0: For FMNEs coming from outside the region, technological capability positively moderates their lower benefit from linkages (e.g. with suppliers, buyers (customers) and other business partners), compared to DMNEs.*

### **3. Method**

#### *3.1 Survey Design and Data Collection*

Although there is no single definition of advanced SMOPEC and have their own distinct features, we are able to identify some common characteristics – all are small but high-performing economies, generating strong economic and social outcomes while facing the constraints of small domestic markets. More importantly, these economies are open to, and active participants in international trade with export shares and outward direct investment/GDP ratio on average roughly twice those of large economies (Skilling, 2020). Using IMF World Economic Outlook data, Skilling (2020) identified a core group of 13 advanced SMOPEC; with populations between one and 20 million people and per capita income above USD30,000 (see also Michailova and Ott, 2019). Using this list as a starting point, we selected countries

for this study whose policies best reflected an openness to or engagement in international trade and investment, with strong regional ties. All five selected economies are known for a combination of high levels of international activity (as measured by trade and/or investment flows), proximity to and engagement with larger regional markets, and economic openness ranked in the top 20 countries in the Global Index of Economic Openness (Legatum Institute, 2019)). We also ensured those selected covered a broad range of geographic areas including Asia (Singapore), Oceania (New Zealand), Central Europe (the Netherlands), the Nordic countries (Finland) and the British Isles (Ireland). Thus, the economies selected comprised a balanced sample of diverse geographies, economic structures and sizes, while being representative of the common SMOPEC themes of limited domestic market size, advanced economic development, international activity (trade and/or investment), proximity to larger regional markets, and economic openness.

In designing the questionnaire for this study, we closely followed Dillman (2007) with respect to personalization, wording, question order and layout. The survey was pilot-tested twice amongst a total of 65 people (26 in the first pilot, 39 in the second), including academic colleagues, business managers and Master's students, to ensure user-friendliness and avoid misinterpretation. The survey was conducted in English, but respondents in the Netherlands and Finland could choose between English and Dutch or Finnish respectively. Researchers involved in the project and official translators were used to conduct parallel translations, allowing modifications where needed; interpretation errors were avoided by back-translation into English (see Malhotra and Birks 2007).

Our online survey targeted the top 500 firms (by revenue) in each of these five SMOPECs, representing an overall sample of 2500 firms. Respondents were first invited, and then reminded via email to complete a web-based or hardcopy questionnaire. A total of 379 responses were received, representing an overall response rate of 15.2%. Of these, two responses were incomplete, and 91 were solely domestic firms with no subsidiaries abroad (although 38 of these were exporters), which we excluded to focus on MNEs. A further 292 were either a subsidiary of a foreign MNE (165 responses), or a domestic MNE (127 responses). In all cases, respondents answered for the principle unit of the company in that country, i.e. the local head office in the case of foreign subsidiaries, or the headquarters in the case of DMNEs. Amongst the FMNEs, 37 percent (61) were headquartered in countries in the same region as the SMOPEC where they operated (region was defined by continent (i.e. Europe, Asia and Australia) see Kudina (2012)), with the remainder (63 percent or 104) originating from outside the region. Almost all FMNEs originated from developed economies, with 37 percent headquartered in the US. The majority (56%) of the respondents operated in service

industries, either in low knowledge intensive (35%) or high knowledge intensive (21%) sectors. Manufacturing firms accounted for 36 percent of the respondents, with 21 percent in high, and 15 percent in low knowledge intensive sectors. The remainder of the respondents (8 percent) represented other sectors, including electricity, mining and construction. Table I provides a summary of respondent firms and sectors, by country.

**Table I about here**

### *3.2 Dependent variables*

*Linkages* are inter-organisational relationships involving a transfer, sharing or development of resources, including knowledge, to respondent MNEs from other firms based locally in the SMOPEC, namely buyers (customers/agents), suppliers and other business partners (e.g. collaborative joint ventures or alliances) (Jindra *et al.*, 2009; Giroud *et al.*, 2012). Specifically, we asked respondents to what extent they *benefited* from knowledge and resources from, respectively, buyers, suppliers and other collaborative business partners. In line with previous research focused on development potential or *quality* of linkages (Crone and Roper 2001; Jordaan 2011; Scott-Kennel and Giroud 2015), respondents were asked to indicate on 7-point Likert scales (ranging from 1-‘not at all’ to 7-‘very much’, or ‘not applicable’) how much they had benefitted from i) technical know-how, R&D and innovation, ii) organizational and managerial routines, iii) marketing know-how and market information, and iv) training and development of human resources, respectively. Three measures of *Linkages* were calculated by taking the mean of each of these four types of knowledge by type of partner/linkage, ie. suppliers, buyers and partners. Reliability of the three scales was excellent, as the Eigenvalue and Cronbach’s alpha were above 2.53 and 0.80 respectively.

Table II provides descriptive statistics for the DMNEs and FMNEs in the sample, and the results of t-tests for differences between them. The Table shows that, on average, DMNEs benefit significantly more from all linkages (eg. from a. suppliers, b. customers, and c. other business partners) than FMNEs. DMNEs are larger and older than FMNEs, they conduct more R&D, product (service) design locally, and engage more in product design and adaptation in the local market. Correlations are available from the authors on request.

