



Completion of high-tech M&As by chinese firms: knowledge distance, industry attractiveness and government involvement

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Abstract

This paper draws upon institutional theory to incorporate the multi-level influences of institutional environment (i.e., knowledge distance at the country level, industry attractiveness at the industry level, and government involvement at the firm level) in order to examine the determinants that affect acquisition completion. Based on a sample of 797 outward M&As in the high-tech industry initiated by Chinese firms from 1991 to 2018, we found that the likelihood of completing an acquisition increases when the knowledge distance between China and the host country decreases and in the presence of a high attractiveness of the Chinese high-tech industry involved. In addition, we found that government involvement in the acquiring firms has different influences from that in the target ones on the likelihood of acquisition completion. Specifically, we only found that the likelihood of acquisition completion decreases in the presence of government involvement in the target firm. The influence of government involvement in the acquiring firms on acquisition completion was not significant. The implications of this study of high-tech M&As enacted by firms from emerging markets are thus discussed.

Keywords Acquisition completion · Outward M&As · Chinese firms · High-tech industries

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Introduction

There has been a recent surge of outward mergers and acquisitions (hereafter referred to as M&As) initiated by firms from emerging economies such as China (Buckley et al., 2018). Many emerging market multinational corporations (EMNCs) have used outward M&As as a springboard to achieve quicker development by acquiring the strategic assets that they are unable to develop internally (Deng & Yang, 2015; Li et al., 2022a; Luo & Tung, 2007). This is particularly true for EMNCs in the high-tech industry¹, the acquisitions of which are designed to gain “*high-end, world-class technology, advance their R&D skills, bolster their innovation, upgrade their capabilities, and augment their ownership of technology*” (Luo & Tung, 2007, p.131). However, research suggests that the M&A completion rate of EMNC acquirers is significantly lower than that of acquirers from developed economies (e.g., Zhou et al., 2016). Such completion failures can result in substantial costs for prospective acquirers, including direct costs such as contract breaching penalties and indirect costs such as information leaks and reputation impairment (Luo, 2022). Therefore, it is important to understand the factors that determine the completion of outward M&As announced by EMNCs (Zhou et al., 2022).

Recent studies have substantially advanced our knowledge of the completion of EMNCs’ outward M&As by uncovering key determinants such as institutional quality of the host markets (Liou et al., 2016; Zhang et al., 2011), institutional distance (Zhou et al., 2016), acquirers’ past M&A experience (Zhou et al., 2022), and the liability of the state ownership of the acquirer (Li et al., 2019). Yet, little is known about whether these findings are applicable in the high-tech industry, which has unique features that link its development to a country’s economic growth, prosperity and national security (Luo, 2022). On the one hand, the development of the high-tech industry is a key driver of a country’s competitiveness (Evenett, 2019), because a nation’s economic success can be determined by “how well that nation innovates, diffuses, and harnesses technology (Luo, 2022, p. 550)”. On the other hand, Luo (2022) has identified “an emerging strain of geopolitical thinking and actions that link technological capabilities directly to a country’s national security and geopolitical benefits” (p. 551), which intensifies recently surged global protectionism and US-China decoupling (Witt, 2019a; Witt et al., 2023) and results in growing regulatory restrictions or government scrutiny on high-tech M&As by Chinese firms. For instance, in 2017, President Trump vetoed the purchase of Lattice Semiconductor, an Oregon-based chip manufacturer, by a Chinese private-equity firm due to the potential dual-use—civilian and military—of the target firm’s products (Bloomberg, 2017). The aggregation of such cases shows that high-tech M&As initiated by EMNCs are likely to raise multiple legitimacy concerns that would affect the likelihood of acquisition completion (Li et al., 2019). To better understand what determines the completion of high-tech M&As by EMNCs, especially by Chinese firms, it is imperative to consider

¹ We compiled multiple lists generated by legitimate agencies (e.g., AeA, BLS, Census, OECD) to capture those commonly identified as the high-tech industry, which includes the following first two-digits of SIC codes—28, 35, 36, 37, 38, 48, 73 and 87. Details of these codes are presented in Table 1.

what legitimacy concerns arise from the nature of the high-tech industry and how these concerns interact with each other.

Management and Sociology scholars highlighted the importance of legitimacy for organizations to be accepted in society and the pressures that society creates on the organizations (DiMaggio & Powell, 1991). These pressures drive companies to follow any established regulations and accepted behavioral norms in order to gain legitimacy (Cuervo-Cazurra et al., 2019; Scott, 1995). In their outward M&As, EMNCs find it particularly difficult to attain legitimacy because they are likely to simultaneously face the two significantly different sets of legitimacy requirements in their home and host institutional environments (Scott, 1995). Failing to cope with both these sets of legitimacy requirements may trigger resistance from key stakeholders whose objections may lead to the rejection of the proposed M&As (Kostova & Zaheer, 1999; Li et al., 2017). Recent literature suggests that Chinese acquirers must deal with a lack of legitimacy resulting from their late-comer status and technology liability (Zhang et al., 2018). Such legitimacy requirements could be even more challenging to be addressed in high-tech M&As, which are often considered by host country governments as closely linked to their national security (Hasija et al., 2020; Pickard, 2022). Thus, this study aims to explore whether and how these legitimacy concerns affect the completion of high-tech M&As by EMNCs.

Considering the complexity of the factors that affect the likelihood of completion of high-tech M&As by EMNCs (Gaur et al., 2018), we decide to take a multi-level approach, which “*is a systematic and integrative approach that helps uncover whether different levels of determinants are related to the acquisition completion while, at the same time, providing a basis for identifying the relative influence of these determinants*” (Yang & Hyland, 2006, p.382). Specifically, we use a strategy tripod framework (Peng et al., 2008), which proposes that EMNC activities should be viewed through multiple lenses—the institution-based view at the country level (DiMaggio & Powell, 1983; North, 1990), the industry-based view at the industry level (Porter, 1980), and the resource-based view (RBV) at the firm level (Barney, 1991). Our use of the strategy tripod framework responds to the calls to understand EMNCs’ outward M&As by going beyond firm level factors (Gaur et al., 2018; Ramamurti, 2012), and is underpinned by a legitimacy perspective (DiMaggio & Powell, 1991; Stevens et al., 2016) rooted in the organizational sociology-based view of institutions (Scott, 2001).

Specifically, at the country level, we argue that, in high-tech industries, the likelihood of acquisition completion will increase when the knowledge distance between the home (China) and host countries decreases. Knowledge distance, which refers to the difference between the home and host countries’ institutional environments in terms of their capacity to innovate and create knowledge, is a context-specific type of institutional barrier in high-tech M&As (Berry et al., 2010; Gaffney et al., 2016) that negatively affects the completion of high-tech M&As by EMNCs. At the industry level, we propose that the likelihood of acquisition completion increases when the home market is characterized by a high degree of interest in the high-tech industry. Despite that high-tech M&As are sensitive to national security concerns, the attractiveness of this industry is a source of imitation that increases the legitimacy of this action and thus the likelihood of acquisition completion (Ozmel et al., 2017).

At the firm level, we argue that government involvement in the target and acquiring firms should be separately examined because they might not necessarily affect the likelihood of acquisition completion in the same way. To empirically validate our arguments, we analyze 797 outward M&As enacted in high-tech industries by 602 Chinese firms from 1991 to 2018. We select Chinese firms because they are recognized as active players in the outward M&A competition, especially in the high-tech industry (Deng & Yang, 2015; Luo & Tung, 2007).

