

Missed Connections: Exclusionary Network Dynamics and Enclave Formation among Multinational Foreign Investors

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ABSTRACT

Despite the widespread expectation that foreign direct investment should transfer ideas and technologies to small enterprises in host countries, it often fails to do so. Dominant analyses attribute knowledge transfer failures to host-country conditions, neglecting social dynamics that shape multinational enterprises' (MNE) decision making, when considering operations in the host country. We contend that these dominant explanations ignore relational factors that economic sociologists have long found to condition market interactions between organizations, but have been incompletely considered by economic geographers. In particular, MNEs' pre-existing business networks shape their decisions about how they mitigate the uncertainties and risks inherent to foreign investment. In-group dynamics, network inertia, and closure discourage multinationals from engaging local firms in favor of establishing and perpetuating foreign enclaves that severely limit knowledge transfer to regionally agglomerated host country firms, irrespective of their capabilities. The formation of foreign enclaves with limited informational contact with domestic enterprises is thus a predictable default outcome of foreign direct investment activity and a fundamental cause of the failure of technology transfer. Extending previous studies of business networks to account for the relational dynamics of MNEs, we offer an understanding of an important puzzle about foreign business enclaves as well as providing further basis with which to understand the causes of the spatially unequal distribution of productive technologies globally.

Keywords: networks, economic sociology, economic geography, clusters, enclaves, multinational enterprises, technological change

Policy makers and academics have long considered foreign direct investment (FDI) a key mechanism for fostering economic development (Bandelj 2009; Buckley et al. 2002; Kee and Tang 2016; Rodrik 1999; Wei and Leifner 2012). FDI promotion policies have been predicated on the notion that FDI will facilitate developmental leaps through technology transfer (Goldemberg 1998; Singh 1999; Tan and Meyer 2011; Thompson 2002). These policies have intellectual roots in claims like those of Paul Romer that multinational enterprises (MNEs) “play a special role as the conduits that let productive ideas flow across national borders” (1993, 544). MNE investment should provide access to leading technologies, ideas, and management skills, solving the “object gaps” (lack of capital goods) and “idea gaps” (lack of skills and technologies) that constrain the development of host country firms, especially small and medium enterprises.

For economic geographers, “being there” (Gertler 2003) has also played a critical role in narratives about both “geographically mediated knowledge spillovers” (Feldman 1999) and the location-based knowledge benefits (Cantwell 2017; Frigon and Rigby 2024). There is broad agreement that agglomeration can provide learning benefits to clustered firms, but that the nature of proximity between firms matters greatly (Boschma 2005) as do multiple other factors. While economic geographers have made strides in understanding what multinationals get from investing in particular locations, there are significant gaps of understanding around what they contribute back to the locale.

There is a fundamental reason to doubt the role of MNC subsidiaries as information conduits to clusters in host countries capable of promote long-term technology acquisition by local firms. Frigon and Rigby's (2024) findings suggest that subsidiaries engage “heterogenous knowledge assets” in their host locations; however, studies like Guiliani's (2008) document that with MNCs, those knowledge assets likely inhere in other foreign—rather than domestic—

organizations. In other words, they tend to not “be there” in the right way for domestic enterprises to learn from them. Indeed, the empirical evidence for positive technology transfer is decidedly mixed. Knowledge and technology transfer benefits are found in some cases, but other studies find FDI has no influence or even reduces local firms’ capabilities (Carkovic and Levine 2005; Lema et al. 2018; Narula and Driffeld 2012; Tan and Meyer 2011; Zhou et al. 2002; Bermejo Carbonell and Werner 2018). Scholars examining the source of learning and knowledge transfer failure have concluded that unfavorable host country conditions are the primary barriers to local enterprises’ successful *reception* and use of technology (Buckley et al. 2002; Tan and Meyer 2011). Analytically, this a defensible conclusion; after all, if MNEs already have organizational capabilities and have mastered certain technologies, failure to learn from their example should be due to host country actors who could not put those lessons into action.

Although studies that focus on host country conditions have revealed much about the dynamics of technology transfer, the causal story they tell—even in the aggregate—is at best incomplete. Thus, if most current research asks, “Why do host country firms not learn from the MNE?” We argue that the prior question that needs to be asked is, “Why do MNEs interact in manners that make learning difficult or unlikely?” And we contend that the social and relational factors that condition MNEs’ actions are key to answering it. If MNEs are indeed critical agents of the transmission of capabilities and technologies—and all available evidence confirms that they can be—the analytical emphasis on the recipient firms seems to ignore the role of MNE subsidiaries as repositories of transmissible ideas and technologies. While features of local interlocutors do matter, MNEs’ are organizations embedded in networks of other firms and their decision-making processes are a necessary part of a complete accounting of successful or failed local learning. In particular, analytical attention should be directed to i) MNEs’ internal

deliberative processes and ii) how existing inter-firm relationships condition MNEs' perceptions of the host country environment, shape their consequent decisions, and ultimately hinder technology transfer to host countries. Drawing upon well-established scholarship in business networks, we offer a bridge between the scholarship on foreign investment and international business, technology transmission, and relational economic geography.¹

Specifically, we argue that the way in which manufacturing MNEs select business partners creates a tendency to form a particular kind of network—foreign enclaves—in which MNE subsidiaries import key inputs or source primarily from other co-located MNE subsidiaries rather than engaging extensively with local firms (see Tan and Meyer 2011). The mandate to lower informational costs and mitigate perceived risks discourages MNEs' host country subsidiary managers from forging links that spread knowledge to host country firms (Murphree et al. 2022). The dynamics of MNEs' existing business networks and standard risk-mitigation practices make limited close engagement with the host economy the *default tendency* of MNEs. After multinational enclaves form, they prevent information transfer for reasons that are not uniquely related to pathologies of the host country or MNE parent company strategies (Aitken et al. 1997; Hirschman 1958; Kokko 1996; McIntyre et al. 1996).