**Table II about here**

### *3.3 Independent variables*

*FMNE (H1.0)*: In line with earlier studies comparing networks and performance of foreign and domestic firms (e.g.

Mezias, 2002b, p.271) in the same host country (Cozza *et al.*, 2021), dummy variables were used for *FMNE*, where 1 indicated a FMNE (or subsidiary) with a parent MNE domiciled abroad, and 0 a locally domiciled DMNE (typically the MNE headquarters). In H2, *FMNE* was divided into dummy variables, where 1 indicated that the FMNE originated from the same region (H2.0), and 0 if the FMNE originated from outside region (H2.1). Specifically, home countries within the same continent as the SMOPEC were considered to be within the region, and others were outside the region (Kudina, 2012). Where countries did not belong to a continent, i.e. New Zealand, we took Australia to be the nearest proximation to a continent.

*Technological capability* of the firm (H3.0) was proxied by the R&D intensity of the MNE, measured by percentage of R&D expenditure to total sales (Driffield *et al.*, 2010).

### 3.4 Control variables

We controlled for commonly cited determinants of MNE linkage formation, namely: age, size and activities of the firm; sector; R&D at industry and country levels; and autonomy<sup>1</sup> (see Cantwell and Iguchi 2005; Jindra *et al.*, 2009; Jordaan, 2011 for similar determinants). All were either measured on 7-point scales or in real terms.

*Age*, was measured by number of years since establishment of the DMNE or the FMNE in the SMOPEC. This reflects accumulated experience in the home/host country, as well as knowledge stocks and capabilities within internal MNE networks (Rabbiosi and Santangelo, 2013).

*Size*, measured by the number of employees of the MNE in the focal country, is important as a control as larger firms have been found to generate more, and more beneficial, linkages (Mu *et al.*, 2007).

*Value-chain activities* included nine types conducted locally (see Table I). However, only two – R&D, product (service) design; and product design and adaptation – showed significant differential between D/FMNEs. Further, R&D activity was highly correlated with *Technological capability of the firm*, presenting multicollinearity issues if both were included, thus we only controlled for ‘*Product design and adaptation*’.

*Marketing spend*, measured as the percentage of sales spent on marketing and sales by the MNE, has been associated with stronger linkages, especially with local customers.

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<sup>1</sup> *Autonomy* was measured by a factor based on strategic decision-making in i) R&D and product or service design, ii) production and processes, iii) procurement and choice of suppliers and iv) marketing, distribution and sales (see Table I), but was highly correlated with the independent variable, *foreign* MNE and excluded from further analysis. Post-hoc tests for the FMNE sub-sample, indicated autonomy was not a significant explanatory variable for benefit from any type of linkage..

*Industry* was measured by a dummy variable taking the value of 1 if the MNE was operating in a *service industry*, and 0 if operating in manufacturing or other sectors (e.g. electric, mining, construction).

*Local sourcing* and *Local sales* were operationalised by the percentage of total inputs purchased locally in the country, and the percentage of total output sold to local customers, respectively. Inputs include all raw materials, intermediate and final goods and services purchased; outputs include both intermediate and final goods and services sold. The majority of the respondents had either very low or very high inputs and outputs, resulting in a U-shaped distribution. We created a dummy variable taking the value of 1 if inputs purchased locally were 50 percent or more of total inputs, and 0 otherwise. We followed the same procedure for total outputs.

*Knowledge-intensive industry* was measured by a dummy variable taking the value of 1 if the firm was operating in a knowledge-intensive industry, and 0 otherwise (see Table I for sectors).

*Country R&D intensity* was measured by the percentage of gross domestic expenditure on R&D to GDP of the country in which the focal MNE unit is located (Greenaway, Sousa, & Wakelin, 2004). In order to account for fluctuation over the years, it was calculated as the mean value of 2007-2009 for each SMOPEC (Finland 3.70%; Singapore, 2.40%; Netherlands, 1.80%; Ireland, 1.47%; and New Zealand 1.23%, see UNESCO, 2019).

### 3.5 Empirical Analysis

We tested Hypotheses 1.0 a, b and c via the following regression model:

$$\text{Linkages} = \delta_i + \beta_1 \text{FMNE} + \beta_2 \text{Technological capability} + \beta_3 \text{Size} + \beta_4 \text{Age} + \beta_5 \text{Marketing spend} + \beta_6 \text{Product design and adaptation} + \beta_7 \text{Local sourcing} + \beta_8 \text{Local sales} + \beta_9 \text{Service industry} + \beta_{10} \text{Knowledge-intensive industry} + \beta_{11} \text{Country R\&D intensity} + \varepsilon$$

where *Linkages* represents our three dependent variables (i.e. benefit of resource and knowledge from buyers, suppliers and other business partners). The regression models were estimated using OLS regressions.

