

Chinese Firms' Acquisition of Innovation Capability from Overseas: Approaches by State- versus Private-Owned Firms

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ABSTRACT Through two in-depth case studies, we compare the approaches of a state-owned enterprise (SOE), Beijing Automotive Industries Holding Co., and a privately owned enterprise (POE), Geely, to acquire and absorb advanced technological knowledge to enhance their innovation capabilities. Each company acquired advanced knowledge from troubled famous Swedish automakers and upgraded their products technologically. Analyzing data mainly collected from secondary sources identifies major differences in approaches and actions at each acquisition step rooted in the type of ownership. We juxtapose these differences with insights from the literature on knowledge acquisition and research on firm ownership. Our findings show that the POE seeks the strategic goal of synergistic technology integration for better innovation and economic performance. In contrast, the SOE pursues national objectives with less regard for market success. This SOE focuses on an independent approach to knowledge absorption and development during their acquisition, whereas the POE emphasizes collaboration in innovation capacity development. This study provides insights into Chinese firms' positioning on innovation development on the global stage, comparative capitalism, and the particular case of state capitalism in China.

KEYWORDS automotive industry, comparative capitalism, innovation capability, SOE versus POE, technology upgrade and catch-up

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INTRODUCTION

Acquiring advanced knowledge from developed economies allows emerging market (EM) firms to skip the risky and costly process of research and development (R&D) and is the leading practice of these firms in pursuit of technological catch-up (Fagerberg & Godinho, 2005; Kumaraswamy, Mudambi, Saranga, & Tripathy, 2012; Luo & Tung, 2018). However, for EM enterprises, moving from overseas

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knowledge acquisition to indigenous innovation is challenging, if not mission impossible, as they are typically short of capital and lack sufficient absorptive capacity (Lin, Krueger, & Rodrik, 2011; Wang, Xie, Xie, & Li, 2019). The developments of domestic capital- and technology-intensive sectors are considered commercially irrational because such attempts defy the endowment structure of EMs (Lin et al., 2011). Some EM governments attempt to compensate for these disadvantages by providing financial and political incentives to stimulate and support local enterprises' overseas knowledge acquisition (Lessard, 2014). However, such attempts are often ineffective in practice because EM governments themselves lack the relevant capabilities required to screen suitable local acquirers and identify high-quality overseas knowledge (He & Wang, 2009; Wang, Stuart, & Li, 2021). Bureaucracy and agency problems inherent in governments further reduce the efficiency of their supporting and simulating efforts (Jia, Huang, & Zhang, 2019; Zhou, Gao, & Zhao, 2017). The agglomeration of these advantages and disadvantages of EM states' intervention in knowledge acquisition for innovation remains controversial at best. By comparing a Chinese state-owned enterprise (SOE) and a privately owned enterprise (POE), we aim to shed some light on these controversies and answer calls (Buckley, Clegg, Voss, Cross, Liu, & Zheng, 2018) to explore the state's effect in acquiring advanced technology from abroad and upgrading innovation capabilities through policy and ownership.

Aggressively promoted by the government through policy and incentives (Jia et al., 2019), Chinese firms have been trying to catch-up with developed country firms in innovation capabilities and advanced technologies (Overholt, 2018). The government encourages SOEs and POEs to spend more time and effort increasing their innovation capacity and building nationally and internationally recognized 'indigenous' brands (Jiang & Lu, 2018; Li, Chen, & Shapiro, 2010). When the government aims to increase national innovation capability, SOEs must follow. In China, many private firms also pursue national innovation strategies (Ebbers, 2018; Zheng & Huang, 2018) as an opportunity or a market response to take advantage of government incentives. Chinese SOEs and POEs have been very active in acquiring technology-intensive firms from advanced economies (Child & Rodrigues, 2005; Peng, 2012), and this state-supported innovation drive (Lewin, Kenney, & Murmann, 2016; Magnus, 2018) has seen China rising to the ranks of most innovative nations (McCarthy, 2019). The effort by both types of firms raises the question of how, not whether, the two types of firms are different in carrying out technological advancement (Overholt, 2018) via foreign knowledge acquisition.

Drawing on differences between SOEs' and POEs' ownership and by probing into the research on knowledge acquisition in the process of EM firms' catching-up, we explore how each type of firm acquires advanced technology from abroad, absorbs it, and innovates. Looking into the acquisitions of Saab by Beijing Automotive Industries Holding Co. (BAIC) and Volvo by Zhejiang Geely Holding Group Co. (Geely), we find how the state's political goals regarding

national innovation and its ownership make an SOE differ from a POE throughout the process. Specifically, we find that BAIC, the SOE, implemented loosely defined criteria in choosing their targets and pursued long-term strategies for innovation upgrades. Under the national indigenous innovation drive coupled with the concern of state-owned property protection, SOEs prefer developing their innovation capabilities alone with clear boundaries of property and independence. In contrast, Geely, the POE, co-develops its product innovation capabilities with foreign partners and adjusts its partnerships in an evolving manner based on its own and subsidiaries' capabilities.

This study makes several contributions. First, by comparing the different upgrading strategies in BAIC and Geely instead of focusing on which is more successful, we contribute to theories of cross-border knowledge acquisition and discover that SOEs and POEs take approaches that are somewhat different from each other, and the difference is beyond what has been delineated in the previous SOE research. While Chinese SOEs are supposed to serve long-term goals, they actually show less long-term orientation than Chinese POEs in response to the periodic and disruptive policy changes. Together with SOEs' complex organizational goals, this explains SOEs' specific approach of target selection and knowledge absorption. We also add knowledge to the discourse interested in the particular context of China and the role of state-ownership on the technological upgrade of China's state capitalism (Ebbbers, 2018; Overholt, 2018), thus also contributing to the conversation on comparative capitalism (Aharoni, 2018; Allen, 2013; Magnus, 2018; Zheng & Huang, 2018).