To understand the phenomenon of enclave formation, we focus on how the behaviors of MNE subsidiaries are conditioned by their existing organizational relationships. We show that the dominance of the host pathology view of technology transfer rests upon an “undersocialized” understanding of MNEs' organizational behavior (Granovetter 1985). This perspective is part of broader “relational” turn in the scholarship on FDI (Bandelj 2020). In general, relational

¹ See Frigon and Rigby (2024) for another recent effort to link streams of literature from international business and economic geography.

arguments emphasize that—like other economic activities—the drivers and consequences of FDI are embedded in existing social relationships (Zelizer 2012; Bandelj 2002, 2009; Hoang 2018). This relational approach has also emerged explicitly in economic geography (Qiu 2005; Yeung 2015). Bandelj (2008) demonstrates that decisions to invest in given locations are conditioned by existing social relationships, rather than neutral assessments of risk, such as those informing the parent company’s strategy.

Our complementary argument—focusing on learning rather than investment *per se*—is that existing business networks affect MNE subsidiaries’ calculations of uncertainty and risk, inclining them toward action within existing network relations. This makes enclave formation and lower-than-expected knowledge transfer to local SMEs the default—though not inevitable—outcome of foreign investment. Network relational dynamics such as those discussed here have been developed in theoretical writings and identified in other empirical settings. For example, business networks may increase local economic resiliency, lower transaction costs, and promote innovation within regional clusters. However, they take on a different role in the context of international markets.

In the context of foreign investment, understanding relational factors is critical because of the scale and nature of FDI’s potential effects (Jorgenson et al. 2007; Li et al. 2021). In terms of scale, foreign investment is one of the single most noteworthy activities in in the global economy; in the 2010s, annual flows of foreign investment totaled around USD 2 trillion (UNCTAD 2021), equivalent to two percent of the aggregate global economy. In terms of impact, foreign investment constitutes a global network for the potential spread of technologies and capabilities for enhancing productivity, health, and well-being. In this respect, FDI has the potential to improve standards of living, particularly those in developing or middle-income

countries, as Romer (1993) accurately deduces. Numerous late-industrializing countries built the foundations of their economic growth on learning from imported foreign technologies (Amsden 2001).

With these stakes in mind, our theoretical argument highlights the need to foreground the processes used by MNEs in selecting partners and suppliers and identifying their perception of risk, the availability of information, and the search process.

Conceptually, scholarship of foreign investment and technology transfer and learning will return biased outcomes if the relational concerns of MNEs go unaddressed. And for policy makers, this more socialized view of MNEs refocuses the study of investment on organizational behavior and casts further doubt on notion that technology will spill over from MNEs if the local conditions are right. The implication for host government policies is the need to move beyond policies meant solely to attract MNEs and adjust local conditions to fit neoclassical ideals, to focusing on creating low-risk opportunities and sustained networks between MNEs and local suppliers.

HOST COUNTRY PATHOLOGIES AND TECHNOLOGY TRANSFER

Despite general agreement that the nonrivalrous nature of technology enables the transfer of technical and organizational insights from MNEs to host country individuals and firms, the realized knowledge benefits of FDI for host countries are widely debated (Carkovic and Moran et al. 2005; Lema et al. 2018; Narula and Driffeld 2012; Crespo and Fontoura 2007). Signs of knowledge transfer exist, but most often the findings are equivocal: divided by industrial sector (Aghion et al 2009), qualified by ownership type (Javorcik 2004), disaggregated over time (Merlevede et al. 2014), lacking a comparison of the cost of incentives (Haskel et al. 2007), and

so on. Lack of clear evidence for positive technology spillovers was once called “sobering” for countries seeking FDI-led productivity growth (Rodrik 1999). It remains so today: for many developing, and even developed, countries, decades of policies to attract foreign investment have been accompanied by uneven industrial upgrading, stagnant rates of productivity growth, and limited local learning. The presence of MNEs’ subsidiaries has even been identified as causally related to the “middle-income trap,” a condition in which host countries suffer from plateauing rates of growth and eventual stagnation, rather than increasing technological capacity and productivity (Doner and Schneider 2016, 2020).

If MNE subsidiaries are natural knowledge conduits, why is the knowledge they embody not spread? The gap between anticipated and actual levels of knowledge and technology transfer has given rise to many explanations. However, predominant explanations share an assumption that the causal factors of weak or absent knowledge spillovers are *products of the host country and its firms*. These explanations identify factors ranging from cultural characteristics to local business relations and legal institutions. This “host pathology” approach to understanding the poor transmission of ideas and technologies assumes the receiving region or firm is the source of failure.

There is variation in the degree to which these host pathology explanations identify barriers as independently inherent in host countries or as existing in relation to MNE subsidiaries. At one end of the spectrum are studies that trace transfer failures directly to the (un)suitability of existing host country conditions: sociopolitical stability, infrastructure, bureaucratic effectiveness, and legal institutions, among others. These features are ostensibly controllable—and improvable—by the host country government. For example, many countries are identified as having weak market economic institutions, which disincentivize MNEs to share

knowledge for fear of loss (Carney et al. 2009; Khanna and Palepu 1997; Khanna and Rivkin 2001). Emerging economies, in particular, are noted for extensive “institutional voids,” including a lack of government capacity for guarding against opportunistic behavior by firms or other government units (Doh et al. 2017; Sethi and Guisinger 2002; Sheng et al. 2011; Tan and Meyer 2010). A host country’s failure to demonstrably enforce intellectual property rights, for example, might account for an MNE’s unwillingness to develop supplier relations with local enterprises, as suppliers could, with little risk of legal consequences, appropriate shared designs and technologies.