To test H2.0 and H2.1, we restricted the *FMNE* to those that are from the region and outside region, respectively. In order to test Hypotheses 3.0, we included an interaction effect in the model between *technological capability* and *FMNE* from outside region (H2.1). The variables were mean-centred before creating the interaction term in order to reduce multicollinearity. We tested for potential heteroskedasticity in the residuals, but Breusch-Pagan tests indicated that the standard errors in the OLS model did not require adjustment. In all models, the maximum variance inflation

factor (VIFs) statistics were below 1.5, indicating no issues around multicollinearity.

#### 4. Results

There is strong support for Hypothesis 1.0 with regard to differences in *linkages*. The negative and significant ( $p < 0.05$ ) coefficient for *FMNE* in all models in Table III is supportive of H1a, b and c, and suggests that FMNE benefit less from resources via all linkage types – forward (buyers and customers), backward (suppliers), and collaborative (other business partners) – than DMNEs. All models are significant, with  $R^2$  values being slightly better for the collaborative linkage model 1c (0.1303) than models 1b (0.1119, forward linkages with customers/buyers) and 1a (0.0988, backward linkages with suppliers).

#### **Table III about here**

Table IV presents the results for H2.0, specifically for FMNEs originating from the same region (first three columns) and FMNEs originating from outside the region (far right column); compared with DMNE. For FMNE from the same region, we found the coefficients for *FMNE* is insignificant ( $p > 0.10$ ) with regard to *linkages* with local suppliers and from buyers, and the models were rather weak<sup>2</sup> ( $R^2$  0.1080 and 0.1030, respectively). However, the coefficient for *linkages* with collaborative partners was negative and significant ( $p < 0.05$ ) suggesting that FMNE from the same region derive less benefit from collaborative partners than DMNEs ( $R^2$  0,1279). These results support H2.0 for linkages with local suppliers and buyers, but not in the case of collaborative partners.

For *FMNE outside the region*, Table IV suggests strong support for H2.1, as all coefficients for *FMNE* are negative and highly significant ( $p < 0.05$ ,  $R^2$  range from 0.1120 to 0.1637). Our results demonstrate that FMNEs whose parent companies originate from outside the region are significantly less likely to benefit from linkages with local suppliers, customers and collaborative partners, than DMNEs.

#### **Table IV about here**

The results change considerably, however, when we consider the moderating effect of technological capability (Table V). We find substantial support for H3.0, where *technological capability* positively and significantly moderates FMNEs' linkages. Specifically, the coefficient of the interaction term *FMNE* and *technological capability* is positive

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<sup>2</sup> Supplementary t-test analysis indicate that there is no significant difference between benefits received by DMNEs and FMNE from the same region, providing further support to our H2.0.

and significant (at  $p < 0.1$  for backward linkages with suppliers;  $p < 0.05$  forward linkages with customers/buyers; and  $p < 0.001$  for collaborative linkages). All models are highly significant with  $R^2$  ranging from 0.1284 to 0.2193.

#### **Table V about here**

With regard to control variables, we find MNE *size* is positively and significantly related to *linkages* across most models, especially for backward linkages with suppliers and collaborative linkages with other business partners. Larger MNEs benefit more from linkages with local firms than smaller ones. Supplementary analysis differentiating firms by *size*, namely small (<200 local employees), medium (200-699) and large (700+), shows DMNEs consistently benefit more than FMNEs from all types of *linkages*. Unexpectedly, we find that *country R&D intensity* is only positively and significantly associated with greater benefit from linkages with buyers (customers)<sup>3</sup>, and not with suppliers or other business partners. Also, contrary to expectations, age is not positively associated with linkages. Indeed, the negative and significant ( $p < 0.1$ ) coefficient for *age* in Table III suggests FMNEs established for longer actually benefit *less* from collaborative linkages with other business partners than DMNEs. Supplementary regression analysis splitting MNEs into two age groups (< or >35 years following the Spline curve break point) revealed FMNEs older than 35 years benefit significantly less from all linkages than DMNEs. For MNEs younger than 35 years, FMNEs benefit significantly less only from collaborative linkages from other business partners. We find no significant difference between FMNEs' and DMNEs' benefits from vertical linkages with suppliers nor buyers if the MNE is younger than 35 years.

## **5. Discussion and conclusions**

Our purpose in this paper was to investigate the linkage differential between FMNEs and DMNEs in advanced SMOPECs, and the influence of regional origin and technological capability on the benefit derived from local resource linkages by FMNEs. The paper contributes to the rather neglected area of international business literature which compares differences between foreign subsidiaries and domestic firms (e.g. Mezas, 2002a; Kronborg and Thomsen, 2009; Mata and Freitas, 2012, Cozza et al., 2021). Although the concept of leveraging linkages with local business

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<sup>3</sup> Replacing country R&D intensity with country variables (New Zealand with the lowest R&D intensity provided the base line), we find that the coefficients of Singapore and Finland – the two countries with the highest R&D intensity in our sample - were positively associated with linkages with buyers. The significance of the main variables were not changed.

partners is implicit in this literature, it has rarely been explored systematically (Mathews, 2006). Our work provides a much needed check of whether assumed relationships do in fact hold true when FMNEs and DMNEs are compared in specific country contexts. We also add depth to our examination of FMNEs by incorporating regional and technological advantages and testing whether these are supportive of beneficial linkages.