This study makes several important contributions to the literature. First, we extend the literature on the legitimacy of EMNCs' outward M&As to the high-tech industry. Previous studies focus more on the liability of emergingness and state-ownership of acquirers (Li et al., 2019; Zhang, 2022), ignoring the legitimacy associated with industry features. We fill this gap by highlighting how unique legitimacy concerns in this sensitive industry are addressed with empirical results. Second, unlike prior studies on the determinants of acquisition completion, which focus on the impact of either country- or firm-level factors, we borrow strategy tripod framework and adopt a multi-level approach to systematically uncover the factors affecting the completion of EMNCs' outward M&As. By doing so, we respond to the calls to understand EMNCs' international M&As by going beyond firm-level factors (Gaur et al., 2018; Ramamurti, 2012) and contribute to a better understanding of the key factors influencing the completion of EMNC strategic asset-seeking M&As. Third, deviating from the extant organizational learning literature, which emphasizes firm-level knowledge distance (e.g., Ahammad et al., 2016; Ai & Tan, 2018), we find that country-level knowledge distance is also significant in affecting the completion of EMNC high-tech acquisitions. This finding extends the literature on institutional distances by focusing on a context-specific type of institutional barrier—knowledge distance—which is much more relevant in the strategic-asset seeking M&As conducted by EMNCs. Fourth, by uncovering positive impact of the attractiveness of high-tech industry sectors on acquisition completion, we contribute to the literature of outward M&As by EMNCs by providing empirical evidence of the influence of home country factors at the *industry level* on acquisition completion. Finally, by separately examining the effects of government involvement in the acquiring and target firms, we shed light on the distinctive influence of government involvement in the two parties on acquisition completion, contributing to the understanding of the influence of government involvement in the literature of outward M&As by EMNCs.

Theory and hypotheses development

A legitimacy perspective of the completion of EMNCs' high-tech M&As

Legitimacy refers to the extent to which an organization's activities are perceived as “*desirable, proper, or appropriate within some social constructed systems of norms, values, and beliefs*” (Suchman, 1995, p. 597). Institutional theories emphasize that organizational actors are constrained and constructed not only by resources, but also by regulative, normative, and cognitive forces (Powell & DiMaggio, 1991; Scott, 1995). These three institutional forces offer distinct but related bases of legitimacy:

regulative legitimacy refers to laws and regulations; normative legitimacy emphasizes professional/industrial norms; and cognitive legitimacy focuses on the pre-conscious and taken-for-granted understandings that are widely diffused and deeply embedded in social settings, such as culture (Scott, 2001).

Gaining legitimacy is an important factor affecting the success of multinationals (Li et al., 2019). In international M&As, acquirers need to deal with the legitimacy hurdle related to the extent to which the actions of a prospective acquirer are perceived as legitimate or desirable by the relevant stakeholders (Li et al., 2017). Despite of the presence of legitimacy challenges in the post-acquisition phase (Hasija et al., 2020), overcoming those encountered in the pre-acquisition one is vital for the completion of the proposed deal (Teerikangas, 2012; Welch et al., 2019). This is because, during the period between the announcement of an M&A and the completion or abandonment of the deal, the acquiring and target firms are required to submit mandatory filings with securities regulators, seek the approval of antitrust authorities, and complete the negotiations (DePamphilis, 2009). At this stage, a deal can be terminated if it is unilaterally abandoned or blocked—either entirely or partially—by regulatory agencies such as government authorities or legislative bodies, or even withdrawn by the target firm (Greenwood et al., 2002). Therefore, acquirers actively manage the impressions of deals to fulfil the legitimacy requirements of these key stakeholders. Failing to do so may jeopardize the endorsement of those key stakeholders and thus threaten the likelihood of deal completion (Lehn & Zhao, 2006). Therefore, it is important to investigate the key factors that affect acquisition completion by influencing the legitimacy concerns of the key stakeholders.

In their outward M&As, EMNCs find gaining legitimacy particularly problematic because of the additional institutional pressures they have to face in the host countries (Luo & Tung, 2007). Most EMNCs are at the early stages of internationalization; and as latecomers, they often lack experience in dealing with the significant regulatory, normative, and cognitive differences in host countries (Yang & Deng, 2017; Zhang et al., 2018). Moreover, an acquirer is often deemed more legitimate when it is equipped with superior resources and capabilities than its target firm (Ai & Tan, 2020; Teerikangas, 2012). Therefore, EMNCs' relatively lack of experience and capabilities in managing outward M&As would make them harder to gain legitimacy in the eyes of host country stakeholders. Recent studies suggest that, when acquiring firms in developed economies, Chinese firms tend to use various strategies to increase their legitimacy, such as building a good pre-acquisition organizational image (Ai & Tan, 2020) and cooperating with western co-investors (Zhang et al., 2018).

In the case of high-tech M&As, the extent to which these sectors are related to national competitiveness and national security accentuates the difficulties involved in gaining legitimacy for acquisition completion. On the one hand, a nation's economic success can be determined by "how well that nation innovates, diffuses, and harnesses technology (Luo, 2022, p550)". The development of the high-tech industry is thus a key to a country's competitive advantage, and M&As are considered by the technology innovation literature as one of the most important strategies adopted by high-tech firms to enhance their technology innovation (Cefis & Marsili, 2015; Cloudt et al., 2006) and invention performance (Makri et al., 2010). On the other hand, technological capabilities embedded in the high-tech industry can be directly

linked to a country's national security and geopolitical benefits (Witt, 2019b). For example, the products or services of some segmentation of the high-tech industry, such as the semi-conduct industry, can be used for military purposes (Farley, 2015). Therefore, international M&As in high-tech industries may easily fall under the scrutiny of relevant stakeholders of both the home and host countries. We thus argued that the characteristics of the high-tech industry would add an extra layer of complexity to the international M&As initiated by EMNCs.

Recent studies have explored the resource and institutional factors that may affect the completion of outward M&As initiated by EMNCs, such as the liability of opaqueness (Li et al., 2019) and prior failure experience of the acquiring firm (Zhou et al., 2022) at the firm level, and host local regulatory environments (Deng & Yang, 2015; Zhang et al., 2011; Zhou et al., 2016) and institutional differences between the home and host countries (e.g., Dikova et al., 2010; Liou et al., 2016) at the country level. Despite this progress, these studies have not adequately addressed the unique legitimacy concerns in the high-tech industry. Moreover, they have mostly explored the determinants of M&A completion on a single level, such as firm-level resources and country-level institutional factors. We thus argue that a coherent theoretical framework to explain how the multiple levels of factors affecting acquisition completion is valuable.

The strategy tripod perspective is a useful tool for constructing such framework (Peng et al., 2008). This perspective argues that multinational corporations, especially those in emerging economies, should focus on the three legs of the 'strategy tripod'—industry conditions at the industry level (Porter, 1980), resources and capabilities at the firm level (Barney, 1991), and country level institutional contexts in which firms are embedded—to shape their behavior (Scott, 2001). By cross-fertilizing the three legs of the strategy tripod perspective, we developed a legitimacy-based multi-level model (Fig. 1) to investigate the completion of Chinese high-tech M&As by simultaneously considering the effects of country-, industry-, and firm-level factors.

