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*Overseas acquisitions by Chinese firms: value generating or destroying?*

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**Abstract**

Using comprehensive panel data on Chinese acquisitions in Germany in the time period from 2007 to 2016, this thesis investigates the effects of the acquisition on target firm performance and concentrates on some critical issues regarding target top management team turnover and target firm performance as well as acquirer technological capability and target innovation performance. More specifically, the thesis focuses on the following questions: (1) How do acquisitions by emerging-market firms in developed markets influence target post-acquisition firm performance? (2) Do target top management team turnover or target chief executive officer (CEO) turnover have an effect on target post-acquisition firm performance in case of emerging-market acquisitions in developed markets and what is the moderating role of appointing an acquiring firm's manager as target CEO? (3) How does the acquirer's technological capability relate to target post-acquisition innovation performance in case of emerging-market acquisitions in developed markets and does prior international acquisition experience of the acquiring firm play a moderating role in this relationship? The theory and findings contribute to the existing literature on emerging-market firms and their investments in developed-market firms and offer some managerial guidelines in managing target post-acquisition success.

**Keywords:**

Cross-border acquisitions; emerging-market multinationals; target firm performance; executive turnover; innovation performance

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**Abbreviations**

CEO	Chief executive officer
DMNE	Developed market multinational enterprise
EMNE	Emerging market multinational enterprise
EPO	European Patent Office
EUR	Euro
FDI	Foreign direct investment
FGLS	Feasible generalized least square
GmbH	Gesellschaft mit beschränkter Haftung
IB	International business
Mio.	Million
MNE	Multinational enterprise
M&A	Mergers & Acquisitions
OLI-model	Ownership – Location – Internalization - Model
RBV	Resource-based view
ROA	Return on assets
TMT	Top management team
U.S.	United States
USD	U.S. Dollar
VIF	Variance inflation factor



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## Introduction

Mergers and acquisitions (M&A) represent a common strategy and important method for strategic expansion. Increased globalization, technological progress, and liberalization of economies have greatly contributed to the popularity of cross-border M&A. Within the last two decades, cross-border M&A have reached exceptional levels at a global stage: in 2017, cross-border M&A accounted, in terms of value, for more than 46 percent of all M&A (Bloomberg, 2018). At the same time, the share of emerging-market flows has grown extensively (this thesis follows the classification of the International Monetary Fund (2020) for emerging and developed economies). While in 2000, investments from emerging-market multinational enterprises (EMNEs) only accounted for little more than 5 percent of all cross-border M&A, in 2017, they already amounted to 30 percent, increasingly targeting firms in developed markets (UNCTAD, 2018, 2017). China has been the most active emerging-market country, being the source of 65 percent of all emerging-market cross-border M&A (UNCTAD, 2018).

This rapid rise of cross-border M&A from EMNEs has surged research interest among academia in various disciplines, including international business (IB), finance, and strategic management. A distinction from the existing research on cross-border M&A, which is based on developed-market multinational enterprises (DMNEs), seems necessary, as scholars acknowledge distinctive characteristics of emerging-market cross-border M&A (Ramamurti and Hillemann, 2018; Buckley *et al.*, 2007b; Luo and Tung, 2007, 2018): Compared to DMNEs, EMNEs internationalize rapidly rather than gradually and use high-commitment modes, such as M&A, already early in their internationalization strategy. Moreover, they enter psychically distant countries earlier than expected based on the traditional internationalization pattern of developed-market firms (Ramamurti and

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Hillemann, 2018; Guillén and García-Canal, 2009; Peng, 2012; Deng, 2009). According to Luo and Tung (2018, 2007), EMNEs use international acquisitions in developed markets as a springboard to minimize market and institutional constraints at home and to access strategic assets as a mean to reduce their competitive disadvantage. In contrast, prior studies show that developed-market firms do not internationalize before they have internally built up superior intangible assets such as technological capability, brand names, or managerial expertise, which then can be exploited abroad (Ramamurti, 2012b; Dunning, 1988; Hymer, 1960).

Prior studies on cross-border M&A of EMNEs have focused on a variety of important aspects, which can be grouped into pre-acquisition and post-acquisition issues. Research on pre-acquisition aspects engaged in topics such as the acquiring firm's motivations (Ramamurti and Hillemann, 2018; DePamphilis, 2015; Chen and Cuervo-Cazurra, 2012; Aybar and Ficici, 2009; Alon, Hale, and Santos, 2010; Buckley *et al.*, 2007a), choice of entry mode (Demirbag, McGuinness, and Altay, 2010; Deng, 2009; Rui and Yip, 2008), shareholder wealth creation in terms of short-term stock-market reactions (Bhagat, Malhotra, and Zhu, 2011; Chen and Young, 2010; Aybar and Ficici, 2009; Boateng and Qian, 2007), and failure rate to complete announced deals (Zhou, Xie, and Wang, 2016).

Gradually, attention is shifting from the antecedents of emerging-market cross-border M&A to the outcomes and long-term value-creating strategies as well as post-acquisition integration processes. The implications of emerging-market cross-border M&A on target and acquiring firm post-acquisition financial performance have already received some attention, however the findings remain inconclusive (Tóké, 2019; Buckley, Elia, and Kafouros, 2014; Chari, Chen, and Dominguez, 2012; Buckley and Elia, 2011; Chen, 2011; Buckley, Elia, and Kafouros, 2010; Chen and Lin, 2009). Therefore, Buckley *et al.* (2018) called for further empirical investigation of emerging-market cross-border M&A,

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specifically Chinese overseas M&A, with updated data. Aspects and implications of post-acquisition human resource management strategies, for instance the turnover of target executives, as well as knowledge transfer and organizational learning have not yet been examined in detail in this context although crucial to the comprehension of emerging-market cross-border M&A. Research on cross-border acquisitions from DMNEs has provided insights into target executive turnover (Bilgili *et al.*, 2017; Devine, Melo Galdino, and Lamont, 2016; Krug and Nigh, 1998; Davis and Nair, 2003; Krug and Hegarty, 1997) and post-acquisition knowledge management (Yen, Ling, and Ting, 2017; Ahammad *et al.*, 2016; Bauer, Matzler, and Wolf, 2016; Ranft and Lord, 2002; Bresman, Birkinshaw, and Nobel, 1999), but it is not clear if these findings can be generalized to EMNEs' cross-border M&A due to their distinctive characteristics.