We find that DMNEs benefit more from local knowledge and resources transferred from external business partners than FMNEs (e.g. Hymer, 1976). This finding supports the general consensus that FMNEs occupy less embedded network positions (Andersson and Forsgren, 2000; Franco et al., 2019; Johanson and Vahlne, 2009, 2020), and holds regardless of type of linkage partner. There are several possible interpretations of this finding. First, global connections, entrenched practices, or fiercely protected proprietary advantages may mean well-established MNEs have much to lose but less to gain from the local milieu in which they operate (Meyer *et al.*, 2011; Gaur *et al.*, 2019). Second, rather than experiencing liabilities of foreignness, FMNEs simply may not need, or be willing to develop local linkages to access resources. We surmise that the strength and value of weak (transactional) ties may outweigh the relative costs of forming strong (collaborative) ties in host economies (Granovetter, 1973), particularly where intra-organisational transfer within the MNE already ensures advantage over local firms, or where regional – rather than local – ties act as primary sources of knowledge (Freund *et al.*, 2020). Third, liabilities of foreignness might indeed endure over time (Zaheer, 1995; Eden and Miller, 2004), but this appears to be contingent on firm- and, to a lesser extent, country-specific factors. Interestingly, the FMNEs in this study appear to rely as much on vertical linkages with suppliers and customers in their earlier years as DMNEs. This may be because FMNEs possess capabilities when they first invest that DMNEs do not have (yet), pointing to a possible liability of localness. It may be that the resources gained from linkage partners become less important – rather than linkages being easier to initiate as suggested by social network and embeddedness literatures - as FMNEs become better established. Or well established FMNEs may form more linkages (Vahlne et al., 2012) as trust and connections develop (Forsgren et al., 2005; Kiyota et al., 2008), but the differential between FMNE and DMNE in terms of the benefit from those linkages declines over time.

While our results enable comparison of linkage differential between DMNEs and FMNEs, another novel contribution lies in distinguishing FMNEs originating from the same region with those outside the region. Results show FMNEs in SMOPEC with headquarters outside the region are significantly less likely to benefit from all linkages when compared with DMNEs, whereas there is no significant difference in benefit from vertical linkages (eg with suppliers and buyers) between DMNEs and FMNEs from the same region. This confirms that the geographic (and associated institutional)

distance is key to explaining when FMNEs might benefit from local knowledge networks (Rosa et al., 2020; Castellani et al., 2021). There are various possible explanations for this finding. FMNEs from the same region may form business relationships prior to investing in SMOPEC, as previous business ties tend to be reinforced within a bounded geographic space. FMNEs from the same region are also likely to be more attuned to business practices in neighbouring countries (Kudina, 2012; Oh and Rugman, 2014). FMNEs from outside the region may be less familiar with local formal and informal institutional constraints, and/or local partners may be less willing to share knowledge and resources with them. It may also be that that regional firms can exploit competitive advantages without the need to make substantial investments in home region-specific adaptation (Asmussen et al., 2015). As such, in SMOPEC, FMNEs from the same region appear to be better positioned – compared to FMNEs from outside the region - to leverage knowledge and resources locally.

The results for technologically-capable FMNEs are quite different to their less capable counterparts, however. Technological capability appears to mitigate the difference between linkage benefits between FMNEs that originate outside the region and DMNEs. Specifically, these FMNEs benefit more if they are technologically capable. A possible interpretation of these results may be that FMNEs from outside the region have either sought to overcome liabilities of foreignness or have identified potential for greater gain and growth by pro-actively engaging in local learning and co-creation of value (Petersen and Pedersen, 2002) through access to resources from local partners (equally local partners may find greater benefit themselves from linkages with more technologically capable FMNEs).

The advanced SMOPEC context may amplify such effects. SMOPEC are characterised by exposure and openness to the international business environment, small market size, advanced institutional and economic development, where firms are often specialised, internationalised and regionally focussed. Limited supply and demand conditions associated with market size in SMOPECs may restrain development of certain sectors, value-chain activities, or firm-specific advantages (particularly with regard to process technology, which requires economies of scale; see Van den Bulcke and Verbeke (2001)), yet may encourage more independent – and therefore unique – development of capabilities in other niche areas. In this context, our results suggest ‘opposites attract’ where sufficient technological variation or ‘gap’ between FMNEs from outside the region and local firms prompts greater engagement through collaborative resource sharing.

### *5.1 Implications for theory*

Theoretically, our study contributes to international business research by identifying novel boundary conditions to explain how MNEs exploit their own advantages in foreign markets (eg. Hymer, 1976) by overcoming outsidership (Johanson and Vahlne, 2009; 2020), where foreignness may constitute either an asset or a liability (Nachum, 2010). Our findings provide greater insights of how foreignness, regional origin and technological capability act as boundary conditions when identifying potential for resource benefit via inter-organisational linkages. Compared with DMNEs, FMNEs from outside the region clearly benefit least from linkages - unless they are technologically capable. This suggests that in the absence of such capability, network outsidership seems to apply most to distant FMNEs. The dynamics of foreignness (as earlier developed in Zaheer and Mosakowski, 1997) suggests that FMNEs experience disadvantage in the local market upon entry, but can overcome this by adapting to the local environment over time, thus bridging market, geographic and institutional distance through participation in external linkages (Castellani et al., 2021). However, comparing FMNEs with DMNEs, it seems the dynamics may depend more on firms' capabilities (eg. a FMNE can possess greater capability upon entry compared to a newly established DMNE). Additionally, in our study, FMNEs from outside the region - although potentially facing greater disadvantage due to distance - appear to overcome the liability of 'outsidership' vis-à-vis DMNEs when they possess higher technological capabilities.