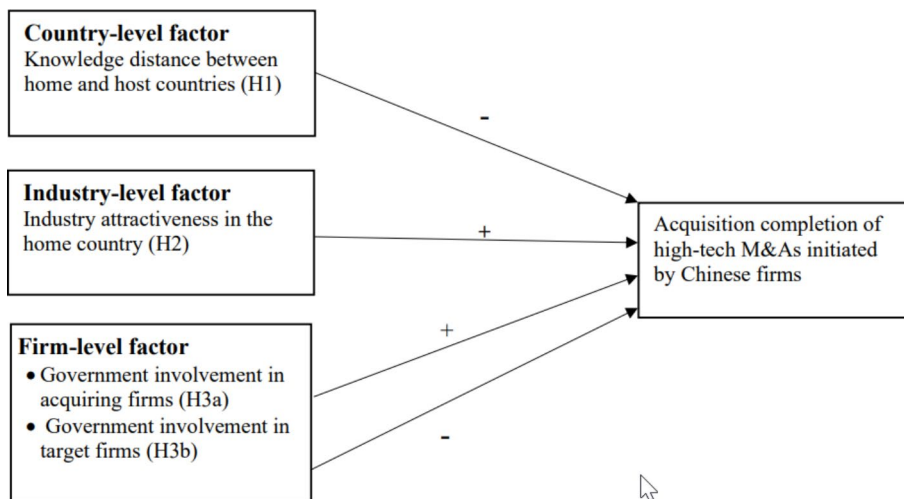


Fig. 1 Theoretical framework and hypotheses

Specifically, at the country level, we argue that the knowledge distance between the home and host countries tends to negatively influence the completion of outward M&As initiated by Chinese firms. Although prior studies in the international M&A literature (e.g., Dikova et al., 2010) have recognized several types of cross-country distances (e.g., cultural or institutional), we have a limited understanding of whether or how knowledge distance, a much more relevant type of distance capturing a nation's innovation competitiveness, may influence the completion of acquisitions initiated by EMNCs. Therefore, we aim to extend the existing institutional distance research to high-tech M&As by EMNCs.

At the industry level, we propose that the attractiveness of the high-tech industry in the home country (China) increases the likelihood of acquisition completion. Prior acquisition literature has suggested that some firms choose to initiate acquisitions because their peer firms have conducted similar deals, and the imitation of other firms may increase their own legitimacy (e.g., Haunschild & Miner, 1997; Yang & Hyland, 2006). Following this logic, the attractiveness of a particular industry (e.g., the high-tech industry) can be a source of imitation that increases the legitimacy of initiating M&As in this industry and thus results in the increasing likelihood of acquisition completion (Ozmel et al., 2017). However, considering how sensitive the nature of high-tech M&As is to the national security of the host country, it is unclear whether and how the attractiveness of the high-tech industry in the EMNCs' home countries, as a driver of imitation, can affect the completion of outward M&As.

At the firm level, we focus on the separate effect of government involvement in acquiring and target firms. Although recent studies have explored how government involvement affects the outcomes of international M&As (Li et al., 2017, 2019), they have often assumed this impact to be limited to the acquiring firms, and little is known about the role it plays in relation to the target ones. The high-tech industry is a sensitive industry that is often related to national security (Luo, 2022). Thus, even private acquirers may be challenged if the target firm is government involved. We argue that the distinction between government involvement in acquiring and in target firms is valuable because it enables the exploration of whether and in which different ways it affects the success of the high-tech M&As initiated by Chinese firms. In the following paragraphs, we develop our conceptual arguments concerning the instances in which the likelihood of acquisition completion increases (or decreases).

The country-level factor: the knowledge distance between the home and host countries

Multinational enterprises are subject to the influence of the institutions found in both the home and host countries and the distance between them (Peng et al., 2009; Zhu et al., 2009). A greater institutional distance suggests a greater risk stemming from a lack of knowledge of local institutions and business establishments (Dikova et al., 2010). Additionally, a high institutional distance increases the obstacles to the successful establishment, monitoring, and upholding of the relationships with local business partners, suppliers, and institutions. Moreover, a high institutional distance can cause the establishment of legitimacy in host nations to be complex and time-

consuming (Dikova et al., 2010; Suchman, 1995). A low institutional distance, on the contrary, can significantly lessen the above challenges.

Although the knowledge of general institutions provided by the prior studies is useful, it is worthwhile to examine the influence of different aspects of the institutional framework, as it can provide a finer-grained and more in-depth view (Hutzschenreuter et al., 2015). Recent studies have begun to explore multiple dimensions of cross-country distance. For example, Berry et al. (2010) offered nine theoretically separate sub-dimensions of institutional distance: Economic, Financial, Political, Administrative, Cultural, Demographic, Knowledge, Global Connectedness, and Geographic. One of these sub-dimensions—Knowledge distance—is of particular interest to high-tech international M&As by EMNCs, which are increasingly interested in acquiring firms located in economically developed locations with strong intellectual property protection laws (Elango & Pattnaik, 2011).

Knowledge distance, which is a relatively new dimension of institutional frameworks, focuses on the difference between the institutional environments found in the home and host countries in terms of their respective capacities to innovate and create knowledge (Berry et al., 2010). Countries differ in terms of the inputs allocated to the creation of knowledge, technology, and innovation, the quality of the institutions that help transform those inputs, and the resulting level of performance (Guler & Guillen, 2010). These differences affect EMNCs' foreign expansion strategies (Zhang et al., 2017). Although EMNCs in high-tech M&As may realize the potential negative impact of institutional distance, they are still likely to have strong motivation to acquire firms in knowledge distant countries, in order to quickly gain advanced technological capabilities and leapfrog their global competitors (Luo & Tung, 2007). For example, Gaffney et al. (2016) found that EMNCs tend to acquire a higher equity share of target firms located in countries with higher concentrations of institutions that promote and protect knowledge.

Despite their strong motivation, EMNCs are likely to fail to complete the announced acquisitions in knowledge distant countries due to their lack of legitimacy in the eyes of key host country stakeholders (Xia et al., 2009), such as government regulators who often have the ultimate authority to decide whether to approve an acquisition proposal (Li et al., 2017; Stevens et al., 2016). When Chinese firms initiate the acquisition of high-tech firms located in countries of a bigger knowledge distance, such as the US and the EU, the host country government agencies usually debate any related national security concerns. This is not surprising because the high-tech industry is knowledge-intensive and sensitive and, as such, it is crucial to a country's economic competitiveness and military security (Evenett, 2019). Moreover, there has long been a geostrategic concern about China's rise among Western countries with high knowledge levels (Witt, 2019b). Chinese high-tech acquisitions may result in technology transfers to China that could convey capabilities that might advance its economic and security interests, while limiting or depriving the host countries' national security apparatus from leveraging those technologies (Kuo, 2018). Therefore, high-tech acquisitions from China are often viewed as illegitimate by government regulatory agencies in countries with high knowledge levels, such as the US and the UK (Luo, 2022). By contrast, if the knowledge distance between China and the host country

is low, the acquisition would hardly trigger national security concerns of the host government agencies.

In sum, we propose that higher knowledge distance makes gaining legitimacy harder from host government regulators, resulting in a decrease in the likelihood of acquisition completion in high-tech M&As by EMNCs, particularly by Chinese firms.

Hypothesis 1 The knowledge distance between the home and host countries is negatively associated with the likelihood of acquisition completion in high-tech M&As initiated by Chinese firms.