The implications of these arguments are clear: it is incumbent upon host country and government to provide social and legal institutions that facilitate international business operations. When those conditions are met, international investment should flow more naturally into the region and result in greater knowledge and technology spillovers. This view is consistent both with the neoclassical economic notion that a government’s role is to provide market-facilitating stability and with the policy prescriptions that commonly emanate from international trade and investment organizations. For instance, the World Economic Forum focuses on countries’ establishment of an “enabling environment,” which includes transparency and consistency in government institutions and policy conditions that offer investment protection and low barriers to trade and investment (WEF 2021). The “enabling environment” perspective is the most explicit in identifying host country pathologies as the root of technology transfer failure.

Several other frameworks for the failure of technology transfer do not lay causality at the feet of the host country government quite so explicitly. These explanations focus on combinations of unsuitable local conditions and firm or technological features that inhibit local enterprises’ ability to serve as partners for MNE subsidiaries. This mismatch prevents MNE

subsidiaries from being the effective tutor or informational conduit that they might otherwise be if conditions were sufficiently complementary. The notion of a mismatch shifts—or appears to shift—the explanatory factor from exogenous features of the host country to the interaction between local firms’ and MNEs’ capabilities.

Absorptive capacity is the most common perspective on mismatches that prevent technology transfer from MNEs to host countries. Cohen and Levinthal (1990) based their concept of absorptive capacity on the idea that learning and innovation require a complementary internal knowledge base to facilitate the recognition, assimilation, and application of outside knowledge. Less technologically advanced firms in host regions struggle to learn from MNEs, even when supplier relations exist. Absorptive capacity remains a central concept in research on the management, transfer, and use of knowledge by, within, and from MNEs, especially as relates to the characteristics of the host region (Berchicci 2013; Fabrizio 2009; Robertson et al. 2012; Schweisfurth and Raasch 2018; Cuervo-Cazurra and Rui 2015; Lewin et al. 2020). Barriers to absorptive capacity include incentive structures, information asymmetry due to gaps in technology capabilities, managerial biases, and weak social integration. These internal features of host country firms—especially in the context of an environment that accentuates challenges to absorptive capacity—constrain knowledge spillovers. Even in developed countries, absorptive capacity is arguably based on the availability of third-party knowledge broker firms between international knowledge sources and host country firms (Karlsen et al. 2022).

Although the notion of skills complementarity theoretically identifies the mismatch itself as the pathology, in practice the mismatch is treated as a failure of host country firms—and local human capital development. Returning to foundational thinking about absorptive capacity, Cohen and Levinthal write that firms populated by employees without a complementary

educational background lack “the requisite technical knowledge to respond proactively to opportunities in the environment” (1990, 138). The focus here is clear: it is up to local firms and workers to develop the “requisite” capacities; otherwise, they will be unsuitable for learning from MNEs. This perspective can be distinguished from the “enabling environment” view by its ostensible focus on the mismatch per se between the technologies used by MNEs and the skills possessed by host region firms—rather than on the characteristics of the local environment alone. That said, where technological spillover does not occur, this is largely a distinction without a difference: the logic of absorptive capacity implies that host country enterprises lack the ability to absorb readily transferable knowledge.

A second type of mismatch is the “cultural distance” between host country workers and MNEs. Central to this perspective is the notion that cultural distance in language, religion, ethnicity, values, norms, and dispositions inhibits knowledge transfer (Datta and Puia 1995; Ghemawat 2007; Schoenberg 2004). Even when knowledge is explicitly transferred in a classroom environment, cultural distance can hinder transfer and absorption (Ambos and Ambos 2009; Javidan et al. 2005). Studies on the knowledge and innovation performance of MNE subsidiaries and acquisitions commonly state that the cultural distance between the home and host country determines much of the performance (Qin et al. 2017). This cultural gap, however, is framed in terms of how much host country firm (for acquisition) or environmental norms (for subsidiaries) differ from those in the MNE’s home country. Differences in the norms are identified as the cause of the failure or subpar performance. In contrast, if the cultural distance is minimal, then the MNE need not change, and knowledge transfer performance is higher. The fundamental problem is that the host country differs from the MNEs’ home country. Wherever the home region of the MNE, the distance impedes performance (Li et al. 2016). Poor

performance is particularly observable in the period immediately following cross-border acquisitions (Chakrabarti and Jayaraman 2009). As with absorptive capacity, this perspective ultimately places the blame for failed spillovers of knowledge on the host region for its differences from the MNE's home region.

Finally, an existing network perspective is that the resources available to domestic firms through *their* own local network relations determine their capacity to absorb new technologies. These arguments point to the way in which local firms' social networks shape their capacity to learn from the presence of MNEs. In a study of Argentine auto parts production, Corredoira and McDermott trace upgrading to "the ways in which the organizational and institutional networks help firms integrate imported advanced practices with a variety of experiential knowledge" (2014, 700). This argument harkens back to Marshall's concept of "industrial districts," in which regionally shared informational resources and human capital make firms more productive, innovative, and better able to learn (1890); more nuanced versions point out the heterogeneity of local networks rather than a blanket effect (Giuliani 2013). Extensions of this argument find that, in the presence of foreign technologies, host country firms embedded in these kinds of beneficial communities are more likely to be able to learn and master technologies that are new to the region. Isolated enterprises, by contrast, are more likely to lack the human and nonmarket resources that can facilitate learning. Beneficial local networks have been identified as both connections between firms and linkages between firms and local business associations, government and education agencies (McDermott and Corredoira 2010; Corredoira and McDermott 2014). Although this perspective is highly sensitive to firm networks, the networks that matter most are those that already exist among host country firms and organizations. Thus,

the pathology or mismatch is fundamentally about host countries' failure to offer the kinds of cluster resources that would enable domestic firms to learn effectively.