Our study adds to the growing literature on the distinction between regional and global strategies (eg. Rugman and Verbeke, 2005; Oh and Rugman, 2014) by demonstrating that when MNEs develop technological capability they can benefit more from local linkages and suffer less from liability of foreignness even when investing from outside the region. Higher levels of technological capability in MNEs, especially those operating in technologically and institutionally advanced countries attractive to foreign knowledge inflows, can facilitate resource exchange and absorption through both strong and weak ties (Freund *et al.*, 2020; Gaur *et al.*, 2019). A common assumption in the literature is that MNEs may not gain, but at least will not be disadvantaged if the resources of a local market are much richer than the subsidiary's absorptive capacity (Cohen and Levinthal, 1990). Our study confirms that FMNEs are more likely to benefit from local knowledge and resources when they possess the ability to do so. However, it is not so much time spent in a host country or country knowledge that matters; rather, it is MNEs ability to invest in developing capability through local linkages with potential for knowledge exchange, resource development and subsequent learning.

### *5.1 Implications for policy and management*

SMOPECs promote, attract and retain both DMNEs and FMNEs as their internationally connected activities are perceived to be beneficial for the local economy. Policymakers might be more mindful of the differential in linkage creation between them, however. Engagement with FMNEs outside the region in particular, may facilitate understanding of the potential difficulties they may experience and enable formulation of policies supportive of innovation, international connectedness, transfer and exchange of resources (Maskell and Hannibalsson, 1998; Oladottir *et al.*, 2012; Singh, 2007).

For managers in SMOPECs, interconnectivity and access to complementary resources through networking may prove an antidote to costs of local isomorphism on the one hand (for FMNEs; Andersson *et al.*, 2002; Kostova and Beugelsdijk, 2021), and pressures of international competition (for DMNEs) on the other (Chetty *et al.*, 2017; Scott-Kennel and Giroud, 2015; Skilling, 2018; Kahiya, 2020). However, our results serve to highlight that FMNEs do not all equally ‘seek to capture co-created value by purposefully engaging with and shaping the value creation and co-creation process’ (Pitelis and Teece (2018), p. 527) through local linkages, although the benefits of such relationships increase with critical mass and technological capability (Ferraris *et al.*, 2020). There are distinct boundary conditions with regard to geographical distance and technological capabilities that managers ought to take into consideration if they are to increase potential benefits from linkages, as well as benefits associated with the distinct SMOPEC host country context (Meyer *et al.*, 2020).

### *5.3 Limitations and future research*

While the comparison of D/FMNEs taken in this paper is quite novel, it has value for further study of the MNE, particularly within the wider context of advanced SMOPECs rather than the single-country focus of previous studies (e.g. Castellani and Zanfei, 2006; Cozza *et al.*, 2021). Purposely, we do not assume (or test for) intra-country homogeneity or between country distinctiveness (Kostova and Beugelsdijk, 2021); rather, the paper focusses on the difference between FMNEs and DMNEs within selected individual countries. Our study is limited by sole focus – at least in terms of respondents – on the MNEs themselves rather than linkage partners (who might better be able to clarify contributions), and by the use of four broad categories of resources necessitated by use of a survey. We defend this approach, however, as it provides more depth in terms of linkage scope and quality and more breadth in terms of types of partner and resources than traditional studies of linkages (e.g. those based on local sourcing or sales, and indirect spillovers), as well as coverage of more firms than would be achievable using case study methodology.

Future research could adopt a more longitudinal approach to investigating specific pairs of firms to explore how, why, and which linkages change over time. Our study reveals a need for deeper understanding of differences between foreign and domestic MNEs, namely; motives for linkages and knowledge exchange, partner responses and technological development behaviour for distinct types of local partners. Future studies could explore the concept of liabilities of foreignness by including firm-specific resources, advantages and strategic intent in explanations of linkage differential. This might help distinguish whether foreign MNEs, including those outside the region, form fewer linkages because they lack resources to do so, do not need to do so, or suffer from disadvantages relative to domestic MNEs; and whether their strategic need for local embeddedness evolves. Future research could also explore how distinct formal and informal institutions at national and regional levels, or types of activities performed affect MNEs' potential benefit from local linkages a single country context.