THEORETICAL BACKGROUND

Typically lagging behind global technological leaders, EM firms work hard to catch-up (Liu & Woywode, 2013). Economists offer at least two suggestions to late-comer EMs to help them catch-up with leading countries in innovation and productivity (Fagerberg & Godinho, 2005). The first is to acquire readily developed technologies from abroad to avoid various costs associated with developing indigenous knowledge (Kumaraswamy et al., 2012; Xie & Li, 2017). The second is to undertake institutional changes that facilitate technology upgrading and engender advanced technologies (Liu, Simon, Sun, & Cao, 2011; Xie & Li, 2018). In practice, many EMs use a combination of the two (Amsden, 1989), adopting open-door policies combined with industrial innovation policies in the hope that knowledge spillovers from abroad will lead to technological advancement and eventually to indigenous innovation (Chittoor, Sarkar, Ray, & Aulakh, 2008).

Technology Upgrading via Overseas Knowledge Acquisition

In the early stages of development, most EM firms access overseas knowledge and advanced technology through inward internationalization. Besides licensing

overseas technology, EM firms can insert themselves into the global value chain with their country- or firm-specific comparative advantages such as cost effectiveness and mass production capabilities (Lessard, 2014; Luo & Tung, 2018). Examples of these types of firms are early semiconductor producers of Asia (e.g., Foxconn), who obtained sufficient knowledge from overseas customers allowing these original equipment manufacturers (OEMs) to become higher quality suppliers (Hobday, 1995). Apart from OEMs, EM firms also form strategic alliances such as equity joint venture (EJV) with advanced economy firms (Luo & Tung, 2007). EJVs facilitate interorganizational knowledge transfer between partners, particularly the tacit knowledge embedded in organizations (Jiang & Li, 2009; Kogut, 1988). EJVs are also more acceptable by advanced country firms because their inherent hierarchical structure provides a high level of interest alignment and behavioral control that help the knowledge holder (usually the developed economy firm) contain and protect technological competencies within the EJV (Alexy, George, & Salter, 2013; Hennart, 1988).

Another EM firms' approach is going abroad to acquire advanced technology and transfer it to their home-country (Li et al., 2010; Luo & Tung, 2018; Zahra & Hayton, 2008). Leveraging international acquisition as a springboard, EM firms have the opportunity to acquire foreign firms that are larger and better-known, and have abundant technological and managerial knowledge compared to themselves (He, Khan, & Shenkar, 2018). Nonetheless, many EM firms find themselves unable to tap into the tacit knowledge embedded in the acquired firm's human resources and organizational structure (Ai & Tan, 2018; Liu & Meyer, 2020; Zhou, Fey, & Yildiz, 2020). Learning from early failures, some EM firms formulate new strategies, such as leaving the acquired technology in its country of origin and lightly touching the target firm instead of attempting its integration (Kale, Singh, & Raman, 2009). This latter strategy leaves the target in a relatively autonomous state and room for gradual integration at their own pace as the absorptive capacity of the EM acquirer increases (Liu & Meyer, 2020; Liu & Woywode, 2013; Zhou et al., 2020).

The Role of Government in Technology Upgrade in EMs

While there are many ways EM firms can obtain advanced overseas knowledge (Edwards, 1993), many cannot achieve technology upgrades and innovativeness (Chin, 2009; Corredoira & McDermott, 2014). This phenomenon is natural as innovation does not lie in EM firms' comparative advantage due to their limitation of absorptive capacity (Li et al., 2010), lack of incentives to learn to innovate (Chin, 2009; Xie & Li, 2017), and poor supply of diverse knowledge at home (Corredoira & McDermott, 2014). When market mechanisms are ineffective, non-market actors such as governments take steps to compensate (Schot & Steinmueller, 2018). Often EM governments play significant roles in facilitating technological upgrades through overseas technology acquisition (Chatterjee & Sahasranamam,

2017). They carefully design the extent, pace, and mode of economic openness to ensure indigenous firms benefit from or at least survive the exposure (Pack & Saggi, 1997). In addition, they designate an amalgamation of industrial and innovation policies to increase the effectiveness of knowledge acquisition from abroad (Chittoor et al., 2008). By providing financial subsidies for R&D and strengthening intellectual property (IP) rights, EM governments create incentives for indigenous innovation and the advancement of domestic absorptive capacity (Huang, Geng, & Wang, 2017). They also make long-term investments in public research institutes and universities to foster and boost the local supply of knowledge and encourage firm-industry collaboration and the development of market intermediaries that support the flow of knowledge and offer complementary resources (Liu et al., 2011).

However, the extent and form of government intervention have not been free of controversies (Pye & Pye, 1988; Zheng & Huang, 2018). Innovation, rooted in diversity, disorder, autonomy, and free-trial, cannot be effectively planned or organized in a top-down or centralized way (Habermas, 1984; McCloskey, 2016; Mokyr, 2017). For example, Zheng and Huang (2018) speculate that state capitalism's control of economic growth through large SOEs and the presence of POEs that develop top-down linkage with the state may not be the answer to improving innovation. Proponents of this idea (e.g., Wang et al., 2021) also contend that governments cannot discern real innovators and fail to accurately allocate resources where they are most needed. Moreover, often acute agency issues tend to misappropriate incentives designed for innovation, and frequently public R&D inputs only boost low-quality innovation with a limited influence or economic value (Jia et al., 2019). Furthermore, scholars posit that public sector spending may crowd out rather than complement R&D efforts of the private sector and smaller firms that usually have better innovation performance (Marino, Lhuillery, Parrotta, & Sala, 2016).