Each of these “mismatch” perspectives is ostensibly more bidirectional than the “unsuitable conditions” arguments that focus solely on conditions such as host country institutions. However, each still implies that the fundamental barrier preventing technology transmission inheres in the host country. Even when the difficulty in transmission is traced to a condition as seemingly neutral as a mismatch of culture—which could be understood as a shared problem—the implication is that the fundamental problem at the center of the mismatch is still that the host country conditions are not appropriate for knowledge transmission from MNEs. For example, studies of ways in which regions can improve their indigenous firms' absorptive capacity are numerous. Entire management programs have been built around the idea of reducing cultural distance between foreign (largely Western) and local firms, managers, and employees. The fact that the onus is generally placed on host country governments, firms and industry groups is indicative of the degree to which host countries are understood—if not explicitly identified—as the source of the mismatch and subsequent technology transfer failures.

None of this is to suggest that institutional, relational, or technical conditions in host countries do not play a role in how MNEs make investments and whether technologies are disseminated. However, host pathology approaches to understanding failed diffusion do not fully consider the nature of information transmission, specifically that transmission requires not only possessors and recipients of ideas but also a relationship between the two through which ideas move. Everett Rogers's well-known expression of this idea is that diffusion is a process in which an idea or technology is “communicated *through certain channels* over time among members of a social system” (2005; emphasis added). Although Romer acknowledges the importance of the

larger point for which he and other endogenous growth theorists are recognized, his assertion that MNEs themselves are “conduits” is imprecise. This imprecision about senders and channels is echoed in the dominant host pathology approach to understanding failures in technology transfer. MNEs are not conduits so much as they are repositories of knowledge and technology. As repositories of information, it is critically important to examine MNE behaviors to understand how they shape the relation ties that shape would-be recipients’ access to their technologies and skills.

The focus on the formation (or nonformation) of the transmission ties between enterprises draws attention to the way in which MNEs’ existing relational networks shape their behavior. This ground is not untrodden. Mark Granovetter famously critiqued “undersocialized” economic views, which ignore social relations, and “oversocialized” institutionalist views, which attribute behavior to general norms of behavior, for their failure to take immediate social relations into account, treating actors as atomized. In Granovetter’s critique, economic actors—both individuals and organizations as congeries of individuals—are “embedded” in both a general social environment and within specific social relations. These “concrete, ongoing systems of social relations” provide more accurate insight into behavior than either assumptions about rational (even “boundedly” rational) action or broad social norms that affect behavior (1985, 487). Sociologists and organizational scientists have since broadly extended the insight that immediate network relations are the appropriate level of analysis for understanding the motivations for many business decisions. For instance, this insight has fruitfully shed light on the effect of network relations on the stability of firm relations (e.g., Uzzi 1997), selection of business partners (e.g., Hoang 2018), and transmission of technology between enterprises (e.g., Samford 2017). However, an area in which this insight has been underused is the role that

networks play in economic relations and the transfer of technology and knowledge across international borders – and the institutional and cultural settings they embody.

This is a notable oversight, as the promotion of foreign investment has been one of the unwavering recommendations for poor and middle-income countries: built on dominant neoclassical and New Growth economic theories, promoted broadly by international organizations such as the World Bank and International Monetary Fund, and enshrined in a growing number of trade and investment treaties. Given the predominance of the host pathology views outlined above, the prevailing conclusions for developing countries has been to alter something about themselves as hosts: prioritize “good governance,” raise levels of technical training and human capital, and teach language and cultural skills. To be fair, none of these is necessarily a harmful recommendation and, in some cases, may improve technology transfer. However, given the unevenness of observed technological spillovers, the focus on local pathologies and neglect of the decision-making process of the putative transmitters of ideas and technologies are faulty, both theoretically and as a basis for sound public policy. As we argue in the following sections, the establishment of subsidiaries in host countries by MNEs, like many other business decisions, is heavily mediated by their existing business networks. Unlike many other business decisions that have been studied, these decisions have critical impacts on the transmission of ideas across international borders and economic development broadly.

HOST PATHOLOGY VIEWS AND ATOMIZED CONCEPTIONS OF BEHAVIOR

Analytically, host pathology interpretations elide the question of how MNEs—the possessors of technologies and ideas—behave. Where explanations do touch on the drivers of MNE behavior, they tend to treat MNEs largely as atomized actors pursuing their chosen strategies. Although not

exhaustive, explanations of MNE behavior typically build on three types of assumptions which are operationalized in a highly undersocialized way: the availability of information, the perception of risk, and the nature of exchange. These explanations are broadly inconsistent with a network-oriented, relational understanding of organizational behavior.

First, informational assumptions underpin a great deal of the scholarship on the investment behavior of MNE subsidiaries and the extent to which they transfer technology. Specifically, analysts tend to assume that subsidiaries have reliable information about host country firms' capabilities. Their actions with respect to local firms are based on relatively accurate information about what skills and technologies they have or have not mastered (Murphree et al. 2022). Markusen and Venebles (1999: 338), for example, consider firms to be rational and "symmetrical," or identical, other than producing slightly different products. By this logic, a MNE subsidiary's decision to select a host country supplier or another MNE subsidiary as supplier is based on a well-informed, utility-maximizing comparison of their capabilities.

Following decision-making theorists such as March and Simon (1958) and others, scholars recognize the internal limitations of organizations as they perceive and process information. Information asymmetry stemming from perceptual limitations and the inherent inadequacies of the ability or willingness of organizations to access and process all available information are important characteristics of subsidiary behavior. These notions of rational organizational behavior—even when the internal "boundedness" of rationality is recognized (March and Simon 1958)—still regard MNE subsidiaries as atomized actors. Such a conceptualization of organizational behavior fails to consider the systemic ways in which existing network relations shape the availability and perceived reliability of information on

which organizations then act. The case for a more relational understanding—based on concrete local networks—is developed in detail below (Granovetter 1985; Bandelj 2008, 2020).