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**Table I. Sample distribution across types of MNEs, sectors and SMOPEC**

| Type of MNE           | Netherlands |    | Singapore |    | Ireland   |    | New Zealand |    | Finland   |    | Total      |    |
|-----------------------|-------------|----|-----------|----|-----------|----|-------------|----|-----------|----|------------|----|
|                       | #           | %  | #         | %  | #         | %  | #           | %  | #         | %  | #          | %  |
| Domestic MNE          | 26          | 51 | 11        | 31 | 15        | 26 | 34          | 39 | 41        | 68 | 127        | 43 |
| Foreign MNE           | 25          | 49 | 25        | 69 | 42        | 74 | 54          | 61 | 19        | 32 | 165        | 57 |
| HQ in the same region | 15          |    | 2         |    | 16        |    | 15          |    | 13        |    | 61         |    |
| HQ outside region     | 10          |    | 23        |    | 26        |    | 39          |    | 6         |    | 104        |    |
| <b>Total</b>          | <b>51</b>   |    | <b>36</b> |    | <b>57</b> |    | <b>88</b>   |    | <b>60</b> |    | <b>292</b> |    |

  

| MNE sector                        | Netherlands |    | Singapore |    | Ireland   |    | New Zealand |    | Finland   |    | Total      |    |
|-----------------------------------|-------------|----|-----------|----|-----------|----|-------------|----|-----------|----|------------|----|
|                                   | #           | %  | #         | %  | #         | %  | #           | %  | #         | %  | #          | %  |
| Manuf: knowledge intensive        | 9           | 18 | 6         | 17 | 18        | 32 | 15          | 17 | 13        | 22 | 61         | 21 |
| Manuf: low knowledge intensive    | 5           | 10 | 2         | 6  | 6         | 11 | 10          | 11 | 22        | 37 | 45         | 15 |
| Services: knowledge intensive     | 9           | 18 | 8         | 22 | 10        | 18 | 26          | 30 | 8         | 13 | 61         | 21 |
| Services: low knowledge intensive | 28          | 55 | 17        | 47 | 16        | 28 | 30          | 34 | 12        | 20 | 103        | 35 |
| Other                             | 0           | 0  | 3         | 8  | 7         | 12 | 7           | 8  | 5         | 8  | 24         | 8  |
| <b>Total</b>                      | <b>51</b>   |    | <b>36</b> |    | <b>57</b> |    | <b>88</b>   |    | <b>60</b> |    | <b>292</b> |    |

**Table II. Descriptive statistics and comparison between domestic MNEs and foreign MNEs**

|   | N   | Mean | St.d. | DMNE  | FMNE | t-value |     |
|---|-----|------|-------|-------|------|---------|-----|
| Foreign (y/n)   | 292 | 0,56 | 0,50  |       |      |         |     |
| Benefit from suppliers <sup>c</sup>                       | 283 | 3,65 | 1,35  | 3,89  | 3,46 | 2,69    | **  |
| Benefit from buyers (customers/agents) <sup>c</sup>       | 255 | 3,06 | 1,41  | 3,41  | 2,80 | 3,51    | *** |
| Benefit from other business partners <sup>c</sup>         | 232 | 3,37 | 1,47  | 3,78  | 3,04 | 3,95    | *** |
| Size <sup>a</sup> (MNE employees in home or host country) | 291 | 980  | 1 640 | 1 373 | 677  | 3,67    | *** |
| Age <sup>a</sup> (since year of establishment)            | 290 | 48   | 42    | 62    | 37   | 5,19    | *** |
| Technological capability <sup>a</sup>                     | 284 | 4,88 | 8,80  | 5,59  | 4,34 | 1,18    |     |
| Marketing/Sales %   | 284 | 1,48 | 1,50  | 1,46  | 1,50 | - 0,89  |     |
| Value Chain Activities Locally                            |     |      |       |       |      |         |     |
| R&D, product (service) design                             | 292 | 0,51 | 0,50  | 0,65  | 0,41 | 4,18    | *** |
| Product design and adaptation                             | 292 | 0,61 | 0,49  | 0,70  | 0,54 | 2,93    | **  |
| Procurement   | 292 | 0,78 | 0,41  | 0,77  | 0,79 | - 0,55  |     |
| Manufacturing or service delivery                         | 292 | 0,70 | 0,46  | 0,69  | 0,70 | - 0,25  |     |
| Human resource management                                 | 292 | 0,77 | 0,42  | 0,77  | 0,77 | - 0,18  |     |
| Accounting & finance                                      | 292 | 0,76 | 0,43  | 0,77  | 0,76 | 0,19    |     |
| Information systems & IT                                  | 292 | 0,73 | 0,44  | 0,77  | 0,71 | 1,16    |     |
| Distribution & logistics                                  | 292 | 0,69 | 0,46  | 0,67  | 0,71 | - 0,65  |     |
| Marketing, sales, after-sales                             | 292 | 0,72 | 0,45  | 0,71  | 0,73 | - 0,28  |     |
| Local sourcing  | 292 | 40   | 32    | 43    | 37   | 1,79    | *   |
| Local sales   | 292 | 48   | 40    | 44    | 51   | - 1,45  |     |
| Service industry  | 292 | 0,56 | 0,50  | 0,54  | 0,58 | - 0,69  |     |
| Hightech industry   | 292 | 0,42 | 0,49  | 0,38  | 0,45 | - 1,31  |     |

Significance levels <sup>^</sup> $p < 0.1$ ; \*  $p < 0.05$ ; \*\* $p < 0.01$ ; \*\*\*  $p < 0.001$