The industry-level factor: industry attractiveness in the home country

Aside from distance factors related to the level of uncertainty between home and host countries, the likelihood of acquisition completion may also be influenced by the acquiring firms' home country institutional environments (Cui & Jiang, 2012; Lee et al., 2014). Previous studies have mostly focused on country-level institutional constraints in home countries—such as any insufficient availability of advanced technologies and weak intellectual property protection laws—that might affect outward FDI and M&As enacted by EMNCs (Cuervo-Cazurra, 2012), and often ignored any industry-level factors, such as industry attractiveness.

Industries are characterized by heterogeneity in terms of their current and prospective profitability, which results in different levels of industry attractiveness (Porter, 1980). In the socially-constructed perspective (DiMaggio & Powell, 1991), in the case of outward M&As, industry attractiveness in the home country may be reflected in certain concrete evidence, such as the number of announced outward M&As in that particular industry—regardless of outcomes—as opposed to that recorded in other industries over a given period. When the relative number of high-tech M&As as opposed to other industries is high, home country attraction to the high-tech industry is relatively strong.

High-tech M&As are attractive to EMNCs for the following reasons. The high-tech industry is vital to a country's innovation and economic competitiveness; thus, it is generally considered a key industry for global competition (Luo & Witt, 2021). Being latecomers to this attractive industry, EMNCs tend to use outward M&As as a springboard to acquire knowledge and capabilities needed to achieve home-centered capability upgrading and compete with established MNCs (Li et al., 2022a). In addition, the EMNCs' home country governments may provide exogenous incentives, such as industry-specific policies in support of targeted industrial development (Gaur et al., 2018). In the case of China, certain industries, such as high-end manufacturing and high-tech, are more attractive to the Chinese government, who encourages firms in those industries to explore value chain upgrading by acquiring proprietary technology overseas (Luo & Tung, 2007; Witt, 2019b). These M&As deals are thus more legitimate in the eyes of the Chinese government authorities, who tend to provide more governmental support to high-tech industry acquirers (NDRC, 2020). Such industrial support policies increase the attractiveness of completing high-tech inter-

national M&As, and foster the legitimation process of completing high-tech acquisitions. Empirically, Gaur et al. (2018) found that the higher the growth potential of the industry, the stronger the attraction and determination emerging market acquirers demonstrate in engaging in and completing outward M&As.

In addition, prior literature on organizational imitation has suggested that legitimacy motivates firms to take the same actions as other firms or take actions of others as granted (DiMaggio & Powell, 1983), thus resulting in the increase of the likelihood and success of that action. When the attractiveness of a particular industry (e.g., the high-tech industry) increases, the legitimacy of M&As in this industry is better recognized and supported by stakeholders, resulting in the increase in the likelihood of occurrence or success of acquisition completion. On the contrary, when home country attraction to this industry is relatively low, the legitimacy of high-tech M&As decreases, resulting in a low likelihood of high-tech M&A completion. Evidence of mimetic isomorphism has been found in the imitation in acquisition decisions (e.g., Yang & Hyland, 2006) and the acquisitions of high-tech firms (e.g., Ozmel et al., 2017).

Overall, the attractiveness of the high-tech industry motivates EMNCs to complete high-tech international M&As, and the action of completing high-tech acquisitions becomes taken for granted and legitimate once a number of firms carry out similar actions. This may cause legitimacy pressures that drive organizations to imitate the established and accepted norms of behavior, leading to a higher number of acquisition completions. Although the increasing number of high-tech M&As from China may also raise national security concerns of the host country regulators, based on the legitimacy-based imitation logic discussed above, we propose that the likelihood of acquisition completion increases when Chinese acquirers' home market is characterized by a high degree of interest in high-tech industry sectors.

Hypothesis 2 Industry attractiveness of the high-tech industries in the home country is positively associated with the likelihood of acquisition completion in the high-tech M&As initiated by Chinese firms.

The firm-level factor: governmental involvement in acquiring or target firms

Government involvement is a widely discussed firm-level characteristic in outward M&As literature. Government involvement may come in different forms, such as officials serving as board members or ministries being majority shareholders of acquiring firms (which makes the latter state-owned enterprises). When the intention to pursue an outward acquisition is announced, the acquirer faces home country government scrutiny in regard to any concerns linked to the protection of the target firm's interest and potential threats to the national security of the host country, especially when the target industry is considered to be sensitive due to being linked to, for instance, military production, crucial infrastructure, or scarce resources. Such scrutiny is usually intensified when the acquirer's home country government is involved because, for those acquirers, maximizing financial performance may not be the only purpose (Cui & Jiang, 2012). If the host country is uncertain about the motivation

of an acquisition with a potential economic or security threat, the legitimacy of the deal is likely to be hampered, resulting in a higher risk of acquisition failure (Li et al., 2019).

Recent empirical studies suggest that Chinese outward M&As enacted by state-owned firms (SOEs) are less likely to be completed than carried out by non-stated-owned ones. For example, Zhang et al. (2011), who studied 1,324 Chinese outward M&As conducted over the 1982–2009 period, found that the likelihood of a Chinese firm succeeding in an overseas acquisition is lower when said firm is an SOE. Li et al. (2019) analyzed outward acquisitions by Chinese firms between 1990 and 2010 and found that SOEs' completion rate was 14% lower than that of other firms. These findings are not surprising because, while pursuing their business objectives, Chinese firms characterized by government involvement are sometimes required to serve political mandates and align their business interests with government economic development objectives (Meyer et al., 2014). Such potential dual motivation is likely to trigger host-country national security concerns, especially when the target industry is sensitive due to being linked to military production, IT infrastructure, or scarce resources (Cui & Jiang, 2012). The national security concerns of host country regulatory agencies make gaining legitimacy harder in foreign acquisitions (Li et al., 2017). For instance, Alibaba's Ant Financial failed to obtain approval for purchasing MoneyGram in 2018, a deal that would have given it a larger role in the US financial system (Mozur & Swanson, 2018; Witt, 2019b).

Despite its empirically proven adverse effects on acquisition completion, government involvement could be viewed as a valuable asset and endorsement of Chinese high-tech industry acquirers to gain legitimacy from home county government regulatory agencies. Compared with privately owned firms, partially or wholly state-owned or involved ones are often viewed as more legitimate and thus receive more procedural support in the pre-acquisition stage, resulting in a higher rate of acquisition completion. This is because that Chinese firms should get approval from relevant governmental authorities² before buying overseas (Luo et al., 2010). There are indeed written regulations and policies on these procedures, yet the standards for examination are ambiguous. This examination process is a legitimation process by government authorities (Greenwood et al., 2002). Firms with government involvement usually can not only pass the examination quickly and smoothly, but also benefit from certain designated policies, such as special loans from the state-owned non-commercial banks, to help them accomplish the outbound M&A in line with state needs (Luo et al., 2010). Moreover, the set of approval procedures is time-consuming. Several months will be an ideal result for private firms that have no government involvement or strong governmental relationships (Tan & Ai, 2010). The bidder in other countries might have accomplished the acquisition before Chinese acquirers qualified to dispatch funds abroad.

² Chinese acquirers usually need to get approval from the National Development and Reform Commission, which takes charge of the planning, supervision and harmonization of China's economy; the Ministry of Commerce, which examines the merit of the proposed M&A; and the State Administration of Foreign Exchange, which is responsible for the examination of the sources and remittance of foreign exchange involved (Tan & Ai, 2010; Luo et al., 2010).