SOEs versus POEs in China

SOEs are essential policy tools in China. As China transitions from a centrally planned to a market-oriented economy, the proportion of SOEs has dropped from nearly 100% prior to 1978 to just over 1.26% of all enterprises in 2019 (NBSC, 2020). A large number of small SOEs went bankrupt, privatized, or changed to mixed ownership (Lin, 2019). Large SOEs consolidated in industries where they had a natural monopoly or where there were national security or strategic concerns (Lin, 2019). Research indicates that Chinese SOEs have better access to scarce resources held by the government (Ebbers, 2018), particularly in monopolized industries (Lin et al., 2011). Yang, Ru, and Ren (2015) find that SOEs, due to their access to resources, perform better than POEs in terms of the success of acquisition but not necessarily in technological upgrades. Furthermore, in China, SOEs pursue socio-political objectives (Ghorbani,

Gunderson, & Lee, 2019) or exist to exert tighter control over critical sectors and industries (Magnus, 2018; Zheng & Huang, 2018) at the expense of profitability.

First appearing in the late 1970s, by the end of 2019, Chinese POEs constituted 93.93% of all enterprises (NBSC, 2020). POEs are young and market-oriented, and different from SOEs in terms of resources, capabilities, and the extent they receive institutional pressure (Xu, Lu, & Gu, 2014). Nevertheless, they are active in almost all industries and comprise a major driving force behind China's evolution to innovativeness in new technology industries (Ghorbani & Carney, 2016).

The previous literature has compared the performance of Chinese POEs versus SOEs (e.g., Jia et al., 2019; Yang et al., 2015), and another body of the literature has studied SOEs in their specific institutional contexts (e.g., Aharoni, 2018; Lewin, 1981). However, the effect of ownership on boosting technological capabilities and continuous innovation is an important yet less studied area (Ai & Tan, 2020; He et al., 2018; Yang et al., 2015). As such, in recent years, there have been calls for a more detailed investigation of technological upgrades in China with a particular focus on the state's role (Buckley et al., 2018), particularly through SOEs.

METHODS

Due to the lack of previous research on the differences between SOEs and POEs in their processes of knowledge acquisition, technology upgrading, and innovation capabilities development, we conducted in-depth case studies (Eisenhardt, 1989), primarily informed by secondary data. Our intention for choosing an inductive method is to explore the differences between the approaches taken by the two types of firms and not generalize our findings (Eisenhardt, 1989).

Case Selection Rationale

As part of building a prosperous society emphasizing indigenous innovation, through five-year plans, the Chinese government has reshaped its auto industry and emerged as a global hub for automotive innovation (Teece, 2019). For a detailed background of the state's policies related to innovation in general and the auto industry specifically, see [Supplementary Material](#). The auto industry as we know it started after 1949 and was dominated by SOEs. In the 1980s, as SOEs sought help through EJVs with foreign automakers, POEs made their way into the Chinese auto industry and increased their role in innovation in the industry (Teece, 2019). The two firms we have selected for this study, BAIC and Geely, at the initial time of this study in 2017 had many similarities, but their most significant difference was rooted in their ownership. The following five points are the main similarities:

- (1) Both had limited absorptive capacity and experience in manufacturing passenger cars before acquiring two Swedish automakers. Founded originally under a different name in the 1950s, BAIC is an SOE under the ownership of the

Administrative Municipality of Beijing. By the mid-2000s, BAIC was the only company among the top five SOEs that did not have its own passenger car brand. On the other hand, Geely (the word in Chinese is 吉利, *jili*, which means lucky or good), headquartered in Hangzhou city, is a young holding group established in 1986 to manufacture refrigerators. In 1997, Geely entered the auto industry. By 2009, just before their respective acquisitions, Geely and BAIC each manufactured 164,495 and 10,061 passenger cars, respectively.

- (2) Within a short period from one another and relatively rapidly, each acquired far superior technology from known seasoned automakers and increased their production significantly. In December 2009, BAIC acquired Saab, a Swedish company established in the 1940s, from General Motors (GM). In 2010, Geely acquired another Swedish passenger car maker, Volvo Cars (hereafter, Volvo), founded in the 1920s, originally a subsidiary of Volvo AB and owned by Ford at the time of acquisitions. Both companies started experiencing a significant rise in sales and market performance two or three years after their respective acquisitions. In 2016, Geely Auto and BAIC Motor, the major subsidiaries of Geely Group and BAIC Holding involved in acquisitions, increased their productions by many folds and sold about 765,970 and 837,967 passenger cars, respectively.
- (3) They had very close domestic market positions. In 2017, BAIC was the fifth largest automaker, and Geely, the largest privately owned automaker, was the seventh automaker based on the volume of all types of cars sold. Geely and BAIC occupied 3.14% and 3.43% of China's passenger car market shares. The growth of Geely's and BAIC's market shares indicates that their sales increased along with the development of the automobile market in China. Still, their sales also show a surge compared with their competitors despite new local and international brands and electric vehicles (EV) entrants.
- (4) They had minimal socialization with their target's technicians. Socialization is one of the most critical tools in transferring (tacit) knowledge between firms (Zahra & George, 2002; Zhou et al., 2020), but both firms had very limited movement of technicians between target and acquirer.
- (5) Both auto groups developed numerous products based on or driven from their acquisitions and the expansion of innovation capacity. For example, BAIC's Senova D50 and D70, released in 2013, are the first products and the closest replica of the original Saabs. Up to 2018, BAIC further improved or changed Saab technology and platform to produce a total of 16 models of cars. In the case of Geely, almost all cars and models developed are based on a jointly developed platform with Volvo.