It is widely accepted that EMNEs use overseas acquisitions particularly to gain access to strategic assets and superior technology (Ramamurti and Hillemann, 2018; Chen and Cuervo-Cazurra, 2012; Luo and Tung, 2018, 2007), yet, the implications for the target firms remain unclear and scholars have failed to reach consensus whether emerging-market acquisitions generate or destroy value for target firms (Galavotti, Cerrato, and Cantoni, 2020; Tóké, 2019; Buckley and Elia, 2011; Buckley *et al.*, 2014; Chari *et al.*, 2012; Chen, 2011). In spite of the lack of consistent results in the academic literature, understanding the effects of cross-border acquisitions by EMNEs in developed markets is more important than ever, considering that the internationalization of emerging-market firms is on the rise.

To clarify the implications of acquisitions by emerging-market firms on target firm performance in developed markets, this thesis explores the following research questions drawing on the growing literature on cross-border acquisitions by EMNEs:

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- (1) How do acquisitions by EMNEs in developed markets influence target post-acquisition firm performance?
  - (2) How do target top management team (TMT) and chief executive officer (CEO) turnover influence target post-acquisition firm performance in case of EMNEs acquisitions in developed markets and what is the moderating role of appointing an acquiring firm's manager as target CEO?
  - (3) How does the acquirer's technological capability influence target post-acquisition innovation performance in case of EMNEs acquisitions in developed markets and does prior international acquisition experience of the acquiring firm play a moderating role in this relationship?

To answer these research questions, I conduct three quantitative empirical studies using unique comprehensive longitudinal panel data on acquisitions by Chinese acquirers in Germany that occurred in the time period 2007 until 2016 and involved the takeover of a majority stake in the German firm. Information on target and acquiring firms can be found in the appendix (Table 21).

This is a particularly suitable setting to answer the research questions for several reasons. First, China is the major source of emerging-market overseas M&A, accounting for about 65 percent of all emerging-market cross-border M&A in recent years (UNCTAD, 2018, 2019, 2020). The dramatic surge in Chinese overseas M&A is attributed to several reforms instigated by the Chinese government, including the "go abroad policy" and the strategy "Made in China 2025" to become the leading global technological superpower (Zenglein and Holzmann, 2019; Du and Boateng, 2015). Subsequently, in Germany, the presence of Chinese acquirers increased rapidly from 2011 onward, reaching its maximum in 2017, when the country was the second largest recipient of Chinese investment in Europe

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with U.S. Dollar (USD) 13.7 billion (Ernst & Young, 2019). This shows the immense relevance of Chinese outward foreign direct investment (FDI) in Germany and highlights the timeliness of the study. Second, Germany counts among the top economies globally. German firms dominate many medium and high-tech industries, thus offering acquiring firms a suitable location to enhance their competitiveness (UNCTAD, 2019; Wübbeke *et al.*, 2016). Third, the research question is not only relevant from a theoretical point of view. Taking a managerial perspective, stakeholders in Germany fear an outflow of knowledge and a threat to local economy (Bertrand, Betschinger, and Settles, 2016; Wübbeke *et al.*, 2016; Buckley *et al.*, 2014; Goldstein, 2009; Wang and Xie, 2009). Thus, in Germany especially cross-border acquisitions by EMNEs have raised concerns about their effect on the performance of target firms, while acquisitions from DMNEs are generally less disapproved. Therefore, this setting allows for a rich context to analyze the research question.

I hand-collected data on these acquisitions from numerous data bases, including Dafne, a data base with comprehensive information on German firms, and the German website Bundesanzeiger, which offers information on firm-level financial information. To test how the independent variables affect target firm performance and target innovation performance, and thus receive answers to the research questions, the data set was analyzed through multiple regression analysis. In addition to the quantitative analysis, existing literature is examined to incorporate prior research and develop the hypotheses.

The first study will focus on a comprehensive way of understanding the effect of acquisitions by EMNEs on developed-market target post-acquisition firm performance, measured as return on assets (ROA). According to traditional IB theory, internationalization is linked with superior performance as these firms are endowed with superior capabilities and comparative advantages (Hymer, 1960). Foreign-owned firms can also benefit from

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these conditions, the potentials for performance improvement lying in the realization of synergies, enhanced competitiveness through restructuring, or the disciplining effect on an inefficient management (Gu, Yang, and Strange, 2019; Erdogan, 2013; Chang, Chung, and Jungbien Moon, 2013; Dunning, 1988). However, in contrast to developed-market firms who venture abroad after gaining superior firm-specific assets, EMNEs specifically use cross-border M&A to gain access to superior assets (Ramamurti and Hillemann, 2018; Chen and Cuervo-Cazurra, 2012; Luo and Tung, 2018, 2007). With this distinctive difference and taking the resource-based view (RBV) of the firm into account, it is important to revisit traditional IB theory, if developed-market firms owned by emerging-market firms also exhibit superior performance compared to their comparable local firms. I apply propensity score matching to account for selection bias and compare acquired firms with similar non-acquired control firms. Additionally, to rule out the general takeover effect, I construct another sample of German firms acquired by Austrian firms to examine the effect on target firm performance in case of acquisition by other developed-market firms. The study finds that acquisitions of German target firms by Chinese acquirers reduce target firm performance, while in the replication with German firms acquired by Austrian firms no statistically significant effect on target firm performance can be observed. These results suggest that overseas acquisitions by Chinese firms in Germany indeed destroy value for the target firms and that the traditional view that foreign-owned firms generally exhibit superior performance, does not necessarily hold true in case of emerging-market acquirers and developed-market target firms. The study contributes to international business research and the implications of EMNEs cross-border acquisitions on target firm performance.

The second study will explore if changes in the strategic management of the target firm could be the cause for the reduction in target firm performance. Performance is oftentimes linked to the skills and effectiveness of the firm's management, e.g. by Karaevli

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(2007), whose findings support that a firm's operational performance is under the control of the management. Indeed, literature dating back to the 1980s has found that M&A induce long-term effects on the dynamics and performance of the target TMT: Within five years, almost 60 percent of the target TMT is gone (Walsh, 1988; Hayes, 1979; Krug, Wright, and Kroll, 2014). Hence, the second study will concentrate on the development of the TMT at the target firms in the post-acquisition phase and the implications on target firm performance.