Second, atomized notions of how enterprises perceive and experience risk, underpin analyses of MNE subsidiaries; they do not adequately account for how perceptions of risk are shaped by network relations and how these perceptions, in turn, affect organizational behavior. These assumptions, however, run counter to the literature on firms as embedded in social structures that are dynamic determinants of how they experience risk (Nooteboom et al. 1997). Firms hedge against both risk—a calculable probability of failure—and uncertainty, an incalculable probability of failure. Contracting with previously known entities is one common way of reducing both the risk and uncertainty inherent in new relationships (Geffen et al. 2008; Murphree et al. 2022). Reducing risk by using known suppliers, however, limits opportunities for unknown local firms to establish exchange relationships with MNE subsidiaries.

Finally, many existing considerations of foreign investment tend to conceptualize firm relations as arm's-length exchanges, rather than considering business relationships as the summation of accrued interactions. A network-centered explanation, by contrast, would recognize that knowledge of suppliers or customers is the result of sustained relationships that lower informational costs of interactions. Ending an existing relationship entails costs, as does building new ones. Consequently, interorganizational networks are characterized by positive feedbacks and path dependence (Matsushashi and Min 2016). These dynamics are often overlooked. Markusen and Venebles (1999), for instance, assume that symmetrical firms have “free entry to and exit from” relationships, underestimating the entry and exit costs of commercial relationships. This assumption ignores the fact that commercial interactions are

embedded in social relationships that shape the costs—or perceived risks—of establishing, maintaining, or altering supply chain relations.

Part of analytically moving away from the host pathology paradigm is recognizing not only that the behaviors of MNEs as technology holders are critical but also that they are not atomized actors responding to a uniform set of external material or normative conditions. Looking beyond undersocialized assumptions about the availability of information, perceptions of risk, and the nature of business interactions, organizations make decisions about which actions to take while embedded in a very real set of social and business relations.

EMBEDDED MNES AND ENCLAVE FORMATION

We have argued that most approaches to the failure of technology transfer from MNE subsidiaries focus on 1) host country factors that undermine the power of agglomeration, and 2) considerations of MNEs that draw on atomized conceptions of their behavior. Our final contention is that considering how networks mediate the behavior of MNEs in their host countries not only is more analytically accurate but also helps explain failures of technology transfer. In sum, incorporating the relational bases of organizational behavior highlights what should be considered as the default tendency of MNEs irrespective of host country conditions: localized enclave formation.

How enterprises access, and adjust to, informational resources in their operating environment is an important lens for viewing the impact of existing network relations. More than domestic enterprises, MNE subsidiaries operate in novel environments where the availability of reliable information is limited, the cost of such information is high, and missteps can be particularly costly. MNE subsidiaries face an array of uncertainties and risks inherent to

operating overseas, including hazards with daily operations, supply chains, and logistics (Bane and Franz-Friedrich 1985; Shapiro 1983; Wilson 1980). Contracting new suppliers pose, for instance, poses uncertainty concerning their capacities, the reliability of input production, and the stability of prices (Aydin et al. 2012). The primary source of this uncertainty is asymmetric information about the likelihood of production disruptions, suppliers' actual cost of production, and suppliers' capacity to provide quality inputs (Yang et al. 2009; Chaturvedi and Martínez-de-Albéniz 2011).

MNE subsidiary managers naturally seek to minimize these informational challenges, and it is unsurprising that they do so through the prism of their existing organizational relationships. A relational approach to understanding the geography of enclaves of foreign investors—and the consequent failure of informational spillovers—highlights the importance of these business relationships and how they shape enterprise behaviors. Scholarship on business networks elucidates how the structure of relationships promotes information sharing, thus reducing information asymmetry between actors and offering opportunities to reduce uncertainty. Specifically, network relations affect the availability and cost of information, condition perceptions of risk, and generate positive feedbacks and inertia in terms of trust. For MNE subsidiaries, these relational factors play out in at least three highly consequential dynamics that inhibit subsidiaries from forming deep, technology-transferring relationships with local firms: i) in- vs. out-group dynamics; ii) a tendency toward network closure; and iii) network stability.

First, a variety of network analytical insights shed light on the implications of in-group/out-group dynamics in how firms select business partners or suppliers. The notion that in-group members are more likely to collaborate with one another than with out-group members is a well-established finding (Tajfel et al. 1971; Fu et al. 2012). Much of this scholarship is based on

the psychology of trust and bias; however, closer in-group relations among firms can also promote knowledge and information sharing about their goals, capabilities, and reliability and support organizational trust and cooperation (Powell 1990; Schrank and Whitford 2011; Samford and Breznitz 2022). These dynamics suggest that businesses prefer to select partners from their own in-groups—their existing supply-chain and industry partners—and face less risk in doing so because they have better information about these firms. At the extreme, out-group firms might share no ties with the in-group, making those organizations functionally opaque to in-group members. This lack of knowledge about their capabilities poses risks, decreasing their attractiveness as suppliers or partners, irrespective of their actual capabilities.

Even when in- and out-groups are less clearly defined, network theory has formalized thinking about more- or less-cohesive groups in a network. Cohesive subgroups are defined as “subsets of actors among whom there are relatively strong, direct, intense, frequent, or positive ties” (Wasserman and Faust 1994: 249; Alba 1973). These conduits between in-group members mean that knowledge and trust are typically greater *within* subgroups than *between* members and nonmembers. As the differential tie density and frequency of interaction grows, so does the information and trust gap between the actors. In a population of businesses, subgroup members—organizations with more intensive existing commercial or cooperative relations—have more frequent and substantive interactions with one another than with out-group businesses (Kim et al. 2006). Accordingly, information costs are lower and levels of confidence potentially higher among cohesive subgroups because of greater density, intensity, or frequency of interaction.