See [Supplementary Material](#) for a more detailed comparison of similarities between BAIC and Geely. The dissimilarity in their ownership structure and different approaches to improving their innovation capabilities make our SOE and

POE contextually ideal for the current study (Eisenhardt, 1989; Plakoyiannaki, Wei, & Prashantham, 2019).

Data Sources

Data from numerous sources inform the inductive method for this comparative study. The material consulted was mainly in Chinese and included some English sources. All authors are fluent in both Chinese and English. All sources were read and analyzed in their original language to increase consistency with the intended meaning (Plakoyiannaki et al., 2019).

Archival industry data. Our principal and primary sources of information were data collected from industry forums, news, automobile magazines, and other related sources. For instance, specific auto sections from news sites such as Sina, Sohu, Yiche, Tencent, China Daily, Forbes, New York Times, Reuters, and other English and Chinese news sites were thoroughly searched to collect news, background history, forecasting, and analysis of automakers, automobile industry and automobile technology, and expert analytical reports about Chinese and international automakers. We also carefully read all past five-year plans and collected any clues about national innovation plans, particularly pertaining to the auto industry.

Specific case firms and biographical material. We also looked for academic and non-academic books and articles on BAIC and Geely or on China automobile industry and the acquisitions Chinese companies have made. Sources we used to obtain industry information often publish detailed analyses of BAIC's and Geely's developments. These sources include summaries and full speeches by heads of the two companies, Heyi Xu (BAIC) and Shufu Li (Geely). In addition, various descriptive and biographical books such as *New Manufacturing Era: Li Shufu and Super Manufacturing of Geely and Volvo* (Wang, Liang, & He, 2017) were also consulted. Publicly available speeches by chairpersons of both companies were collected and carefully read for clues regarding reasons for technology acquisition, choice of the acquired company, firms' strategic plans, and indigenous innovation process, among others.

Limited information was also gathered and used from the stock market and financial analysts because only parts of Geely and BAIC were listed on the stock market (i.e., not the whole company).

Internal company sources. Internal sources of data were divided into two types, secondary and primary. Company websites were extensively researched, and many company documents (e.g., annual and internal reports) were acquired through personal contacts. Information on new products and prototypes and stages of innovation upgrade were obtained through these internal documents collected during company visits.

To complement and triangulate the secondary data from all sources and obtain some minor missing details, we also conducted a few interviews from 2013 to 2017. Our six interviewees were mainly the top management or engineering levels at various departments and subsidiaries of BAIC and Geely. The interviews were, on average, over an hour-long, with the longest being close to 3 hours and the shortest less than 50 minutes. Questions for interviews included three types. The first type was to confirm and triangulate the accuracy of information we found through secondary sources. A sample question for managers of both companies was the reason for the acquisition of their target firms. The second type of question was on minor details that we could not find from external sources. A few semi-structured and open-ended sample questions for the two companies were regarding the extent of collaboration and interaction between their employees and the technicians of their acquired firm. The third type of question was open-ended questions to divulge new information. For example, managers of both firms were probed about their strategies for acquisitions and internationalization. The interviews did not make many new discoveries but complemented the information obtained from secondary sources. Other scholars (Buckley et al., 2018) have also observed that managers of Chinese firms are known to evade divulging useful information about their acquisitions.

Analysis Process

Due to the lack of sufficient studies to guide us through our research and the need for a more in-depth investigation of the phenomenon, a standard case-study procedure was set up to unpack the underlying nuances of relationships between different events or constructs (Eisenhardt, 1989; Marshall & Rossman, 2011). Our investigation was based on a very contextualized environment (Plakoyiannaki et al., 2019). The analysis followed these stages.

Mapping national events and company actions. We organized the data chronologically and compared BAIC's and Geely's approaches to their acquisition and innovation upgrade whenever comparable data were available. If comparable information was not available, we conducted a further search for information through any of our secondary sources or made notes to find out through interviews. Once all missing information was collected and ordered chronologically, we performed our open coding by highlighting important information and events and matching them with industry and government policies.

Highlighting the process. In the next stage, we referred to the literature and tried to find familiar or dissimilar patterns (Eisenhardt, 1989). With the lens of knowledge acquisition, in addition to the ownership differences, particularly in the context of China, we organized the information on the process of technology acquisition and knowledge upgrade guided by Zahra and George's (2002) framework. We

also compared each firm's resources and ownership structure in their institutional setting. We specifically focused on the major and minor differences between these companies by comparing industry experts' reports on these firms and consulted existing theories to explain the underlying differences based on each firm's ownership.

Identifying reasons. We then found reasons and rationale for some events by matching events with the content of speeches by each companies' leaders – Heyi Xu from BAIC and Shufu Li from Geely. We paid particular attention to speeches directly linked to or immediately before and after some major events or national policy changes. To ensure the accuracy of our matching, we cross-validated and triangulated our findings in interviews. For example, in interviews, we clarified our understanding of 'Learning to build Saab is similar to learning to cook' or 'Volvo is like a tiger'. Another example of triangulation is finding the purpose of building R&D centers and the scope of their projects for both companies.