Two opposing arguments are brought forward by the RBV of the firm and agency theory: According to the RBV of the firm, management continuity represents an important factor of stability and is believed to have a positive implication on post-acquisition performance (Bilgili *et al.*, 2017; Ahammad *et al.*, 2016; Krishnan, Miller, and Judge, 1997; Cannella and Hambrick, 1993a). In contrast, agency theory argues that acquisitions occur as a result of inefficient management at the target firm (Devine *et al.*, 2016; Demirtas and Simsir, 2016; Jensen and Ruback, 1983; Manne, 1965), hence turnover is desirable and positive. Most of the existing evidence on target TMT turnover and post-acquisition performance is based on samples of publicly listed U.S. firms, which have been targets to domestic acquisitions in the 1980s. These studies document a negative effect of TMT replacement on target firm performance, which provides support for the RBV of the firm (Krishnan *et al.*, 1997; Cannella and Hambrick, 1993a). However, studies with data on more recent M&A deals, involving publicly listed target firms as well, show a positive effect of TMT replacement on target firm performance, lending support to agency theory (Devine *et al.*, 2016; Demirtas and Simsir, 2016). This conflicting evidence suggests that the link is not as straightforward and that it could depend on the context whether retaining or replacing management contributes to acquisition success. As a result, there has been a call for further

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research considering cross-border acquisitions as well as privately held target firms (Krug *et al.*, 2014).

Different from the extant studies, this study investigates the effect of target TMT turnover on target post-acquisition firm performance following acquisitions by EMNEs in developed markets. Additionally, the sample used in this study is the first to include a majority of privately held firms. Privately held firms account for the majority of acquisition targets, but so far, empirical studies mostly rely on samples of publicly listed firms because of better data availability.

Overall, the study finds that target TMT turnover has no significant effect on target post-acquisition firm performance, whereas target CEO turnover positively affects target post-acquisition firm performance. This result actually shows that the departure of the CEO is beneficial for target post-acquisition firm performance, providing evidence that CEO turnover can represent a way of demonstrating organizational and strategic change as well as the disruption of established practices and norms, thereby positively affecting post-acquisition firm performance, while the larger proportion of the TMT stays on board to avoid too much commotion and disruption (Bilgili *et al.*, 2017). No support was found that the appointment of an acquiring firm's manager as new target CEO weakens the positive relationship between target CEO turnover and target post-acquisition firm performance. Thereby, this study contributes to the better understanding of target TMT turnover following cross-border acquisitions by EMNEs in developed markets and the implications of turnover on target post-acquisition firm performance.

In particular, the transactions, where the target is located in a developed market and the acquirer in an emerging market raise concern in the public and are often associated with the fear of knowledge drains, technology transfer, and reduction of innovation performance of target firms (Fisch, Block, and Sandner, 2018; Bandick, Görg, and Karpaty, 2014;



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Miozzo, DiVito, and Desyllas, 2016). To address this issue, the third study will investigate the implications on target firm post-acquisition innovation performance. To measure target innovation performance, the study employs the following dependent variables: innovation rate (number of patent applications each year by the target firm) and innovation quality, captured as innovation impact (number of forward citations that a patent receives in subsequent patents), innovation generality (forward citations received in few or various patent classes), and innovation originality (citations made to earlier patents from few or various patent classes).

Although prior studies have offered valuable insights on the effect of an acquisition event on target innovation performance, empirical evidence remains inconsistent. Some studies show evidence that foreign-acquired firms are more likely to innovate (Chen, Hua, and Boateng, 2017; Zhang, Deng, and Tang, 2018; Girma, Gong, and Görg, 2008; Guadalupe, Kuzmina, and Thomas, 2012; Bertrand, 2009; Bandick *et al.*, 2014; Eliasson, Hansson, and Lindvert, 2017), whereas other studies provide findings that imply a negative impact of foreign acquisitions on target innovation performance (Szücs, 2014; Stiebale, 2016; Stiebale and Reize, 2011). Considering the conflicting results, the study proposes that some acquirers might be more effective in promoting target innovation performance successfully than others.

Different from the extant studies, this study examines the relevance of the target's and acquirer's country of origin as well as the acquiring firm's technological capability to promote target innovation performance successfully. There is still a lack of profound empirical and theoretical knowledge how these types of acquisitions, where the acquirer is from an emerging country and the target firm from a developed country, affect innovation performance in target firms. Drawing on the RBV of the firm and the concept of technological capability, the study finds a significant and positive relation between the

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acquiring firm's technological capability (measured as number of patents applied for by the acquiring firm since its foundation) and target innovation impact in the post-acquisition phase. However, no statistically significant effect could be observed for the other three variables representing innovation performance, namely innovation rate, innovation originality, and innovation generality. Moreover, the study found no support that prior international acquisition experience of the acquirer positively moderates this relationship. The study contributes to innovation and M&A literature and shows that various aspects of innovation performance have to be differentiated, when conducting research on innovation performance. Varying measures for innovation performance might also be the reason for the inconclusive results on the effect of cross-border acquisitions on target innovation performance in prior studies so far.

The thesis consists of three parts. After the introductory section, which introduced the purpose of this study and selection of the research questions, three chapters follow that empirically investigate the research questions in relation to the underlying theory. The first chapter serves to answer the main research question, which is to determine whether Chinese overseas acquisitions in developed markets generate or destroy value for the target firms. The second chapter concentrates on the development of the TMT at the target firms after the acquisition event took place. Building on agency theory and the resource-based view of the firm, it investigates empirically how target TMT and CEO turnover affect target firm financial performance after acquisition. The third chapter takes on another perspective of target firm performance and analyzes which acquirers have the capability to generate and manage innovation at the target firm successfully. Finally, the last part provides a conclusion as well as discussion of the implications and limitations of the project. Additionally, suggestions for future research avenues are offered.

# 1 Overseas Acquisitions by Emerging-Market Firms in Developed Markets and Target Firm Performance – an Empirical Analysis of Chinese Acquisitions in Germany<sup>1</sup>

## *Abstract*

*Acquisitions by emerging-market firms in developed markets have increased significantly. Although many papers have analyzed the effects of foreign acquisitions on firm performance, the current understanding how target firm performance is affected is still limited. Using a comprehensive data set of Chinese acquisitions in Germany combined with propensity score matching, this study finds that Chinese ownership has a negative effect on target firm performance. The negative effect is even more pronounced for firms in the service and manufacturing sectors, where the majority of Chinese acquisitions in Germany takes place. To account for a general foreign acquisition effect on target firm performance, the study is replicated with a sample of Austrian acquisitions in Germany. In contrast to the Chinese sample, no statistically significant effect of Austrian ownership on target firm performance can be observed.*

## 1.1 Introduction

Overseas M&A have rapidly increased during the last decades, comprising, in terms of value, more than 46 percent of all M&A (Bloomberg, 2018). At the same time, the share of emerging-market flows in overseas M&A deals has also been growing extensively. While in 2000, investments from EMNEs only accounted for little more than 5 percent of all overseas M&A, in 2017, they already amounted to 30 percent, increasingly targeting firms in developed markets (UNCTAD, 2018, 2017). The rise of EMNEs and their investments in developed-market firms is a phenomenon that has important theoretical and empirical implications. Thus, it has received growing attention in IB research and initiated a vital and still ongoing debate whether existing IB theories are adequate to study the

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internationalization of EMNEs, if they need to be extended, or if the development of new theories is required (Chikhouni, Edwards, and Farashahi, 2017; Cuervo-Cazurra, 2012; Ramamurti, 2012a; Dunning, 2006).