Despite the potential hindrance of the host country regulators, we believe that Chinese acquirers with government involvement will obtain more facilitating resources from their home country government so that they can achieve industrial upgrading and innovation-driven development via high-tech M&As. Thus, we argue that the likelihood of completion of Chinese outward M&As in the high-tech industry increases when the acquiring firms are characterized by government involvement. We thus hypothesize:

Hypothesis 3a Government involvement in an acquiring firm is positively associated with the likelihood of acquisition completion of high-tech M&As initiated by Chinese firms.

When Chinese firms acquire high-tech firms overseas, host-country regulators sometimes perceive them not simply as business entities, but also as political actors because of China's communist ideology and related institutional environment (Du & Boateng, 2015; Globberman & Shapiro, 2005). The challenges posed by such legitimacy concerns may increase if the target firms are state-owned or involved (Child & Marinova, 2014); this is due to the fact that such high-tech enterprises are often prevalent in industrial sectors that are strategic to the economy of a country—such as semiconductor, high-end manufacturing, and telecommunication sectors—and their performance is of great importance to broad segments of the population and to other sections of the business spectrum (Pollina, 2014). Hence, any attempts to acquire government-involved firms are likely to be subjected to stricter scrutiny by local authorities. They may evaluate and justify a case's appropriateness and desirability based on criteria such as the foreign acquirer's motivations, the acquirer's compatibility with the local ideology, and the implications of the deal for national security and economic development (Li et al., 2017). Such legitimation process may increase the uncertainty of the approval of the M&A (Tolbert & Zucker, 1996). We thus propose the following hypothesis:

Hypothesis 3b Government involvement in a target firm is negatively associated with the likelihood of acquisition completion in high-tech M&As initiated by Chinese firms.

Method

Data

The data used in this study, which encompass all the outward M&A attempts in the high-tech industry announced by Chinese firms between 1991 and 2018, were drawn directly from the Thomson Financial Merger & Acquisition database. This database is well known for its comprehensive lists of M&As, valued at over US\$5 million, in different industries sorted by SIC codes. To be selected, the high-tech M&A must be announced by China-based organizations between 1991 and 2018. In addition, we

limited our samples to public firms to ensure data availability from secondary sources and then excluded the cases where complete data on firms' characteristics (e.g., the SIC codes, government-involved or not) were unavailable. The final sample is 797 high-tech M&A deals initiated by 602 Chinese firms. Table 1 displays characteris-

Table 1 Major characteristics of the sample

Acquirers' industry	Percentage based on the number of deals
Manufacturing	42.22%
Finance	35.18%
Service	13.48%
Transportation	5.73%
Trade	1.44%
Others	1.95%
Target firms' industry	
28 Chemicals And Allied Products	15.25%
35 Industrial, Commercial Machinery, Computer Equipment	13.42%
36 Electronic Equipment	21.53%
37 Transportation Equipment	9.17%
38 Measuring, Analyzing, Controlling Instruments	6.38%
48 Communications	3.50%
73 Computer programming Services	24.67%
87 Engineering, Accounting, Research, Related Services	6.08%
Outcome	
Completed	56.72%
Incomplete	43.28%
Location	
Developed	66.43%
Developing	33.57%
Top #1 location	(13.40%)
Hong Kong	
Top #2 USA	(13.03%)
Top #3	(4.57%)
Germany	
Top #4 Japan	(3.46%)
Government involvement	
Yes	24.68%
No	75.32%
Diversification	
Related	54.75%
Unrelated	45.25%
Ownership decision	
Full	52.87%
Majority	21.47%
Equal	1.35%
Minority	24.31%

tics of these deals. First, an analysis of the first two-digits of the SIC codes, which identify the industry sectors of firms, showed that 42.22% of the Chinese acquiring firms were from the manufacturing sector, followed by finance (35.18%) and services (13.48%). In terms of the sectors of the target firms, 24.67% were in computer programming services, followed by electronic equipment (21.53%) and chemicals and allied products (15.25%).

Furthermore, among the 797 deals in the sample, 56.72% had been completed (43.28% had not). In terms of the target markets, 66.43% of the M&As had been conducted in developed markets (33.57% in developing ones). Specifically, top one location of target firms was Hong Kong (13.40%) followed by USA (13.03%), Germany (4.57%) and Japan (3.46%). In relation to government involvement, 24.68% of the sample M&As had seen some degree of it. In terms of the percentage of industry relatedness between the acquiring and target firms, 54.75% of the deals had involved related firms (45.25% had not). Finally, in terms of the deals' ownership decisions, 52.87% had involved full ownership and 21.47% majority ownership, which, together, accounted for over 70% of the sample.

Measures

Dependent variable. The dependent variable in this study was *Acquisition completion*—defined as whether the international M&A under study had been successfully completed—which was hence operationalized as a dummy variable coded as 1 when the deal's status is coded as “completed” in the database and 0 for incomplete ones (such as pending, withdrawn, etc.).

Independent and moderating variables. Following Berry et al. (2010) and Guler and Guillen (2010), we defined *Knowledge distance* as the difference in terms of patents and scientific production between the home and host countries, as determined by variation in the numbers of patents registered and scientific articles published per capita. This study was aimed at checking whether the target country's level of knowledge, in relation to that of the home country, influences the likelihood of acquisition completion. As distance is directional, we used a relative measure, which indicated not only the extents of the differences, but also their directions. The relative knowledge distance between the target and the home countries can affect acquisition outcomes. A low or negative distance, which indicates that the home country tends to have higher knowledge, makes it more likely for acquiring firms to be less challenged in acquiring or transferring knowledge with target firms. Thus, the acquisition will have a greater likelihood of completion.

The *Industry attractiveness in the home country* measure refers to the degree of cross-border high-tech industry M&As with all outcomes (e.g., completed, intended or withdrawal) initiated by Chinese firms as opposed to that in other industries with all outcomes. It was measured by the total number of international M&As in high-tech industries as a percentage of that the total international M&As across all industries by Chinese firms, as of one year prior to the year of the dependent variable. High

Industry attractiveness in the home country was expected to be associated with high *Acquisition completion*.

The measure *Gov. involvement acquirer* indicates whether (or not) the acquiring firm under study had been involved with any government agencies. We coded *Gov. involvement acquirer* as 1 if an acquiring firm had been marked as government owned/involvement flag in the Thomson database, and 0 otherwise. Likewise, *Gov. involvement target* indicates whether the target firm in each transaction was involved with any government agencies (coded as 1) or not (0).

In terms of control variables, we first incorporated the home country variable of China, which served as a motivator for international M&As. Specifically, we used *Home GDPGW* to capture the effect of the home country's (China) economic environment (e.g., GDP growth) on international M&As (Tolentino, 2010). Firms are argued to be more inclined to invest abroad when their home country economic environment is strong; this is because such strong domestic economy has provided these firms with the resources and competitive advantages necessary for international competition (Luo & Wang, 2012). Furthermore, using data collected from the Index of Economic Freedom, developed by the Heritage Foundation, we measured *Institutional distance*, which refers to the differences in the formal and regulatory institutions found in the M&As' home and host countries (Aybar & Ficici, 2009), with positive values of this measure indicating that the host market scores higher than the home country on the index of economic freedom, and negative values indicating the opposite. In terms of informal institutional distance, we measured *Cultural distance* through the four cultural dimensions of power distance, uncertainty avoidance, individualism, and masculinity, as identified by Hofstede (1980) and constructed by Kogut and Singh (1988). A low score in this measure means that the home and host countries are culturally proximate, and a high score means that they are culturally distant. Considering that Kogut and Singh's index has been criticized (e.g., Konara & Mohr, 2019) for incorrectly specifying this measure, we ran additional analyses using alternative measures (e.g., Euclidean distance). Because we obtained the same results from this robustness check, the Kogut and Singh index was used in the following analysis.