RESULTS

BAIC (SOE) and Geely (POE) Differences

We noticed many differences between these two technology acquisitions, some indicated by previous studies on Chinese firms' technological catch-up efforts. While we note these findings in the following, they are not the main focus of our findings. Instead, we report the dissimilarities in chronological order and focus on explaining the major dissimilarities that stood out and were rooted in the ownership of firms. For example, albeit we find that BAIC and Geely differed in their domestic versus international focus, we consider their different approaches to finding and selecting target technology and their insistence on independent versus collaborative innovation upgrade more interesting.

Selecting a Target

In the SOE, BAIC, the case target of the acquisition was based on very loose criteria set by the government's long-term plans, but in the case of the POE, Geely, the target was located from much earlier by the Chairman, Li. Mr. Xu, the Chairman of BAIC, pursued the SOE practice of following government orders and looking inward, mostly stating his strategic plan for better positioning of BAIC in the local market. In one of his speeches (Auto Sohu, 2009), Xu had said that BAIC's major problem was the lack of valuable IP to construct its competitive advantage and build its brand of cars. Mr. Xu's speeches up to 2009 were almost always about BAIC's EJV with Hyundai as their 'own brand' and no mention of an aspiration to establish a new independent brand.

The Beijing Municipality government, BAIC's direct owner, would take back the line of credit if BAIC failed to acquire a foreign technology by 2010, the end of

the most recent five-year plan. Xu, informed by other SOEs' acquisition experience, opted to purchase an existing brand instead of locally developing a platform in-house. By 2008, BAIC was looking for a Western firm suffering from poor performance to be easier and cheaper to acquire. In April 2009, during his speech at the Shanghai Auto-show, Xu acknowledged BAIC's slow pace in building its indigenous brand and placed technology acquisition as his third strategic priority without naming a set target (Xu, 2010). To fulfill SOEs' responsibility of technological upgrade, BAIC's criteria for BAIC were as follows: first, the target company falls into the mid-range to high-end quality spectrum; and, second, they could finalize the deal to have a brand and IP before the end of the five-year plan deadline (Zeng, 2009).

In 2008 and 2009, many automakers being struck by the economic downturn of the financial crisis created a unique opportunity for Xu (Li, 2008). Over two years and after several unsuccessful attempts, finally, in mid-2009, BAIC approached GM about Saab for the second time. GM, being under the force of Chapter 11 bankruptcy to sell its underperforming assets/brands, agreed on only selling the IP of older platforms of Saab. Mr. Han, the Corporate General Manager of BAIC (personal interview, 2013), said that GM would not have agreed to sell advanced technology to its Chinese partners' competitors if it were not for the financial crisis. BAIC did not acquire Saab's assets, facilities, equipment (except for a few robotics), or the brand name. BAIC's rationalization for this agreement was based on the assumption that they only needed the technology to build their own brand of cars, which presumably was embedded in the IP, not assets or all other patents. The acquisition and management of foreign investments would have diverted their focus from their goal of innovation upgrade by 2010 (Han, personal interview, 2013).

Geely, too, was trying to use the momentum provided by the government to expand globally and improve its technological innovation. However, Li, the Chairman, was more explicit about his target from the beginning. Zhang (2011) suggests, in 2002, only five years after Geely entered the auto industry, Li had already mentioned Volvo for its perceived superiority in safety and environmentally friendly technologies during his speeches (Wang, 2010). Mr. Gang Wei, the Deputy CEO of CEVT, said (personal interview, 2016):

It was a long-term strategic plan to merge with Volvo. In 2006, Mr. Shufu Li foresaw the change of the global auto industry. He [at that time] set up a prospective strategy and planned for the acquisition of Volvo.

In 2007 and 2008, Li formally inquired about purchasing Volvo several times but did not receive a response from Mullaly, the CEO of Ford at the time (Zhang, 2011). In 2008, as Ford was going through similar financial difficulties as GM, albeit not under Chapter 11, Mullaly finally responded with a positive intention. In 2008, Ford was experiencing a 20.3% decrease in revenue compared to the year before (Wang, 2010). Mullaly blamed Ford's over-diversification as a

problem and began the implementation of the 'One Ford' strategy by trying to sell its international subsidiaries, Land Rover, Jaguar, and Volvo. The sale of Volvo to Geely was eventually finalized in the second half of 2010.

During the few years prior to the acquisition, BAIC seemed to be content with having EJV production with Hyundai and Daimler until the government insisted on boosting their national pride, building indigenous brands, and increasing their production before the end of 2010. This point was also reflected in their decision about who and what to acquire. They went around on a shopping spree until they finally were pressed for time, and no other company or technology was up for acquisition until they settled for the first company available to them, Saab. BAIC's leaders only knew the set of knowledge they wanted to acquire from a mid-range automobile technology. On the other hand, Geely seemed to think more strategically about what and whom they wanted. Li had a set plan, but he had to wait for about eight years from announcing his wish until he acquired Volvo. Many experts labeled Li's patience and desire 'stubborn' (Zhang, 2011).

Contrasting the two, the government protected BAIC's economic outlook by requiring taxi companies to buy SOE cars, and performance or synergy was not the intended outcome. On the other hand, Geely focused on the strategic approach to future growth and sought greater synergy through engaging in a technological upgrade. While BAIC's approach to technology upgrade was to fulfill its responsibility by achieving domestic goals set by the government before the end of the five-year plan, the synergistic approach entered Geely into the international innovation ecosystem.