<sup>a</sup>Natural logarithm-transformed variable in the analysis, in order to reduce skewness

<sup>b</sup>Square root-transformed variable in the analysis, in order to reduce skewness

<sup>c</sup>7-point Likert scales

**Table III. Regression results (H1.0)**

| Dependent                             | Linkages from suppliers<br>(H1.0 a) | Linkages from customers/ buyers<br>(H1.0 b) | Linkages from collaborative partners<br>(H1.0 c) |
|---------------------------------------|-------------------------------------|---|--|
| FMNE                                  | -0,46 ** (0,18 )                    | -0,44 * (0,19 )                             | -0,75 *** (0,21 )                                |
| Technological capability <sup>a</sup> | 0,00 (0,05 )                        | 0,00 (0,06 )                                | -0,01 (0,07 )                                    |
| Size <sup>a</sup>                     | 0,17 *** (0,06 )                    | 0,16 * (0,07 )                              | 0,16 * (0,08 )                                   |
| Age <sup>a</sup>                      | -0,14 (0,10 )                       | 0,03 (0,11 )                                | -0,22 ^ (0,12 )                                  |
| Marketing spending <sup>a</sup>       | 0,05 (0,06 )                        | 0,03 (0,06 )                                | 0,00 (0,07 )                                     |
| Product design and adaptation         | -0,25 (0,18 )                       | 0,12 (0,20 )                                | -0,09 (0,22 )                                    |
| Local sourcing                        | -0,18 (0,18 )                       | -0,09 (0,19 )                               | 0,10 (0,21 )                                     |
| Local sales                           | 0,28 (0,18 )                        | 0,25 (0,19 )                                | 0,32 (0,22 )                                     |
| Service industry                      | 0,32 ^ (0,17 )                      | 0,29 (0,19 )                                | 0,30 (0,21 )                                     |
| Knowledge intensive industry          | 0,00 (0,17 )                        | 0,12 (0,19 )                                | 0,12 (0,21 )                                     |
| Country R&D intensity                 | 0,14 (0,09 )                        | 0,21 * (0,10 )                              | 0,11 (0,11 )                                     |
| Constant                              | 2,91 *** (0,52 )                    | 1,40 * (0,58 )                              | 2,98 *** (0,61 )                                 |
| R <sup>2</sup>                        | 0,0988                              | 0,1119                                      | 0,1303   |
| F-value                               | 2,61 **                             | 2,69 **                                     | 2,90 **  |
| Maximum VIF                           | 1,35                                | 1,32  | 1,35   |
| n                                     | 274                                 | 247   | 225  |

Significance levels ^  $p < 0.1$ ; \*  $p < 0.05$ ; \*\*  $p < 0.01$ ; \*\*\*  $p < 0.001$

Note: Standard errors are in parenthesis; tests are two-tailed

<sup>a</sup> Natural logarithm-transformed variable, in order to reduce skewness

**Table IV. Regression results for FMNE originating from the same region (H2.0) and FMNE originating from outside the region (H2.1)**

| Dependent                             | FMNE from the same region        |  |   | FMNE from outside the region     |  |   |
|---------------------------------------|----------------------------------|--|---|----------------------------------|--|---|
|                                       | Linkages from suppliers (H2.0 a) | Linkages from customers/ buyers (H2.0 b) | Linkages from collaborative partners (H2.0 c) | Linkages from suppliers (H2.1 a) | Linkages from customers/ buyers (H2.1 b) | Linkages from collaborative partners (H2.1 c) |
| FMNE                                  | -0,31 (0,22 )                    | -0,35 (0,25 )                            | -0,58 * (0,27 )                               | -0,53 * (0,21 )                  | -0,60 ** (0,23 )                         | -0,93 *** (0,25 )                             |
| Technological capability <sup>a</sup> | -0,06 (0,07 )                    | -0,06 (0,08 )                            | -0,14 (0,08 )                                 | -0,02 (0,06 )                    | -0,03 (0,07 )                            | -0,03 (0,08 )                                 |
| Size <sup>a</sup>                     | 0,11 (0,08 )                     | 0,11 (0,10 )                             | 0,06 (0,10 )                                  | 0,18 ** (0,07 )                  | 0,12 (0,08 )                             | 0,21 * (0,09 )                                |
| Age <sup>a</sup>                      | 0,02 (0,12 )                     | 0,19 (0,14 )                             | -0,12 (0,14 )                                 | -0,14 (0,12 )                    | 0,01 (0,13 )                             | -0,33 * (0,15 )                               |
| Marketing spending <sup>a</sup>       | 0,08 (0,08 )                     | 0,04 (0,09 )                             | -0,02 (0,09 )                                 | 0,06 (0,07 )                     | 0,05 (0,07 )                             | 0,04 (0,08 )                                  |
| Product design and adaptation         | -0,53 * (0,22 )                  | -0,44 ^ (0,25 )                          | -0,31 (0,27 )                                 | -0,10 (0,21 )                    | 0,37 (0,23 )                             | -0,08 (0,25 )                                 |
| Local sourcing                        | -0,09 (0,22 )                    | 0,04 (0,24 )                             | 0,22 (0,25 )                                  | -0,15 (0,21 )                    | -0,13 (0,22 )                            | 0,11 (0,24 )                                  |
| Local sales                           | 0,35 (0,23 )                     | 0,25 (0,25 )                             | 0,32 (0,27 )                                  | 0,19 (0,21 )                     | 0,21 (0,22 )                             | 0,13 (0,24 )                                  |
| Service industry                      | 0,30 ^ (0,21 )                   | 0,30 (0,23 )                             | 0,50 * (0,25 )                                | 0,36 ^ (0,21 )                   | 0,26 (0,22 )                             | 0,27 (0,24 )                                  |
| Knowledge intensive industry          | -0,08 (0,21 )                    | 0,20 (0,24 )                             | 0,12 (0,26 )                                  | 0,10 (0,19 )                     | 0,28 (0,21 )                             | 0,09 (0,24 )                                  |
| Country R&D intensity                 | 0,12 (0,10 )                     | 0,19 ^ (0,11 )                           | 0,11 (0,12 )                                  | 0,16 (0,11 )                     | 0,18 (0,12 )                             | 0,05 (0,13 )                                  |
| Constant                              | 2,90 *** (0,60 )                 | 1,51 * (0,74 )                           | 3,41 *** (0,72 )                              | 2,71 *** (0,61 )                 | 1,61 * (0,69 )                           | 3,30 *** (0,71 )                              |
| R <sup>2</sup>                        | 0,1080                           | 0,1030                                   | 0,1279  | 0,1120                           | 0,1371                                   | 0,1637  |
| F-value                               | 1,79 ^                           | 1,49                                     | 1,80 **                                       | 2,33 *                           | 2,67 **                                  | 2,95 **                                       |
| Maximum VIF                           | 1,39                             | 1,30                                     | 1,35  | 1,45                             | 1,41                                     | 1,48  |
| n                                     | 175                              | 155                                      | 147   | 215                              | 197                                      | 178   |