In this respect, existing business networks limit the options available to given actors as they search for satisfactory solutions from their local contacts (March and Simon 1958; Nelson

and Winter 1982; Mitsuhashi and Min 2016). Historical experience is a strong predictor of the limits of searches for solutions (March 1958; Stuart and Podolny 1996; Rosenkopf and Almeida 2003). When they lack existing ties, MNEs have minimal information concerning the capabilities of host country enterprises, and these local enterprises, in turn, lack understanding of MNEs' needs and their mutual concerns. Even when weak or indirect ties exist, they may not give MNEs sufficient confidence that partnering with local firms will not increase the risk for their subsidiary's performance. This lack of confidence is particularly troublesome given that FDI is already a high-risk activity (Bane and Franz-Friedrich 1985; Shapiro 1983; Wilson 1980). In sum, in-group firms with frequent or repeated interactions have lower information asymmetry, and a lack of knowledge about out-group firm capabilities reduces the incentive to pursue commercial relationships.

To illustrate, consider China, a country seen as having been successful at transferring knowledge and technology from foreign-invested to co-located local firms. Even in China, the in-group/out-group dynamic dampened knowledge transfer from foreign investment. In the Pearl River Delta—the first region opened to FDI, and one dominated by culturally and linguistically similar Hong Kong and Taiwanese firms—enclave formation is well documented (Yang and Liao 2010). Throughout the 2000s, Taiwanese firms remained highly insular, sourcing only the most basic components from host region firms (Murphree and Breznitz 2020). Even many of the ostensibly local firms supplying higher value-added components were actually Taiwanese or other foreign-invested enterprises incorporated in China to avoid bureaucratic impediments (Mao et al. 2004; Rolf 2019). Large Taiwanese manufacturers such as Delta pressured their existing Taiwanese suppliers to move to the region, rather than establishing connections with local firms (Liao 2009; Yang and Liao 2010). Many industrial areas developed integrated electronics

production chains that consisted entirely of Taiwanese firms sourcing from their existing partners, with little participation by host region companies.

A second relational dynamic that shapes enterprise behavior is the tendency to pursue network closure in commercial relationships, in which certainty, trust, and cooperation are prized for their ability to reduce risk and uncertainty. Repeat interactions and reciprocity are common in competitive markets, even where neo-classical economic theory assumes that most interactions should be “arm’s-length, one-shot engagements” (Rivera et al. 2010). Embedded repeat relationships exist, among others, between large corporations and financial institutions (Baker 1990), investment banks and other financial institutions (Podolny 1994), apparel producers (Uzzi 1996), and large law firms and their clients (Uzzi and Lancaster 2004). Firms cultivate close, repeated relationships with particular partners because those ties facilitate trust, tacit information exchange, and willingness to solve problems jointly. These existing relationships also imply past investment to establish standards and coordinate logistical detail (Hertz 2001).

The need for repeated interactions and subsequent network closure is more prevalent in commercial relationships that involve meaningful transfer of knowledge. In other words, if a large enterprise sought to purchase a standardized input from one of several potential suppliers, the situation might resemble a one-time, spot market purchase. Price competition would predominate, and little information would be exchanged. Guiliani (2008) documents this kind of relationship, in which local enterprises are selected to provide some basic inputs for electronics MNEs in Costa Rica. However, these commercial relations do not imply the exchange of technology or know-how. Instead, more-intensive informational relationships are formed between electronics firms and foreign headquarters (Guiliani 2008). Given the high risk of foreign operations and the necessity of highly efficient production chains, MNE subsidiaries are

likely to use network closure to create and maintain stable networks of known and trusted partners. Indeed, only half of foreign subsidiaries even report having a formal mechanism for identifying capable local suppliers (Kusek and Silva 2018).

The electronics manufacturing sector in central Mexico is illustrative of closed networks stemming from the relationships among the local managers of MNE subsidiaries. The liberalization of the Mexican economy in the 1980s attracted an influx of foreign electronics firms that intended to produce exports for the US market (Gallagher and Zarsky 2007). Foreign original equipment manufacturers' (OEM) subsidiaries in Mexico cooperated to entice contract manufacturers and suppliers with whom they had existing relationships to co-locate in Mexico. Many settled in the state of Jalisco. After their arrival, these foreign firms dominated both existing electronics trade associations (e.g., CANIETI) and established new industry associations (CADELEC) (Samford and Palmer-Rubin, n.d.). At the behest of these MNE subsidiaries, these business groups took steps to align their shared export operations and pave the way for the colocation of more foreign suppliers, providing local market information and advocating for incentive policies for foreign investors. While they facilitate continued relations between foreign firms, these kinds of efforts have prevented domestic firms from penetrating the supply relations of the foreign subsidiaries.

Finally, the overall stability and longevity of business networks is a phenomenon with important implications for foreign investors. Social networks tend toward continuity, although they are rarely completely static. Longitudinal stability in social networks is often attributed to relational mechanisms, such as reciprocity, repetition of interactions, and the presence of positive feedbacks. Rivera et al. (2010) distinguish relational mechanisms for network change from assortative mechanisms—such as the dynamics of homophily and heterophily—and proximity

mechanisms—such as shared physical location. The relational understanding of networks over time helps to explain why networks remain stable and tend toward network inertia even in the face of exogenous change (Kim et al. 2006). Relational mechanisms, most prominently repeated interactions, are associated with trust (Gulati and Gargiulo 1999; Uzzi and Lancaster 2004), cooperation and information sharing (Uzzi 1996), exchange (DiMaggio and Louch 1998; Uzzi 1999), and price differentials (Uzzi and Lancaster 2004). Hence, whereas assortative mechanisms may provide opportunities to access networks through contacts of contacts (Granovetter 1973), relational mechanisms create a tendency toward repeat interaction among known members, to the exclusion of others. Ultimately, these feedbacks create inertia or path-dependent behaviors, as the tendency toward iterated actions creates increasing, rather than diminishing, returns. Whether the benefits are actual or perceived, the resulting positive feedbacks help explain why firms generally prefer to extend existing relationships rather than form new ones, even when maintaining existing relationships might be disadvantageous (Mitsuhashi and Min 2016).