Absorption of Knowledge and Innovation

BAIC began the process of integration of knowledge almost immediately after its acquisitions. In their efforts to learn, BAIC insisted on developing their own brand and knowledge, which was consistent with the indigenous innovation goal of the government. BAIC's idea was to build a replica factory of Saab in Beijing to develop a brand, not inherit a foreign brand (Mr. Zhang, the Director of Corporate Strategic Planning in BAIC, personal interview, 2013). In its new factory, instead of a conventional approach to knowledge transfer through socialization (Zahra & George, 2002), BAIC initiated the absorption of knowledge using a do-it-yourself and 'learning by doing' procedure. As a result, during the three years that it took BAIC to manufacture an improved version of Saab, only about 150 Saab technicians took turns to travel to Beijing to help. This procedure meant that BAIC technicians tried to do every detail based on purchased manuals and only asked questions from Saab technicians when absolutely necessary. Mr. Gu, the Chief Engineering Officer of BAIC, recalled (personal interview, 2013) many occasions that they had to ask Saab technicians for help when BAIC technicians could not find answers in manuals. For example, he mentioned a problem with fitting parts of chassis together that no matter how they tried to fit the two pieces together and they did not fit perfectly. Gu noted:

The Saab technician just took a hammer and gently hit the sides of the parts, and everything suddenly fitted together. We didn't know we could do that. This was based on many years of experience and was not in manuals.

Like other Chinese SOEs had done before them, BAIC transferred the technology to China as one of their own. To maintain the same quality and reduce the price, they convinced about 70% of Saab suppliers to move part or all their manufacturing to China to be near BAIC (Corporate General Manager of BAIC, personal interview, 2013). This ensured that the tacit knowledge rooted in parts could also be moved to China and BAIC. More crucially, BAIC registered their own brand name, Senova (Shenbao, 绅宝, in Chinese), as an indigenous brand. Apart from suppliers that moved to China, BAIC did not maintain a relationship with Saab or its other original affiliates.

On the other hand, Geely had a more holistic approach and purchased everything associated with Volvo Cars. Geely acquired 100% of shares of Volvo Cars, including the brand, equipment, IP, debt, factories, contracts, plans, and even patents registered under Ford's name that were used in Volvo cars. Geely left Volvo's operation completely untouched and independent in Sweden. Unlike BAIC, building an indigenous brand was not Geely's aim.

Geely took several measures that helped improve Geely's quality by absorbing new Volvo knowledge and maintaining Volvo's status as an industry leader in the area of safety and emission. First and most importantly, as Geely had the right to use all IPs of Volvo (after a certain number of years that we could not determine), they started learning the governance of facilities and quality management system in Sweden. Second, Geely gave up its own low-end and cheap technology and instead grasped Volvo's high-end brand standards and R&D capabilities. For example, Geely transformed many of their practices using Volvo's standards to produce and test their domestic brands. Third, by convincing Volvo's suppliers to supply to Geely without moving to China or compromising the quality and future innovation, Geely increased the economy of scope and scale for suppliers and R&D centers and reduced the cost of parts and future products of Geely and Volvo. Fifth, Geely established R&D centers, such as CEVT, joint-ventured between Geely Auto and Volvo Cars in Sweden and other countries.

While Geely owned all Volvo IPs, they did not insist on transferring the core of Volvo technology to their own brands to maintain independent identities across brands. On the contrary, Li had repeatedly emphasized that he wanted to keep Volvo as a wholly separate and independent entity. He expressed this by saying (Wang, 2010: 23–24):

Geely Auto and Volvo are brothers; they do not have a father and son relationship. ... Geely will not produce Volvo and Volvo will not manufacture Geely ... they support each other and advance together.

Unlike BAIC, not interested in the fate of Saab, Volvo's sustained competitive advantage, rooted in its innovation, became Geely's concern. Similar to Geely's

other international brands, Volvo was not the only means of technology upgrade. All Geely's domestic and international brands together were under technological upgrading. Li was interested in turning Volvo's profitability around and making Geely a global player with Volvo. For example, Li said (Wang, 2010: 22):

To improve Volvo's competitiveness, we must return it to its natural habitat. Volvo is like a tiger that we have to return to the mountain [in Chinese, instead of 'forest' as tigers' habitat, the mountain is used], where it belongs, to let it resume its hunting abilities. On this mountain [forest], we have Mercedes, BMW, and Audi; Volvo must be able to compete with its full strength. Therefore, Volvo must be able to release [the full power of] its brand, quality, and management team.

Li turned Volvo's profitability around shortly after acquiring it while improving Geely's position. After 2013, the new Volvo XC60, based on the CMA platform developed by CEVT, increased Volvo's sales and market share in all its three largest markets; at the same time, Geely's domestic brands also experienced significant growth in China (see [Supplementary Material](#) for more detail).

DISCUSSION

Despite its innovation and product upgrade in terms of technology, Senova's sales dropped in 2017, while BAIC maintained its overall market position, thanks to the production and sales of its two EJV brands, Beijing-Hyundai and Beijing-Benz. Due to its failure in differentiation in terms of looks and price, auto experts rejected BAIC's attempt to give Senova a mid- to high-range image (Chejingshe, 2019). The decline of the China automobile market in 2018 (Car News, 2020; Pan, 2019) exacerbated the situation, and Xu announced the suspension of the production of Senova and old Saab technology in BAIC's Beijing factory, citing the Beijing Municipal government's plan to end the era of internal combustion engine vehicles as the reason (China Auto Time, 2018).