Prior studies offer valuable insights into the distinctive characteristics of EMNEs compared to DMNEs, including their strategies and motivations for investing abroad (Ramamurti and Hillemann, 2018; Chen and Cuervo-Cazurra, 2012; Elango and Pattnaik, 2011; Luo and Rui, 2009; Child and Rodrigues, 2005) as well as their pace and pattern of internationalization (Ahmed and Bebenroth, 2019; Masiero, Ogasavara, and Risso, 2017; Mathews, 2006).

Yet, implications of EMNEs acquisitions on target post-acquisition firm performance are widely overlooked. Only few researches investigated the effect of acquisitions in developed markets by EMNEs on target firm performance providing conflicting evidence and limiting the advancement of IB theories (Tórkés, 2019; Buckley *et al.*, 2010, 2014; Buckley and Elia, 2011; Chari *et al.*, 2012; Aureli, 2015). Hence, this study will analyze acquisitions of developed-market targets by EMNEs and examine the effect on target firm performance. To rule out the general takeover effect, it will additionally examine the effect on target firm performance in case of acquisitions by other developed-market firms.

Chinese acquisitions in Germany are chosen as the empirical context. This is a particularly suitable setting: First, China is the major source of emerging-market overseas M&A, accounting for about 65 percent of all emerging-market cross-border M&A in recent years (UNCTAD, 2018, 2019, 2020). The presence of Chinese acquirers increased rapidly from 2011 onward, reaching its maximum in 2017, when the country was the second largest recipient of Chinese investment in Europe with USD 13.7 billion (Ernst & Young, 2019). This shows the immense relevance of Chinese outward FDI in Germany and highlights the timeliness of the study. Second, German firms dominate many medium and high-tech

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industries, thus offering acquiring firms a suitable location to enhance their competitiveness (UNCTAD, 2019; Wübbecke *et al.*, 2016). Third, the research question is not only relevant from a theoretical point of view. Taking a managerial perspective, stakeholders in Germany fear an outflow of knowledge and a threat to local economy (Bertrand *et al.*, 2016; Wübbecke *et al.*, 2016; Buckley *et al.*, 2014; Goldstein, 2009; Wang and Xie, 2009). Thus, in Germany especially overseas acquisitions by EMNEs have raised concerns about their effect on the performance of target firms, while acquisitions from DMNEs are generally less disapproved. Therefore, this setting allows for a rich context to analyze the research question.

This study uses a comprehensive and unique panel data set of Chinese acquisitions in Germany from 2008 to 2016. To evaluate the acquisition effect, I apply propensity score matching to identify the missing counterfactual of a target not involved in an acquisition by an emerging-market acquirer. The full sample, including Chinese acquired and matched non-acquired firms, is composed of 126 groups. In a second step, to rule out the general takeover effect, I replicate the study with a sample of German firms acquired by Austrian firms.

Overall, the study finds that acquisitions of German target firms by Chinese acquirers reduce target firm performance. The negative effect is even more pronounced for firms in the manufacturing and service sector. In a replication with German firms acquired by Austrian acquirers no statistically significant effect on target firm performance is found, neither in the whole sample nor in the model with only manufacturing and service firms.

The study contributes to the growing literature on cross-border acquisitions by EMNEs and to the on-going debate about the applicability of traditional IB theories on EMNEs. By showing the effect on target firm performance after acquisition by EMNEs the understanding of EMNEs and the implications of their internationalization process is advanced.

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This paper is structured as follows: The next section assesses existing research and analyzes the theoretical background, from which the hypothesis is derived. Section 3 describes the data set, methodology, and variables. Section 4 presents the results of the empirical analysis. The study ends with a discussion of the findings in light of theory and practice.

## **1.2 Theoretical background and hypothesis**

### **1.2.1 Motivations of emerging-market firms to acquire developed-market target firms**

Existing studies, focusing on DMNEs, found that firms expand globally after they have internally built up superior intangible assets such as technological capabilities, brand names, or managerial expertise (Ramamurti, 2012b; Dunning, 1988; Hymer, 1960). These competitive advantages must be sufficient to compensate the increased cost when operating abroad, as set out in the eclectic paradigm, also known as Ownership-Location-Internalization (OLI) model (Dunning, 1988). Firms can either acquire vertically, by investing in the production of intermediate goods or distribution channels, or horizontally, by establishing a similar line of business. While the first is normally motivated by cost-related reasons and the desire to reduce uncertainty, the latter generally happens to overcome high transportation costs, protectionist barriers, or unfavorable currency shifts and is driven by the possession of intangible assets (Guillén and García-Canal, 2009). Overall, overseas M&A enable firms to generate market power and growth (DePamphilis, 2015). According to the positive multinational network hypothesis, overseas M&A additionally provide firms with valuable options, such as the possibility to transfer resources across borders or reduced tax payments through intra-firm financial transactions (Aybar and Ficici, 2009). Other motives include external factors such as encouragement to invest by foreign governments,

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fear of losing a market, overseas success by a competitor or strong competition in the domestic market (DePamphilis, 2015).

So when EMNEs enter foreign markets for vertical expansion, existing theories can still hold true. On the other hand, when they internationalize horizontally, scholars cannot explain these movements with traditional theory, according to which EMNEs lack the necessary competitive advantages, such as a strong brand or superior technology (Madhok and Keyhani, 2012; Ramamurti and Singh, 2009; Rugman, 2009). Consequently, scholars suggest that EMNEs typically do not engage in overseas M&A to exploit, but rather to access competitive advantages, namely to acquire strategic assets, such as superior technology, advanced know-how, and brands, needed to overcome their liability of lateness and to survive in global competition, which is represented in the resource-based view of the firm (Ramamurti and Hillemann, 2018; Alon *et al.*, 2010; Chen and Cuervo-Cazurra, 2012). Luo and Tung (2018, 2007) introduce the springboard perspective, which states that EMNEs use international expansion to overcome their latecomer disadvantage by acquiring strategic assets to reduce market and institutional constraints in their home markets. Chen and Cuervo-Cazurra (2012) affirm this notion and present the technological escape hypothesis, according to which EMNEs address the weak innovation system of their home market by acquiring innovative firms in developed markets.