In addition to country-level variables, we controlled for deal-specific and firm-specific factors such as the size of deal (*Deal size*), industry relatedness of acquiring and target firms (*Relatedness*), payment method (*Cash*), the size of acquiring firm (*Acqr size*) and experience of acquiring firm (*Experience*). As larger deals are expected to receive more attention from the media and the general public than smaller ones, we measured *Deal size* by the log value of the dollar value of each international M&A to control for its impact. Considering that firms pursuing industry-related M&As face fewer challenges as opposed to those pursuing unrelated ones (Yang, 2015), we included the dummy variable *Relatedness*, which showed whether the acquiring and target firms shared SIC codes; a value of 1 was assigned if they did, and a value of 0 otherwise. To control how payment method affects acquisition completion (e.g., Martin, 1996), we used the dummy variable *Cash*, which was coded as 1 if the M&A deal under study was marked as 100% of cash in the Thomson database, and 0 otherwise. In terms of firm-specific factors, similar to *Deal size*, we measured *Acqr size* by the log value of the asset value of acquiring firm to control for its impact (e.g., Li

et al., 2017). *Experience* was used to control for the impact of learning experience. The *Experience* measure—i.e., the number of international M&As undertaken by each acquiring firm—accounted for the cumulative number of international M&As undertaken by each acquirer before the acquisition under study. From the learning perspective (e.g., Vermeulen & Barkema, 2001), an experienced firm is more likely to complete an acquisition attempt because some of the acquired skills and knowledge can be transferred from one acquisition to another.

Finally, to control for the positive or negative effects on acquisition completion of different time sub-periods and industry environments over the study period, we created two dummy variables *WTO* and *Global financial crisis* by coding specific year (i.e., 2001 and 2008) separately as 1 and all years as zero. We also included industry dummy variables for acquiring firms, which were coded based on the first two-digits of their SIC codes.

Model and analysis

To analyze the likelihood of a firm completing an international M&A, we used the common maximum likelihood method of estimation as a logistic regression model (Amemiya, 1981).

$$\text{Logit} : (\text{Acquisition completion}_i = 1 \mid \mathbf{x}_i) = \exp(\mathbf{x}_i \beta) / (1 + \exp(\mathbf{x}_i \beta))$$

As noted, we coded the dependent variable as 1 if a deal had been completed and 0 otherwise. We regressed this variable on \mathbf{x}_i , a vector of explanatory variables, with β being a vector of parameter estimates. The estimated coefficients from logistic regression represent the change in the log of odds of acquisition completion for a given change in any explanatory variable. Odds ratios are derived from exponentiation of the estimated coefficients from logistic regression.

Concerns of any common-actor effect (Lincoln, 1984), which would result from deals initiated by the same firm not being independent, needed to be addressed. We corrected for this potential issue by grouping the M&A deals that had been initiated by the same firm so that the corresponding error terms were clustered on each unique acquiring firm.

Empirical findings

Figure 2 shows the number of international M&As undertaken by Chinese firms in the high-tech industry from 1991 to 2018. As shown, before the year 2000, the total number of deals per year had remained low (e.g., fewer than 30 deals per year). Starting with 2007, the total number of deals per year had increased to more than 100, until reaching over 500 deals per year from 2015 to 2018. In addition, before the year 2000, the completed deals per year had been more than double the incomplete ones (except for 1993, 1997, and 1999). From 2000 to 2018, the completed deals per year had regularly outnumbered the incomplete ones (except for 2003, 2013, 2017, and 2018).

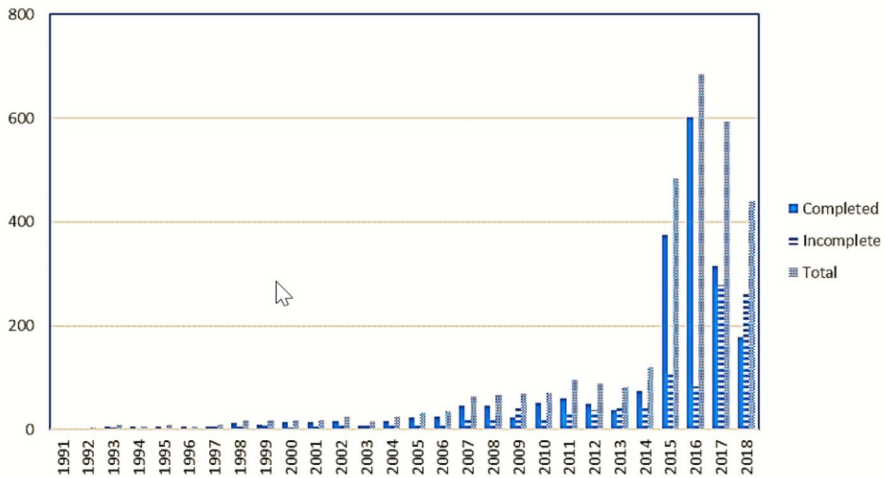


Fig. 2 Frequency of outward M&As in the high-tech industry by Chinese firms, 1991–2018

Table 2 reports the means, standard deviations, and correlations for the independent and dependent variables in the decision to complete an acquisition. For the most part, the independent variables were found to not be highly correlated with each other in bivariate relationships. To assess whether multi-collinearity was a major concern, we examined the variance inflation factor (VIF) scores (Belsely, Kuh, & Welsch, 1980) and found no major violations.

Table 3 displays the logistic regression results for the acquisition completion decision. Model 1 presents the results for all control variables. Models 2 to 5 capture the results for each proposed hypothesis. Model 6 presents the results when all the variables are put together. The likelihood ratio test confirmed that the results of all of these models are statistically significant.

Models 2 and 6 in Table 3 show that *Knowledge distance* has a significant and negative correlation with the dependent variable ($p < 0.05$). Specifically, the coefficient for *Knowledge distance* in Model 6 says that, holding other independent variables at a fixed value, we will see the odds of acquisition completion is about 55% less for a one-unit increase in *Knowledge distance* because the odds ratio associated with *Knowledge distance* is 0.448. This result supports Hypothesis 1 that a high institutional environment distance between the home and host countries in terms of knowledge creation would decrease the likelihood of completing high-tech M&As initiated by Chinese firms.