On the other hand, Geely created further synergy and expanded its array of mid-range to high-end brands by introducing new Volvo and Geely models and adding more brands, such as Lynk & Co., Polestar, and Geometry. All new brands and models are co-developed with Volvo and based on the platform developed by CEVT. Geely has introduced these new brands as 'co-developed' and not indigenous or independent brands. In October 2021, Geely's subsidiary, Volvo Car AB, was listed on Stockholm's Nasdaq, solidifying Volvo's independence.

We compared an SOE with a POE in their approaches to technology and innovation upgrades through in-depth comparative case studies. Both companies successfully internalized the acquired technology and developed new products post-acquisition. Despite skepticism about the innovation performance of Chinese firms (Magnus, 2018; Zheng & Huang, 2018), BAIC and Geely establishing their positions by acquiring old Swedish technologies demonstrate that both

POEs and SOEs play essential roles in technology catch-up and innovation in China, albeit taking different paths.

Technological upgrades and indigenous innovation seem different for our SOE and POE. Chinese government utilizes SOEs to pursue long-term goals that build comparative advantages in strategic industries, so that China would not be stuck at the low-end value chain activities in such industries (Lin, 2019), but they yield uncertain payoffs in the short run (Magnus, 2018). Innovation capability building is thus an appropriate task for SOEs. When the top-down goal was given to them directly or through five-year plans (Ebbbers, 2018; Zheng & Huang, 2018), the upward accountability structure inherent in the bureaucracy of Chinese SOEs ensures they are taken seriously with top priority (Zhou, 2021). At the same time, the government imposes a relatively short time to achieve long-term goals (Ramamurti, 1986). SOEs are used to the top-down disruption into their organizational routines (Zhou, 2021) as a result of the government's central decision making (Jia et al., 2019) and/or potential changes of policy directions every five to ten years (Ebbbers, 2018; Magnus, 2018).

Since firms' heterogeneity is largely ignored in policy design, as an SOE, BAIC has to conform to the allotted timeframe of each policy (Lin, 2019), regardless of whether it is ready for it. This dynamic between the state and SOEs necessitates firm-specific adaptation, which inevitably and to some degree manifests as decoupling (Jia et al., 2019; Zhou, 2021). The decoupling of BAIC explains their focus on a short horizon of one or two decades in fulfillment of building a product and a brand with exclusive IP rights under their control that could be labeled 'indigenous' and 'independent'. As a result, the synergy seems to be of secondary or less importance, is less visible, more complicated, and requires longer to achieve.

On the other hand, POEs faced with market competition focus on the potential synergy they can achieve from a technology acquisition. POEs are active and free (i.e., in an independent sense) participants of the market that pursue their own long-term economic interests, whether be it growing domestically or internationally. In knowledge acquisition, the selection of the target was important for Geely in creating synergy and post-merger integration to achieve innovation that is important in firms' long-term competitive advantage (Chittoor et al., 2008). Geely chose their target(s) aligned with their long-term economic interests more selectively and tolerated delays until the target became available. Once the suitable target is acquired, creating synergy is more flexible and open for exploration. POEs are more flexible and open to product development and innovation collaboration without strict top-down control. Li assigning equality to Volvo, Geely Auto, and their other brands cultivates independence in subsidiaries to set their own directions and together or independently come up with bottom-up innovation.

State-ownership could also explain BAIC's preference for complete and exclusive control of IP. Through a long period of distrust of foreigners before the open doors (Ebbbers, 2018) and their inability to learn from EJV partners, who were perhaps protecting the fundamental knowledge (Alexy et al., 2013),

BAIC, similar to many other SOEs, knew well about the limitation of help they could get from foreign partners. In addition, several rounds of SOE reforms have delineated their dual goals of improving their efficiency and preventing the loss of national assets (Lin, 2019). While carrying social or political obligations and enjoying a soft budget, SOE executives also need to ensure the preservation and appreciation of state-owned assets, which influence their political life and professional career and are not worth risking. Furthermore, products and brands with full domestic IP rights mean no long-term reliance on any foreign entity. The Chairman of BAIC turned down the offer of the Swedish government that included Saab's manufacturing equipment and land in Sweden and made it clear that all BAIC wanted from Saab was the technology (Tian, 2010).

In contrast, Geely tried to learn by establishing dual management systems with their international advanced technology firms. Based on its POE status, national or international, all its brands are Geely brands. Geely's important outcome was the strategic synergy of building innovation capacity and learning through cooperation. Collaboration and co-development as significant sources of innovation were the apparent approaches to Geely and sufficient to insert them into the global innovation system.

Managerial Implications

The findings of this research call managers' attention to the different approaches Chinese SOEs and POEs take to build innovation capabilities through acquiring advanced overseas knowledge. The two types of firms have different criteria for screening targets and preferences over cooperation with foreign entities. We suggest that SOEs are not purely profit-driven and their behaviors are not unpredictable. SOEs have long-term goals, but the top-down authority occasionally disrupts the processes of achieving them. Their shifting priorities are set by top-down instructions and usually with time pressure to match national or regional five-year plans (Li, Cui, & Lu, 2014; Lin, 2019). SOEs would make all efforts to achieve these goals in time, at least in a symbolic and underdefined fashion. Therefore, to deal with Chinese SOEs, it is essential to map the authority hierarchy and identify the relevant policies at the national and regional levels (Zhou, 2021). Comprehensive knowledge of these policies would be beneficial in discovering SOEs' preferences.