Yet, researchers point out that, although EMNEs do not possess the traditional ownership advantages, they do possess different competitive advantages, e.g. deep knowledge of emerging-market customers, the ability to act in difficult institutional as well as business environments, or the capability to produce at very low cost, which must be regarded as well, as these kind of competitive advantages are in no way less valuable (Chikhouni *et al.*, 2017; Child and Rodrigues, 2005; Dunning, 2006; Ramamurti, 2012a, 2012b; Cuervo-Cazurra and Genc, 2008; Rui and Yip, 2008; Guillén and García-Canal,

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2009; Buckley *et al.*, 2018). This is line with the OLI-model that firms must possess some kind of ownership advantage before internationalization (Dunning, 1988). Hence, there is substantial evidence that EMNEs indeed venture abroad to gain strategic assets in terms of valuable brands and superior technology as well as capabilities, however, it cannot be confirmed that they do not possess any competitive advantages beforehand (Ramamurti, 2012a; Luo and Tung, 2018; Buckley *et al.*, 2018).

Firms from China have particularly received much attention in this regard. Indeed, part of Chinese acquisitions in developed markets is believed to be driven by the Chinese political agenda to become the world's most advanced and competitive economy with the help of innovative manufacturing technologies. Although the scientific findings for strategic asset-seeking motives are inconclusive so far (Alon, 2010; Yan, Hong, and Ren, 2010; Sutherland, 2009; Buckley *et al.*, 2007b; Rui and Yip, 2008; Child and Rodrigues, 2005; Deng, 2004), more and more studies suggest that strategic and political objectives motivate Chinese acquisitions, especially in developed markets (Hanemann and Huotari, 2017: 8; Wübbeke *et al.*, 2016; Madhok and Keyhani, 2012; Buckley *et al.*, 2008; Deng, 2007, 2009).

In traditional IB research, scholars also recognize that firms do not internationalize and become multinational enterprises (MNEs) overnight. The internationalization follows different stages and happens gradually. According to the Uppsala internationalization process model, established by researchers from the University of Uppsala in Sweden in 1977, firms enter foreign markets country-by-country, beginning with those closest in terms of cultural distance. Typically, in the first step, engagement only involves exporting, then in the second step, with increased sales, setting up own sales subsidiaries, and in the final step the establishment of own production facilities to overcome trade barriers (Johanson and Vahlne, 1977). In contrast, firms from emerging markets internationalized very rapidly. Instead of entering country-by-country, they see a highly integrated world as their market



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from the beginning (Guillén and García-Canal, 2009; Mathews, 2006), hence internationalizing rapidly rather than gradually and using high-commitment modes, such as M&A, already early in their internationalization strategy. Moreover, they enter psychically distant countries earlier than expected based on the traditional internationalization pattern of advanced-market firms (Ramamurti and Hillemann, 2018; Guillén and García-Canal, 2009; Peng, 2012; Deng, 2009)

With these distinctive differences between EMNEs and DMNEs it is important to revisit traditional IB research and build upon the international expansion of EMNEs (Chikhouni *et al.*, 2017; Cuervo-Cazurra, 2012; Ramamurti, 2012a).

### **1.2.2 Overseas acquisition performance**

According to the theory of the multinational enterprise, internationalization is associated with superior performance as these firms are endowed with superior capabilities and comparative advantages (Hymer, 1960). Foreign-owned firms can also benefit from these conditions, the potentials for performance improvement lying in the realization of synergies, enhanced competitiveness through restructuring, or the disciplining effect on an inefficient management (Gu *et al.*, 2019; Erdogan, 2013; Dunning, 1988; Chang *et al.*, 2013). Indeed, a study on foreign-acquired Chinese firms found that they outperform comparable local firms (Chang *et al.*, 2013).

But there are also numerous challenges related to conducting business abroad which can cause failure: Firms face inherent costs due to the unfamiliarity with the environment, institutional conditions, cultural, economic, and political differences and the increased costs for coordination across geographic borders, a phenomenon called liability of foreignness, which has to be overcome by the firm doing business abroad through firm-specific advantages (Dunning, 2000; Zaheer, 1995). Moreover, acquiring firms have to adapt to both

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a new national culture and a new organizational culture, which is described as double-layered acculturation (Ahern, Daminelli, and Fracassi, 2015; Rajan, 2010; Dreher and Ernst, 2014; Galpin and Herndon, 2014). Additional influence of exchange rate, danger that foreign governments do not permit the remittance of capital or dividends, or complications due to different accounting standards further impede overseas M&A (DePamphilis, 2015). The failure reasons for domestic M&A apply as well: Synergies can't be realized or the costs for realization exceed the synergy gains. Hubris hypothesis suggests that company managers are too optimistic about their abilities to generate value from the new company (Roll, 1986; Martynova and Renneboog, 2008). Other times the deals are driven by irrational or emotional management decisions to gain power or prestige rather than strategic motives, which is termed as empire-building (Trautwein, 1990).

Academic research on the profitability of M&A indicates that in developed markets, on average, the value creation for the acquiring shareholders varies closely around zero, while the target shareholders gain significant positive returns (Meckl and Röhrle, 2016; Baker *et al.*, 2012; Schoenberg, 2006; Bruner, 2002). Studies have explored several aspects in order to determine which factors influence post-acquisition performance. The most common independent variables analyzed are relatedness of acquisition, which provides mixed results (Megginson, Morgan, and Nail, 2004; Palich, Cardinal, and Miller, 2000), acquisition experience offering inconclusive results as well (Bertrand and Betschinger, 2011; Ma, Zhu, and Cai, 2016; Galavotti *et al.*, 2020; Puranam and Srikanth, 2007), and firm size with relatively consistent results (King, Slotegraaf, and Kesner, 2008; Fanto, 2001).

In spite of the meanwhile significant role of emerging-market firms for overseas acquisitions in developed markets, research regarding post-acquisition performance in this context is still limited with inconclusive results.

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### *1.2.2.1 Empirical findings: Acquiring firm's post-acquisition performance in cross-border acquisitions by emerging-market firms*

Most of the existing studies concentrate on the post-acquisition performance of acquiring firms, predominantly showing positive results which contrast the findings for acquisitions of developed-market acquirers. Bhagat *et al.* (2011) analyzed a sample of acquiring EMNEs mostly targeting firms in developed markets, documenting a positive return to the acquirers. Boateng and Qian (2007) also indicated a positive return to acquiring Chinese firms. Other authors, relying on cumulative abnormal returns as performance measure as well, support these findings (Du and Boateng, 2015; Lan, Yang, and Zhu, 2015; Nicholson and Salaber, 2013; Chen and Lin, 2009; Gubbi *et al.*, 2010).