The inertial weight of these networks is demonstrated by, for example, the continuity of the supply networks of US automotive companies in Canada. In 1965, the US and Canada adopted an “Auto Pact,” which was intended to open the Canadian market to US automotive production and stimulate contact and upgrading with Canadian auto parts suppliers. The “Big Three” (Ford, GM, and Chrysler), and their existing suppliers, responded by expanding operations in southern Ontario, a high-skill, culturally similar, and institutionally stable location close to Michigan-based OEMs. Consequently, by the late 1970s the export value of assembled automobiles from Canada with US brands had expanded nearly tenfold. However, this increase occurred within closed production networks. After establishing factories in Canada, the Big

Three's US-based first-tier suppliers dominated auto parts production. OEMs had strong leverage over their supply-chain partners, with whom they had long-term relationships (Herrigel 2004; Rutherford and Holmes 2008). Lacking these long-standing ties, Canadian suppliers were relegated to producing low-value-added inputs for these suppliers. As suppliers of suppliers, they were excluded from "strong linkages and knowledge flows" with OEMs because this transfer occurred primarily through their direct contracting and component provision (Rutherford and Holmes 2008, 532). Despite low knowledge barriers due to cultural and institutional similarity and geographic proximity, inertia ruled and "automotive OEMs were not aware of the presence or capabilities of even globally successful, [Canadian] firms" (Rutherford and Holmes 2008, 532). Nor were they particularly interested in looking for capabilities outside their existing networks.

Observable even in contexts with as seemingly low risk as US auto companies shifting assembly to southern Canada, the motivation for maintaining stable business networks is heightened in situations in which the conditions are uncertain. Given the risk and high costs of forming new local relationships, positive network feedbacks are particularly meaningful for new MNE subsidiaries. Indeed, after MNEs establish a stable network of suppliers in their home country, they actively replicate it abroad, demanding that their suppliers move with them. Although this might increase overall FDI flows, it severely limits the ability of local companies to join those networks, reducing potential conduits for information flows from MNEs to local companies.

The recent trend toward "friend shoring"—locating production facilities in (geographically proximate) allied countries rather than economic rivals—illustrates the ubiquity of network inertia's impacts on MNE behavior. Since 2016, advanced battery and semiconductor

manufacturers in South Korea and Taiwan have been encouraged to open new production facilities in the United States. However, these MNEs have not developed new supplier and sourcing relationships in the US. SK Innovation's electric vehicle battery plant in Georgia has not attracted complementary local or international investment; indeed, "co-located" foreign investment mentioned in the media takes place over 100 miles away (Schilling 2021a, 2021b). Rather, the company imports the necessary components from its existing home-country suppliers. In Arizona, a new TSMC semiconductor manufacturing plant has attracted co-located suppliers, but these are existing TSMC suppliers from Taiwan (Betz 2021). Even in the world's most developed economy, which has strong market-conforming institutions, MNEs view risk reduction and maximization of the chances of success through the lens of their existing, closed groups. Apart from the creation of construction jobs and the sale of product output in the US, foreign MNE subsidiaries and local enterprises have little economic connection, thus limiting potential knowledge transfer and upgrading of capabilities.

We propose that, taken together, these insights account for why MNE subsidiaries tend to form enclaves: rather than building commercial relationships with unknown local, host country firms, they continue working with existing partners, by either importing inputs or co-locating with legacy suppliers. Existing suppliers have known capabilities and trusted procedures for working with the MNEs, whereas host country firms remain sources of uncertainty. To reduce risk, MNEs that open or retool overseas operations can be expected to prefer replication of existing supplier networks to development of new ties with host country firms. After host country enclaves emerge, network inertia and positive feedbacks from those relationships entrench them over time, prolonging isolation from the host economy. In the absence of

relationships with local firms, knowledge transfer relies on the training and movement of individuals and is far less likely to occur.

This is not to say that learning relationships and technology transfer never occur between MNE subsidiaries and their host country interlocutors; we acknowledge cases where MNCs have avoided the restrictive relational pressures we identify. Rather than gainsaying, these cases are consistent with our broader claim as these non-enclave outcomes can often be traced to settings in which the investor's need to work with host country interlocutors outweighs the risk of loss. One particular setting is when the intent of the MNE's investment is not resource- or efficiency-seeking alone, but rather is intended to provide access to local consumer markets for MNE products or services or to learn from local firms. These latter forms of investment – so-called market-seeking or technology-seeking (Dunning and Lunden 2008) – are made with the understanding that learning from host country firms and consumers is strategically necessary. MNEs must offer goods and services that meet the needs and preferences of local consumers and adhere to local legal standards and behavioral norms (Herrigel 2018; Herrigel et al. 2013; Brandt and Thun 2010). In network terms, rather than maintaining a closed set of bonding relations associated with efficiency and risk reduction, the need to draw on the experience of host country actors raises the need for bridging ties to access novel information that is embodied locally. Gary Herrigel's (2013; 2018) studies of German automotive and machinery firms operating in China provide examples. These MNCs invested in China with both the intention of selling into the local market and an experimentalist governance architecture that acknowledged the need to develop products in conjunction with local interlocutors who understood manufacturing parameters and product markets. The resulting “iterated transfer and exchange” (2018; 369) was ultimately a learning process that benefitted the MNCs' manufacturing processes in China and globally. The

departure in cases like these supports the notion that network dynamics underpin the tendency toward enclave formation: unless investment strategy mandates bridging, enclave formation remains the default tendency.