Hypothesis 2 states that the likelihood of completing high-tech M&As will increase when the acquiring firms' home countries show high attraction to high-tech industries. As shown in Table 3, the coefficients of *Industry attractiveness in the home country* and *Acquisition completion* were found to be positive and significant in Models 3 ($\beta = 2.554$, $p < 0.001$) and 6 ($\beta = 2.551$, $p < 0.001$). The marginal effect of *Industry attractiveness in the home country* on acquisition completion, holding other independent variables in the model equal their means, shows that for every increase

Table 2 Descriptive Statistics and Correlations for Acquisition Completion in the High-tech Industry by Chinese Firms, 1991-2018^a

Variable	Mean	s.d.	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. Acquisition completion	0.58	0.49														
2. Knowledge distance	-1.37	0.94	-0.126***													
3. Industry attractiveness in the home country	0.45	0.24	0.295***	0.022												
4. Gov. involvement acquirer	0.14	0.35	0.031	-0.064**	0.083***											
5. Gov. involvement target	0.60	0.24	-0.062*	-0.038	-0.041	0.154***										
6. Home GDPGW	7.80	1.73	0.106***	0.078**	0.060*	0.067**	0.071**									
7. Institutional distance	21.90	11.15	-0.077**	0.235***	0.184***	0.164***	-0.074**	-0.064**								
8. Cultural distance	2.13	1.42	-0.075**	0.223***	0.309***	0.189***	-0.065*	-0.052*	0.452***							
9. Deal size	1.36	0.96	-0.007	0.156***	0.063*	0.278***	0.036	-0.054	0.254***	0.259***						
10. Relatedness	0.57	0.49	0.072**	0.119***	0.045	-0.004	-0.022	-0.017	0.032	0.067**	-0.025					
11. Cash	0.31	0.46	-0.034	0.008	-0.108***	-0.099***	0.003	0.031	-0.051*	-0.152***	-0.095**	-0.003				
12. Acqr size	3.70	1.26	-0.030	-0.196***	0.013	0.109**	0.065	-0.106**	-0.118***	-0.049	0.299***	0.053	-0.184***			
13. Experience	3.24	9.24	0.061*	0.108***	0.019	0.033	0.028	0.029	0.093***	0.065**	0.136***	0.203***	-0.023	-0.029		
14. WTO	0.16	0.36	0.087***	-0.083***	0.030	-0.005	0.065**	-0.076**	-0.083**	-0.117***	-0.246***	0.075**	0.034	-0.050*	-0.019	
15. Global financial crisis	0.19	0.39	0.054*	-0.03	-0.116***	0.044	0.019	0.462***	0.022	-0.034	-0.036	0.052*	0.055*	-0.029	-0.217***	-0.099**

a: N=797 (602 firms)

*p<0.05; **p<0.01; ***p<0.001

Table 3 Results of the Logistic Analysis for Acquisition Completion in the High-tech Industry by Chinese Firms, 1991-2018^a

Variables	Model 1	Model 2 H1	Model 3 H2	Model 4 H3a	Model 5 H3b	Model 6 All	Hypotheses testing
Knowledge distance (H1)		-0.673* (0.288)				-0.801** (0.306)	H1 is supported
Industry attractiveness in the home country (H2)			2.554*** (0.597)			2.551*** (0.603)	H2 is supported
Gov. involvement acquirer (H3a)				0.114 (0.449)		0.589 (0.525)	H3a is NOT supported
Gov. involvement target (H3b)					-0.900* (0.391)	-1.058* (0.425)	H3b is supported
Home GDP/GW	0.093 (0.075)	0.072 (0.076)	0.124 (0.078)	0.094 (0.075)	0.089 (0.076)	0.102 (0.080)	
Institutional distance	-0.008* (0.003)	-0.013* (0.005)	-0.007 (0.005)	-0.008+ (0.004)	-0.008+ (0.004)	-0.012* (0.005)	
Cultural distance	-0.112 (0.073)	-0.077 (0.072)	-0.223 (0.110)	-0.111 (0.073)	-0.128+ (0.074)	-0.177 (0.109)	
Deal size	0.119 (0.122)	0.175 (0.125)	0.157 (0.125)	0.106 (0.124)	0.136 (0.123)	0.233+ (0.132)	
Relatedness	0.249 (0.295)	0.171 (0.300)	0.410 (0.306)	0.245 (0.296)	0.303 (0.297)	0.362 (0.310)	
Cash	-0.081 (0.216)	-0.077 (0.218)	-0.069 (0.223)	-0.079 (0.216)	-0.103 (0.218)	-0.080 (0.225)	
Acqr size	-0.050 (0.091)	-0.095 (0.093)	-0.087 (0.093)	-0.050 (0.091)	-0.051 (0.091)	-0.143 (0.097)	
Experience	-0.253+ (0.135)	-0.193 (0.137)	-0.244 (0.136)	-0.255+ (0.135)	-0.248+ (0.136)	-0.210 (0.139)	
WTO	0.761* (0.309)	0.704* (0.310)	0.723* (0.318)	0.749* (0.312)	0.896** (0.319)	0.780* (0.330)	
Global financial crisis	-0.245 (0.397)	-0.239 (0.400)	-0.077 (0.412)	-0.252 (0.398)	-0.176 (0.403)	-0.024 (0.420)	
Log likelihood	-265.989	-263.205	-255.121	-265.957	-263.225	-248.824	
LR Chi2	20.95*	26.52*	42.69***	21.01*	26.48*	55.28***	
pseudo R ²	0.37	0.40	0.44	0.38	0.40	0.48	

^ap<0.10; *p<0.05; **p<0.01; ***p<0.001

Due to space limitations, the results of industry dummies are not shown above

in industry attractiveness the probability of acquisition completion increase on average by 53%. Hypothesis 2 is therefore supported.

As to the role played by *Gov. involvement acquirer* in the likelihood of completing high-tech M&As, the coefficient term was found to be positive and but not significant in Models 4 ($\beta=0.114$, $p>0.05$) and 6 ($\beta=0.589$, $p>0.05$). Hypothesis 3a, which argues that government involvement in an acquiring firm is positively associated with the likelihood of completion of high-tech M&As, is not supported. In terms of the role played by *Gov. involvement target* in the likelihood of completing high-tech M&As, the coefficient term was found to be significant but negative in Models 5 ($\beta=-0.900$, $p<0.05$) and 6 ($\beta=-1.058$, $p<0.05$). Therefore, Hypothesis 3b, which argues that government involvement in a target firm is likely to decrease the likelihood of completion of international M&As, is supported. Together, the findings supporting Hypotheses 3b but not 3a show that government involvement in acquiring or target firms influences, do not affect the likelihood of acquisition completion in high-tech industries in the same way. Diverging from prior studies, which aggregated the impact of government involvement in acquiring and target firms, our results provide robust evidence clarifying how government involvement affects acquisition completion.

Discussion and conclusion

Discussion

With the increasing importance of Chinese firms in global investment (Deng et al., 2020; Li et al., 2022a, b; UNCTAD 2015) and rising concerns of unfair competition and national security associated with high-tech M&As, researchers are showing growing interest in the factors that affect the successful completion of outward M&As undertaken by Chinese firms in the high-tech industry (Guo & Clougherty, 2020; Wei et al., 2021). Drawing from the legitimacy perspective (DiMaggio & Powell, 1991; Stevens et al., 2016) and strategy tripod framework, we develop a multi-level model that explores and explains the neglected factors affecting the completion of high-tech M&As by Chinese firms.

The results of this study largely support our hypotheses. First, we find that the likelihood of acquisition completion increases when the knowledge distance between China and the host country decreases. Although EMNCs often have strong motivations to use high-tech M&A as a springboard to acquire target firms in high knowledge distant countries (Luo & Tung, 2007), our finding suggests that they would still face legitimacy hindrances associated with this distance, resulting in the failure of acquisition completion. Second, this study shows that the likelihood of acquisition completion increases when China shows a high interest in the high-tech industry. Echoing the argument that imitating other firms is a source of gaining legitimacy, our finding also proves that home country's attractiveness of high-tech industry would overcome host country legitimacy concerns associated with national security to increase the likelihood of acquisition completion. Third, the findings of this study diverge from those of prior ones, which found that the likelihood of a Chinese firm

completing an overseas acquisition is lower when the acquiring firm is a state-owned enterprise (e.g., Zhang et al., 2011). Specifically, separating the impact of government involvement from acquiring and target firms on acquisition completion, we do not have significant evidence to support that the likelihood of acquisition completion increases when the acquiring firms are characterized by government involvement. In the context of high-tech M&As initiated by Chinese firms, acquiring firms with high government involvement may receive more financial and procedural support from their home country. Yet, they also face strong opposition from their host markets, resulting in the insignificant result shown in our study. In terms of the impact of government involvement from target firms on acquisition completion, this study shows that the likelihood of acquisition completion declines when a high-tech target firm is characterized by government involvement, supporting the argument that government involvement will trigger national security concerns in the home country.