However, another group of scholars has found conflicting results (Aybar and Ficici, 2009; Chen and Young, 2010; Chen and Lin, 2009; Ma *et al.*, 2016). Aybar and Ficici (2009) analyzed the effect of overseas M&A announcements by emerging-market acquirers and indicated that bidders earn a negative return. This is supported by Chen and Young (2010), who documented that Chinese firms with majority government ownership acquiring firms abroad tend to destroy shareholder value. Chen and Lin (2009) used financial ratios to measure performance of Chinese acquiring firms, which target mainly firms from developed markets, finding that merely about half had an improved performance one year after transaction. This is confirmed in another recent study, which found that cross-border M&A by Chinese listed companies during the period 1996 and 2012 destroy value in terms of return on assets for Chinese acquirers (Ma *et al.*, 2016).

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### 1.2.2.2 Empirical findings: Target firm's post-acquisition performance in cross-border acquisitions by emerging-market firms

The studies on target firm post-acquisition performance in emerging-market cross-border M&A are even less consistent in their findings. The researchers mainly focus on profitability, productivity, sales, and employment as measures of target firm performance. Buckley *et al.* (2010) proposed that developed-market firms can benefit from emerging-market acquirers through other types of resources than intangible assets, e.g. by importing raw materials from the acquirer's home country, delocalizing labor-intensive processes, or through the provision of new financial resources and therefore new investment opportunities. Complementing with an empirical study on European, US, Canadian, and Japanese firms acquired by emerging-market acquirers, Buckley and Elia (2011) documented that the target firms' productivity, sales, and employment are affected positively, while the target firms' profitability is not significantly increased after acquisition. They further found that EMNEs not only acquire targets with high performance and, taking acquisition experience into account, that experienced acquirers tend to acquire firms with better performance and also contribute to post-acquisition productivity and sales more positively. In 2014, the authors demonstrated that the acquirer's tangible resources positively influence the target firms' sales performance, while there is no effect on profitability. On the other hand, the effect of the acquirer's intangible resources is insignificant (Buckley *et al.*, 2014). In contrast, Chari *et al.* (2012) found that U.S. target firms that have been acquired by EMNEs can improve their profitability in the post-acquisition period, while sales and employment decline. Chen (2011) examined the acquisition effect on target firm performance with data from U.S. firms. The author found that FDI in general increases target firm profitability and the effect is larger when the acquirers are from other industrialized countries compared to acquirers originating from emerging markets. The effect on target firm productivity, sales, and employment is

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only positive for targets acquired by firms from industrialized countries, while EMNEs induce a negative effect. Similarly, with data on acquired Hungarian firms, Tóké (2019) found that only acquirers from higher income countries foster productivity significantly, while acquirers from lower income countries do not produce statistically significant effects. The study showed first evidence that researchers need to account for the origin of the acquirer when studying target firm performance in the event of acquisition.

Considering these conflicting empirical results it is of theoretical and practical interest to analyze whether developed-market target firms benefit or lose in terms of firm performance when they are acquired by EMNEs. With this, evidence can be provided, if the traditional theory that foreign-owned firms in general show superior performance also holds true for developed-market firms owned by emerging-market acquirers.

In cross-border acquisitions, performance can be increased through different channels: According to the eclectic paradigm and the internalization theory, firms need to possess firm-specific assets in order to successfully operate abroad (Dunning, 2000; Rugman and Verbeke, 2009). These firm-specific assets can be matched with the target firm's assets to increase profitability, e.g. the acquirer's superior technology combined with the target's market access can increase profitability through cost reduction and increased sales. Empirical studies indeed confirm this and show superior performance in foreign-owned firms compared to domestic ones (Gu *et al.*, 2019; Erdogan, 2013; Haskel *et al.*, 2007; Chang *et al.*, 2013), however, the majority does not differentiate the country-of-origin of FDI. Cross-border M&A also allow to relocate production sites from more costly locations to cheaper ones, due to less expensive labor force or input material, in order to increase firm profits through a decrease in production costs (Yeaple, 2003).

As most existing research is based on acquisitions between developed-market firms or flows from DMNEs to EMNEs, it does not reflect the fact that most acquirers from

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emerging-markets do not possess such intangible assets, e.g. superior technology. Consequently, in this setting EMNEs usually absorb strategic assets from their targets rather than transfer strategic assets to their developed-market target, which suggests that the theoretical prediction (Delios and Beamish, 2001) that the target benefits from the acquirer's strategic assets possibly does not hold in most cases. Quite the contrary can happen: the acquirer moves the production facilities and the know-how from the target firm to its home country, thus reducing productivity, sales, and profitability at the target.

But acquirers from emerging markets possess other valuable assets, e.g. strong tangible assets as cheaper access to raw resources, materials and production facilities, as well as low-cost access to capital because of various home-country-specific advantages (Rugman, 2009; Goldstein, 2009; Williamson and Zeng, 2009; Buckley *et al.*, 2018). DMNEs can benefit from these assets by becoming more cost effective through resource redeployment and by revenue enhancement through access to new distribution channels owned by the acquiring firms, possibly leading to greater market coverage including economies of scale and better bargaining power and resulting in improved profitability (Buckley *et al.*, 2014; Buckley *et al.*, 2007b). Depending on which effect prevails, profitability of a developed-market firm acquired by an emerging-market firm can either increase or decrease.

Taking an institutional approach, EMNEs not only face a different culture concerning business customs and practices in developed markets, they are also confronted by quite diverse institutional conditions, as their home country environment is characterized by under-developed capital markets, extensive state ownership and intervention, inefficient intermediaries, strong contract enforcement laws leading to uncertainty, increased transaction costs, and integration challenges (Ramamurti and Hillemann, 2018; Chen *et al.*, 2015; Jiang and Kim, 2015; Chen and Cuervo-Cazurra, 2012).

Considering these conditions, it is predicted that the benefits from the emerging-market acquirers' tangible resources can't outweigh the detriments caused by the strategic asset transfer and the integration process on the developed-market target firms' performance. Therefore, the following hypothesis is formulated:

**Hypothesis 1:** *Emerging-market ownership has a negative effect on developed-market target firm performance.*

Figure 1 illustrates the proposed relationship.