In addition, SOE managers need to work on multiple tasks, seldom designed for any specific company or industry and potentially incongruent, simultaneously assigned to them by various levels of authorities (Lin, 2019). SOE managers need to conciliate the potential paradox between requirements and their firm specificities, which at times is not an easy job. For instance, BAIC risked a portion of national capital to acquire Saab and fulfill its indigenous innovation responsibility as required by the 2004 edition of the Auto Industry Policy. They bought Saab's internal combustion engine technology in compliance with building an indigenous

brand only to be faced with another policy shift to EV by the government of Beijing, their direct owner. BAIC made visible and quantifiable improvements in their innovation capabilities, as reflected in the increased number of patent registrations and new sedan models. It is crucial for managers of companies aspiring to work with SOEs to understand the multiple goals SOE executives face and not simply interpret SOEs' shifting and non-market-oriented actions and decisions as irrational or resulting from agency problems.

Theoretical Contributions

Despite the qualitative nature of this study, our study makes various contributions to the literature on technology acquisition in firms as related to the type of ownership within the institutional theory. Our first contribution is about the motivation and strategic approach to cross-border knowledge acquisition in SOEs versus POEs. While SOEs were conventionally supposed to be more long-term oriented than POEs, we found the opposite. The POE's strategic approach for knowledge acquisition was a relatively long-term strategy based on collaboration and co-ownership, while this approach in the SOE was based on a relatively short-term policy agenda and the protection concerns of the state's assets. BAIC's attempts mainly focused on attaining an independent brand by the deadline assigned by the government rather than upgrading their innovation capability eventually. On the other hand, Geely can effectively achieve the ultimate national goal by building an innovative ecosystem. Future studies could consider the role of goal setting and goal attainment in two types of firms.

We also contribute to the positive scholarship on comparative capitalism that does not assume a zero-sum game between state-ownership and private-ownership; both firms could be innovative in their own ways (Huang et al., 2017). It is out of the scope of this study to conclude whether state capitalism and government pressure on SOEs and POEs to increase innovation is working or failing (Magnus, 2018; Overholt, 2018; Zheng & Huang, 2018), but through this study, we find both types of ownership and their respective approaches to technology upgrade to be successful. Scholars (e.g., Zheng & Huang, 2018) are of the opinion that top-down innovation may not be the most sustainable approach to creativity, but other scholars (e.g., Brown & Duguid, 2000) argue that this type of approach could work if managed well. For example, instead of focusing on the firm's product success, we should focus on the state's policies' success that requires SOEs to change directions.

Furthermore, we view the institution of ownership and variety of capitalism (Zheng & Huang, 2018) in China not as a single variable but in relation to specific types of ownership within the same nation (Ragin & Zaret, 1983). The two capitalist systems in China have created related complementary institutions and a hybrid system (Djelic, 1998). We provide a mid-range theory placed between the institutional theory that focuses on firms and comparative capitalism that

comprises two parallel systems within a nation. To replace the old bureaucracies, countries emerging from socialism bricolage institutions of the past and newborn capitalist systems (Stark & Bruszt, 2001). Chinese SOEs are embedded in the fabric of the existing local institutions and forced to play by the old rules, where a top-down communicative action (Habermas, 1984) is adopted to form their new identities in pursuit of growth (McCloskey, 2016; Mokyr, 2017) irrespective of the old system's potential pitfalls (Pye & Pye, 1988). On the other hand, POEs have more choices in the emerging free-market system through distributive leadership (Choudhury, 2017; Mokyr, 2017), whereby experts direct innovation activities of the firm.

Finally, Geely's success in cooperating with Volvo, CEVT, and its other brands and launching various brands also highlights a new era of China's presence in the global auto industry (Teece, 2018, 2019) and many other industries. Compared to the time of being perceived as a copycat or the state that appropriates other countries' technologies, POEs such as Geely are proving to be relied upon for future innovation and advancement of knowledge. Unlike SOEs with an internal and domestic focus, we observe that many Chinese POEs establish themselves within the global supply chain (Lessard, 2014; Luo & Tung, 2018) and not only help their domestic productions and innovation capability but also help the innovation and performance of the global market. We recognize that after their acquisitions, Volvo, along with Geely's other acquired foreign firms, became a part of Geely's conglomerate. We also highlighted that unlike SOEs and many other EM firms that either fully moved the acquired foreign firm to their home-country or lightly touched the foreign firm (Kale et al., 2009; Liu & Woywode, 2013), Geely had led Volvo and its other brands to greater success in international markets.

Limitations and Future Research Directions

Despite the insight they have offered, the first and most important limitation in our research is our focus on only two cases. There are simply not enough opportunities for EM firms to acquire such large-scale technology from abroad in this highly consolidated industry. Despite the depth and reliability of our findings, the extension of implications to other SOEs and POEs should be taken with caution. The second limitation is regarding the performance of technology acquired. While [Supplementary Material](#) lists some of the two firms' products that benefited from acquired technologies, it is difficult to discern the extent this advanced knowledge has directly affected each company's innovation performance. The performance of a product depends on much more than a firm's quality of innovation and technology (Cooper & Kleinschmidt, 1987). In general, we suggest future studies investigate the extent of contribution of emerging firms to the global innovation network with particular attention to their ownership and more nuanced criteria for success.

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DATA AVAILABILITY STATEMENT

The data for this study were primarily collected from secondary sources referenced in the manuscript. Sources cited include speeches, press releases, brochures, websites, books, TV reports, electronic media, expert analysis, and minor information from the stock market. In addition, we collected more data from a limited number of interviews, internal documents and memos, and board/annual meeting reports from before firms' IPO. We received permission to use these latter types of data for our analysis, but they cannot be made publicly available due to agreements with case companies.

SUPPLEMENTARY MATERIAL

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