Contributions

Our study contributes to the literature in several significant ways. First, we extend the legitimacy perspective of EMNCs to the high-tech industry, highlighting how unique legitimacy concerns in this industry are addressed with empirical results. Previous studies on the legitimacy of EMNCs' outward M&As focus more on the liability of emergingness and state-ownership of acquirers (Li et al., 2019; Zhang, 2022), with less attention paid to the legitimacy associated with high-tech M&As. The high-tech industry is closely related to national competitiveness, thus using high-tech M&As as a springboard is usually legitimate in the eyes of EMNCs and their home country regulators who may facilitate the deal completion. On the other hand, this industry raises protectionism and national security concerns, accentuating the difficulties involved in gaining legitimacy from the host country government for acquisition completion. These unique features make prior findings based on other industries less than fully applicable to EMNCs' high-tech M&As. This study has filled this gap by demonstrating how multiple legitimacy effects jointly determine the effects of three important factors on the completion of high-tech M&As by EMNCs.

Second, we adopt a multi-level approach to systematically uncover the factors affecting the completion of EMNCs' outward M&As. The extant literature on the determinants of acquisition completion is mostly focused on a single level, such as the impact of country-level factors such as formal institutional distance (Dikova et al., 2010; Liou et al., 2016) and firm-level factors such as prior experience (Yang, 2015; Zhou et al., 2022). We borrow the strategy tripod framework (Peng et al., 2008) and adopt a multi-level approach to explore and explain how neglected factors from the country-, industry-, and firm-levels simultaneously influence acquisition completion in the high-tech industry setting. Our use of the strategy tripod framework responds to the calls to understand EMNCs' international M&As by going beyond firm-level factors (Gaur et al., 2018; Ramamurti, 2012). By doing so, we contribute to a better understanding of the key factors influencing the completion of EMNC strategic asset-seeking M&As.

Third, our study extends the literature on institutional distances by focusing on a context-specific type of institutional barrier—knowledge distance—which is much

more relevant in the strategic-asset seeking M&As conducted by EMNCs. The significant influence of knowledge distance on acquisition completion found in this study serves as empirical evidence to clarify the impact of this distance on acquisition completion in relation to other factors. Specifically, unlike prior studies, which focused on knowledge distance at the firm level (e.g., Ahammad et al., 2016; Ai & Tan, 2018; Zhang et al., 2020b), this study provides empirical evidence that country-level knowledge distance is also relevant and significant in affecting EMNC acquisition completion.

Fourth, this study contributes to the literature on outward M&As by EMNCs by providing empirical evidence of the influence of home country factors at the *industry level* on acquisition completion. Instead of using common industry-level measures such as industry competition (e.g., Porter, 1980), or industry unfavorableness (e.g., Gaur et al., 2018) measured by subjective managerial perceptions, we adopt a socially-constructed legitimacy perspective to measure industry attractiveness, which considers the actions taken by other firms in the home country, and the results of our study support the argument that industry attractiveness in the home country plays a significant role as a source of imitative legitimacy, resulting in the increase of legitimacy of high-tech M&As and the likelihood of high-tech M&A completion.

Fifth, our results extend our understanding of the influence of government involvement in the literature on outward M&As by EMNCs. Our study goes beyond the prior ones that either only examined the role played by government involvement in acquiring firms or aggregated the impact of government involvement in both acquiring and target firms (e.g., Li et al., 2017; Zhang et al., 2011). We contribute by separately examining the influence of government involvement in acquiring firms as opposed to that in target firms. As shown in our results, while the facilitating role of home government involvement and impeding role of host government involvement both arise, the latter has a stronger influence on acquisition completion in the high-tech industry setting. We thus provide more robust evidence than previous studies in explaining the complexities of the influence of government involvement on acquisition completion.

Managerial and policy implications

Our findings offer important insights to practitioners and policy makers. First, we suggest that managers of acquiring firms from developing countries should take great care in choosing their target firms. The findings of this study show that, in order to smoothly and successfully complete high-tech M&As, target firms located in countries with knowledge environments that are proximate to that of the home country are a better choice than those located in knowledge distant countries. Both investors and other stakeholders will be supportive of such high-tech M&As because they will expect that the small knowledge distance between the home and host countries will neither hinder nor discourage the transfer of knowledge in the post-acquisition stage.

Second, the results of this study suggest that, should managers perceive strong national security concerns to be held by high-tech industries in host countries, they could consider targeting firms with no government involvement because such firms are more likely to accept the deals (or put up a weaker opposition). The managers of acquiring firms with government involvement could bring high-tech M&As to suc-

successful completion if they carefully manage the impression made by such deals and monitor any national security concerns held by host country governments.

Third, our findings suggest that when governments provide credible signals and support for firms in emerging economies to engage in high-tech M&As, they should be aware that their support and involvement could be a double-edge sword which may trigger the national security concerns of the host country and the failure of the deals. On the contrary, our research suggests that home country government involvement is crucial because it would protect high-tech firms to be acquired by overseas competitors.

Limitations and future research

This study has several limitations that may point at promising avenues for future research. First, due to limited data availability, only those transactions that came with sufficient information in terms of deal characteristics were included in this study's sample. Second, to generalize the results of this study, future research might consider examining high-tech M&As enacted by firms from other emerging markets such as India (Nair et al., 2016). In so doing, the robustness of the results or new insights into the study of acquisition completion by firms from emerging markets may be uncovered. Third, some measures adopted in this study can be replaced with finer approaches. For example, future researchers could further consider the differences between domestic and international patents so that knowledge distance between China and other developed countries would be better captured. Similarly, to better verify any national security concerns associated with the involvement of the Chinese government in international M&As, a close examination of the specific percentage or various forms of government involvement in international M&A settings would be advised. Fourth, akin to the work done by Li et al. (2017), future research might examine other types of acquisition outcomes (e.g., duration of acquisition or level of ownership) to complement the existing studies on acquisition completion. In addition, future research might include other factors affecting M&A completion, such as country-level psychic distance (Meyer & Peng, 2005; Nicholson & Salaber, 2013) and firm-level target firm status (Cui & Jiang, 2012), absorptive capability (Dikova et al., 2010; Lebedev et al., 2015) and knowledge similarity between acquiring and target firms. Finally, a deeper understanding of the interplay between the multi-level factors affecting the direction and magnitude of M&A completion would be valuable. Therefore, future studies might consider testing the moderating effects of factors from different levels. For example, Contractor et al. (2014) studied the joint influence of country- and industry-level factors (e.g., relatedness and institutional distance) on ownership strategies. Likewise, Lahiri et al. (2014) examined the moderating effects of institutional distance and other factors (e.g., country of origin and service type). As such, the study of the joint influence of macro- and firm-level factors might represent another direction for future research.

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