**Figure 1. Conceptual model emerging-market ownership**



### 1.3 Sample and methodology

#### 1.3.1 Propensity score matching

One key element in evaluating pre- and post-acquisition performance is to define an appropriate performance benchmark in the absence of acquisition. In an ideal world, the performance of an acquired firm could be compared to the performance of its non-acquired identical twin. In reality, however, no identical twin exists. Therefore, a set of potential firms from which the target firm was selected is needed. Propensity score matching allows to match each acquired firm with a local firm not acquired, even though its ex ante likelihood of being acquired is closest to that of the acquired target firm. The data base Dafne was used for the identification of control firms without Chinese investment. It provides comprehensive firm-level information on German firms. I utilized the Chinese acquired firms' key characteristics at the start of the observation to identify the ideal matching control firms. I downloaded a data set of all German firms from Dafne and then run propensity score

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matching to find the ideal match. The following key characteristics were used: industry group as well as a similar range in size and profitability. With this process a control firm for each observed target could be identified. Based on this, the study can compare the performance of the Chinese acquired firms to that of their identical twins with no Chinese investment (Chang *et al.*, 2013; Chari *et al.*, 2012).

### 1.3.2 Sample construction

The data selection process took place in several steps. First, I collected data on M&A from the SDC data base by Thomson Reuters which has been widely used in earlier studies (Ellis *et al.*, 2017; Bhagat *et al.*, 2011; Wang and Xie, 2009; Masulis, Wang, and Xie, 2007; Ben-Amar and Andre, 2006). I took all acquisitions into account where the acquiring nation is China and the target nation is Germany up to the year 2016. Before 2000, Chinese FDI was strictly controlled by the Chinese government and only very few acquisitions took place (Buckley *et al.*, 2018). From 2000 onwards policies towards FDI have been liberalized (Buckley *et al.*, 2008). In total, SDC data base reports 131 acquisitions with these premises. Furthermore, I added 35 acquisitions from this period which have not been included in the SDC data base, but reported in the German publication Platform M&A China/Deutschland as well as another 82 acquisitions reported in a study by SMB consultants (SMB Consultants, 2017). I validated all data entries with the ownership data reported in Dafne. Altogether, 248 Chinese acquisitions in Germany could be identified through this process. The final data set is the result of a careful screening procedure: 49 transactions were excluded, as these could be identified as rumored deals, which have not been completed, and asset deals. By limiting the study to acquisitions, where more than 50 percent of the target firm was acquired, I ensure that the study only analyzes acquisitions, where the target is fully controlled by the acquirer



after the completion of the acquisition (Bertrand and Betschinger, 2011; Wang and Xie, 2009). This reduced the sample by further 29 acquisitions.

Second, I collected additional firm-level panel data for the target firms from Dafne. Moreover, I downloaded the target firms' financial statements from the German data base Bundesanzeiger to observe the firms for several years before and after the acquisition. 99 acquisitions had to be discarded, where no data was available, as the German commercial code allows for size-related exemptions for certain disclosure requirements, e.g. revenue. During propensity score matching another 8 acquisitions have been dropped, as no appropriate matching firm could be identified.

Hence, a refined sample of 63 acquisitions was produced, where firm-level data was available and an appropriate non-acquired matching firm could be identified. Information on target and acquiring firms can be found in the appendix (Table 21). The acquisitions occurred between 2008 and 2016 in the six industry sectors manufacturing, services, trade, energy, transportation, and construction, whereas the first two account for more than 80 percent. In accordance with the target firms, I collected firm-level panel data on the control firms, identified through the propensity score matching, for the same period as their matching firms with Chinese investment from Dafne and Bundesanzeiger

Table 1 illustrates the analytical strategy.

**Table 1. Analytical strategy**

		Acquired firms		Control firms	
<b>China sample</b>					
Sample 1	Full sample	63 groups	608 observations	63 groups	608 observations
Sample 2	Manufacturing and services firms	52 groups	502 observations	52 groups	502 observations
<b>Austria sample</b>					
Sample 3	Full sample	32 groups	299 observations	32 groups	299 observations
Sample 4	Manufacturing and services firms	18 groups	173 observations	18 groups	173 observations

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Sample 1 includes Chinese acquired and control firms and is composed of 1,216 observations within 126 groups. Due to different acquisition years and data availability, the panel is not balanced, but each firm is observed at least one year before and one year after the acquisition. On average, four years after the acquisition event are observed. As described above, the majority of acquisitions from China in Germany took place in the manufacturing and service sector. Therefore, to obtain a more detailed analysis for these specific sectors, sample 2 only considers German target firms, which are in the manufacturing and service sector as well as their control firms. The model consists of 1,004 observations within 104 groups.

In a second step, I replicate the study with a sample of German firms, which have been acquired by Austrian firms, to rule out the general foreign acquisition effect. I have chosen Austrian acquisitions in Germany, because, in contrast with China, Austria is a developed-market country and in terms of culture, legal system, and language very close to Germany. I replicate both models, so sample 3 considers all German acquisitions by Austrian firms for which relevant information is available, in the period from 2009 to 2017. It is composed of 598 observations within 64 groups. Sample 4 only considers firms from the manufacturing and service sector and consists 346 observations within 36 groups.

### **1.3.3 Sample characteristics**

To gain a more detailed understanding on Chinese acquisitions in Germany, insights on different sample characteristics will now be presented. First, specific deal variables, namely in which years the acquisitions in the sample took place and how much share was acquired, to analyze whether Chinese acquirers prefer full or partial acquisitions, will be shown. Second, a detailed analysis of the target firms characteristics, specifically industry sector, state, public listing, size, and age will be presented. This helps to draw conclusions,

which firms are especially attractive for Chinese acquirers. Third, ownership status and public listing of the acquiring firms are examined for a better understanding which kind of Chinese acquirers are active in Germany. An analysis of the relatedness of target and acquiring firm follows.

Table 2 displays in which years the acquisitions in the sample occurred.