Significance levels ^  $p < 0.1$ ; \*  $p < 0.05$ ; \*\*  $p < 0.01$ ; \*\*\*  $p < 0.001$

Note: Standard errors are in parenthesis; tests are two-tailed

<sup>a</sup> Natural logarithm-transformed variable, in order to reduce skewness

**Table V. Regression results for technology moderator for FMNE originating outside the region (H3.0)**

| Dependent                             | FMNE from outside the region        |   |  |
|---------------------------------------|-------------------------------------|---|--|
|                                       | Linkages from suppliers<br>(H3.0 a) | Linkages from customers/ buyers<br>(H3.0 b) | Linkages from collaborative partners<br>(H3.0 c) |
| FMNE                                  | -0,63 ** (0,21 )                    | -0,77 ** (0,24 )                            | -1,24 *** (0,26 )                                |
| Technological capability <sup>a</sup> | -0,14 (0,08 )                       | -0,18 ^ (0,10 )                             | -0,27 ** (0,10 )                                 |
| FMNE X Technological capability       | 0,21 ^ (0,11 )                      | 0,25 * (0,12 )                              | 0,45 *** (0,13 )                                 |
| Size <sup>a</sup>                     | 0,18 ** (0,07 )                     | 0,12 (0,08 )                                | 0,21 * (0,08 )                                   |
| Age <sup>a</sup>                      | -0,15 (0,12 )                       | -0,01 (0,13 )                               | -0,38 ** (0,14 )                                 |
| Marketing spending <sup>a</sup>       | 0,07 (0,07 )                        | 0,06 (0,07 )                                | 0,07 (0,08 )                                     |
| Product design and adaptation         | -0,10 (0,21 )                       | 0,33 (0,23 )                                | -0,14 (0,24 )                                    |
| Local sourcing                        | -0,12 (0,21 )                       | -0,10 (0,22 )                               | 0,18 (0,23 )                                     |
| Local sales                           | 0,18 (0,21 )                        | 0,19 (0,22 )                                | 0,11 (0,24 )                                     |
| Service industry                      | 0,35 ^ (0,21 )                      | 0,25 (0,22 )                                | 0,25 ^ (0,24 )                                   |
| Knowledge intensive industry          | 0,08 (0,19 )                        | 0,29 (0,21 )                                | 0,06 (0,23 )                                     |
| Country R&D intensity                 | 0,16 (0,11 )                        | 0,19 (0,12 )                                | 0,04 (0,12 )                                     |
| Constant                              | 2,79 *** (0,61 )                    | 1,83 ** (0,70 )                             | 3,72 *** (0,70 )                                 |
| R <sup>2</sup>                        | 0,1284                              | 0,1563                                      | 0,2193   |
| F-value                               | 2,48 **                             | 2,84 **                                     | 3,86 ***   |
| Maximum VIF                           | 1,45                                | 1,42  | 1,49   |
| n                                     | 215                                 | 197   | 178  |

Significance levels ^  $p < 0.1$ ; \*  $p < 0.05$ ; \*\*  $p < 0.01$ ; \*\*\*  $p < 0.001$

Note: Standard errors are in parenthesis; tests are two-tailed

<sup>a</sup> Natural logarithm-transformed variable, in order to reduce skewness