CONCLUSION

Relational factors influence where (Bandelj 2002, 2009) and how (Hoang 2018; Qiu 2005; Yeung 2015) foreign investors invest. We have illustrated that relational dynamics can also shape with whom they form partnerships and that, in the context of the study of FDI and local knowledge spillovers, the choice of suppliers by MNE subsidiaries is particularly important. If MNE subsidiary behaviors are conditioned by relational factors, the characteristics of the host country become less central to whether technology transfer occurs or not. That is, the natural inclination toward forming foreign enclaves holds true irrespective of whether a host country has more or less absorptive capacity or business-friendly institutions. Although the factors highlighted by the host pathology views of technology transfer are likely to play a role after an MNE has identified which local firms it will engage with, the identification of partners or suppliers by MNEs occurs first. And the very nature of enclaves of foreign companies leads to fewer (and less informationally significant) connections to local enterprises.

Our argument offers a conceptual bridge between relational economic sociology, economic geography, and studies on knowledge transfers associated with foreign investment. Most current research follows the logic of host pathology explanations, seeing MNEs as generally ready transmitters of technologies, whose benefits go unrealized because of difficult or inappropriate conditions on the ground at sites of investment. Although these studies indicate serious concerns, in this paper we highlight the need to account for organizational agency and the motivations and behavior of MNEs themselves (Quark et al. 2020). Foreign investment is no

different from other well-studied forms of economic activity in being embedded in, and conditioned by, social relations. Thus, the inclusion of the dynamics of MNE business networks is analytically appropriate and offers meaningful insights into the tendency for foreign firms to be poor transmitters of technology across international borders. The relational emphasis helps make sense of the widespread prevalence of enclaves and proposes that enclave-forming behavior be anticipated as the natural outcome of foreign investment, rather than an aberration or the consequence of local failings.

The context in which we propose that these relational mechanisms condition the behavior of MNEs is novel and highly consequential—both theoretically and in practice. Considerations of these dynamics have been studied in more limited settings (e.g., the fashion industry; Uzzi 1996), but they are still underdeveloped in studies of FDI and technology transfer. The stakes for understanding the consequences of organizational relations in FDI with respect to global economic development could scarcely be higher. Although MNEs might not be conduits for the knowledge and technology transfer precisely as proposed by Romer (1993), there is longstanding agreement that their presence at least offers individuals and firms in host countries the potential for learning (Marshall 1920). The importance of understanding how the MNEs facilitate—or fail to facilitate—the transmission of technology is illustrated by the extent to which MNEs establish subsidiaries outside their home countries, the range of countries that promote foreign investment as a means of gaining access to foreign technologies, and the influence of international organizations that encourage FDI as a ladder for development. Understanding the natural tendency toward enclave formation could also help MNEs alter their strategies if they wish to benefit from the capabilities in a co-evolving host region (see Frigon and Rigby 2024).

Linking the absence of technology transfer to network dynamics also reveals a policy imperative for host countries: the need to follow up FDI attraction with policies to foster local network embeddedness. Interventions that seek to mitigate the natural tendency toward enclave formation should incorporate an understanding of how MNE executives perceive the risks, uncertainty, and costs inherent in identifying and establishing local partnerships. Networking interventions are markedly different from interventions that seek to raise regional absorptive capacity or improve institutions of economic governance (Samford and Breznitz 2022). Linkages can be formed between MNEs and local firms at the personal or firm level, offering multiple options for policies that aim to reduce information asymmetry and help MNEs to become aware of local capabilities. However, current World Trade Organization rules limit the degree to which governments may use local content or joint-venture requirements to influence MNEs' sourcing and investment decisions. Hence, policies need to be carefully and narrowly targeted, which could make them difficult to implement.

Including the choices and decision-making process of a networked MNE in the study of international knowledge transfer also indicates areas for further study and sheds light on previous findings. For instance, along with the findings around market- and technology-seeking investment, one consistent finding is that productivity increases due to FDI-based knowledge transfer occur when subsidiaries are joint ventures (Javorcik 2004; Javorcik and Spatareanu 2008; Smarzynska 2004). Joint ventures source a larger volume of inputs from local firms than do wholly owned MNE subsidiaries. Despite making this observation, these studies do not reveal the mechanism through which joint ventures have more backward linkages. The network perspective suggests that local owners in joint ventures have existing relationships with the local business community. This reduces the information asymmetry facing the MNE partner and

mitigates the risk of selecting local suppliers because their capabilities are now known. The knowledge of the opportunities and capabilities of the local production chain reduces the risk perceived by MNE subsidiaries. This encourages local sourcing and contract relations, thus increasing local learning and upgrading. Rather than undermine our argument about the tendency toward enclave formation, positive examples of knowledge transfer such as this are likely to be situations in which network dynamics help mitigate MNEs' separation from local SMEs.

Most fundamentally, our framework calls for focused empirical attention on which organizational features shape the perceptions of risk and closure of existing MNE networks. We expect these dynamics to differ across sectors (Giuliani 2008; Giuliani 2013) and MNEs home countries, so confirmatory work should concentrate on comparative intra-industry relations. The second clear empirical direction is to look within organizations, which have several factors that condition their willingness to embrace local partners. For example, are subsidiary executives from host countries less likely to embrace an enclave strategy because they have broader local networks? Or does greater managerial latitude at subsidiaries facilitate greater risk-taking with local suppliers? Finally, research suggests that emerging economy FDI behaves differently from developed country FDI. Our argument suggests that, by reducing risk through reliance on in-group business contacts, investors from emerging countries behave just like developed country MNEs. Accordingly, the tendency toward enclave formation in South-South MNE investment would be a rich avenue for future research and would help expand understanding of emerging market MNEs.

As research in economic geography on international technology transfer advances, it is important for expectations about FDI to be revised to explicitly include decision-making processes by MNEs because they are the risk-mitigating consumers of technologies, rather than

the suppliers of those technologies. Like other economic actors, foreign investors are embedded in networks that mediate their behaviors. More comparative research is needed to achieve a full understanding of when and through which mechanisms those conduits are created.

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