**Table 2. Acquisitions by Acquisition Year (Sample 1)**

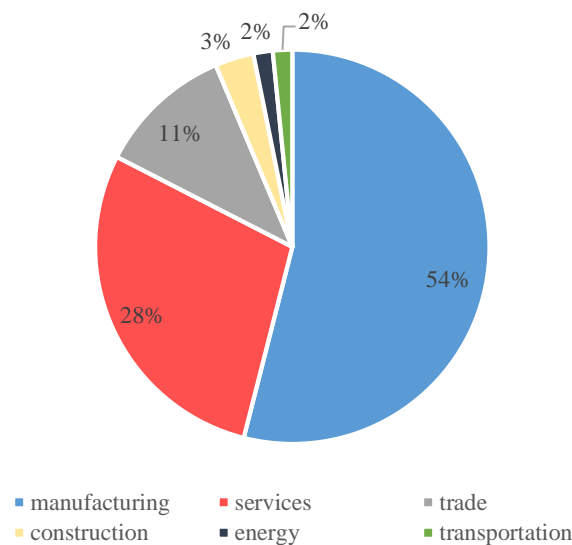
Year	Frequency	Cumulative Frequency	Cumulative Percentage
2008	1	1	1.59
2009	1	2	3.17
2010	1	3	4.76
2011	9	12	19.05
2012	6	18	28.57
2013	7	25	39.68
2014	10	35	55.56
2015	10	45	71.43
2016	18	63	100.00

The sample reflects the general observation that Chinese investments in Germany increased rapidly from 2011 onwards. More than half of the observed acquisitions occurred between 2014 and 2016. Thus, the sample corresponds with the general development of Chinese acquisitions in Germany, as illustrated in the introduction.

The sample has been restricted to acquisitions, where more than 50 percent have been acquired. Although in all observed acquisitions, the Chinese acquirer executes full control over the target, it is interesting to find out which strategy Chinese firms follow, specifically, whether Chinese firms tend to fully acquire their German target or if they prefer to undertake partial acquisitions. In the sample, 25 percent of the acquisitions involved the takeover of more than 50 percent up to 75 percent, while approximately 20 percent of the firms acquired more than 75 percent but less than 100 percent. Thus, more than half of the acquisitions involved the takeover of all target shares. This indicates that Chinese acquirers favor to be the sole owner and do not want to deal with minority owners.

The industry sector distribution, depicted in Figure 2, shows very clearly in which industries Chinese acquirers are interested in. The distribution corresponds very much to the Chinese political agenda “Made in China 2025” (Wübbeke *et al.*, 2016; Zenglein and Holzmann, 2019). Chinese acquirers mostly targeted German firms from the manufacturing and service sectors with 54 percent and 29 percent, respectively. 11 percent of the acquisitions took place in the trade sector, while the construction, energy and transportation sectors were targeted less.

**Figure 2. Target industry sector overview (sample 1)**



Considering the regional distribution of the acquisitions in Germany, a regional clustering in a few states can be observed. Almost 70 percent of the Chinese acquisitions in Germany occurred in the five states North Rhine-Westphalia, Baden-Württemberg, Bavaria, Hesse, and Lower Saxony. These states generally have a strong economic importance in Germany, which can be observed by their contribution to the German gross domestic product (Statistische Ämter des Bundes und der Länder, 2019). Thus, it is not surprising that most of the acquisitions also occurred in these states.

Previous studies on target post-acquisition firm performance concentrated on publicly listed firms due to better availability of data (Chari *et al.*, 2012; Chen, 2011). However, almost all target firms in the sample used in this study, namely 90 percent, are not publicly listed firms in form of a German limited liability company called Gesellschaft mit beschränkter Haftung (GmbH). This legal status represents a common German corporate structure, especially for small- and medium-sized business. Small- and medium-sized business make a great contribution to Germany's economic strength: They employ more than 60 percent of Germany's workforce, are highly innovative and account for about 50 percent of gross value added (Statistisches Bundesamt, 2019). Only 10 percent of the German target firms in the sample are publicly listed. In contrast, approximately two thirds of the Chinese acquirers are publicly listed.

Table 3 displays the distribution of size of the target firms in terms of assets. In more than 70 percent of the acquisition events, the target firm exhibits less than 25 Mio. EUR in total assets. This corresponds to the high share of privately held firms.

**Table 3. Acquisitions by target size (sample 1)**

Target assets	Frequency	Cumulative Frequency	Cumulative Percentage
< 5 Mio. EUR	13	13	20.63
> 5 Mio. EUR	22	35	55.56
> 25 Mio. EUR	10	45	71.43
> 50 Mio. EUR	6	51	80.95
> 100 Mio. EUR	9	60	95.24
> 500 Mio. EUR	2	62	98.41
> 1,000 Mio. EUR	1	63	100.00

The analysis of the target firms' age shows that the majority, namely more than 60 percent, is 25 years or younger. Approximately 25 percent are between 26 and 50 years old, while eight percent are between 51 and 100 years old. Only five firms are over 100 years.

In case of Chinese acquisitions it is also interesting to look at the ownership structure of the acquiring firms. State ownership is still extensive in China and the internationalization

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of Chinese firms is said to be mainly driven by a political agenda (Zenglein and Holzmann, 2019; Wübbecke *et al.*, 2016), so the conclusion that state-owned enterprises are used to reach these political goals could be suspected. However, the sample shows that only 29 percent of the acquirers are state-owned enterprises. Nonetheless, non-state-owned firms also benefit from favorable conditions generated by the state, such as access to low-cost access to capital (Williamson and Zeng, 2009; Buckley *et al.*, 2018). Additionally, it is difficult to specify a Chinese firm as private with certainty, because also privately-owned firms can be state-influenced, meaning that the government exercises some degree of control, e.g. on management appointments, business plans, or project decisions (Buckley *et al.*, 2018).

Lastly, it is examined whether the acquirer and the target firm belong to the same industry. While 37 percent of the acquisitions took place between related firms (2-digit industry classification), 63 percent occurred between firms from different industries.

### **1.3.4 Measures**

#### *1.3.4.1 Dependent variable: Target firm performance*

In research papers, firm performance is typically operationalized through a profitability index such as ROA or Tobin's Q. Subjective measurements, e.g. managers' evaluation of success, have been used less. Tobin's Q measures the ratio between the market value of assets and its replacement value, therefore it can't be used for privately held firms, for which no measure on market value is publicly available. As the vast majority of firms in the data set involves companies not publicly listed ROA is used, which shows the percentage of how profitable a firm's assets are in generating value. ROA is calculated as net income divided by total assets. The data have been collected from the target firms' annual statements, which are provided by the German Federal Ministry of Justice and Consumer Protection on Bundesanzeiger.

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The use of accounting data has several advantages: it reports actual performance, contrary to market value, which represents the investors' expectations on future performance. Second, it is more objective than managers' subjective assessment of success. Third, it is more suitable to examine the long-term impact of acquisitions on performance (Aureli, 2015).

#### *1.3.4.2 Independent variables: Target Ownership*

The variable *Target Chinese Ownership* is used as independent variable. It is coded as a dummy variable and takes the value of 1, if a German firm is majority owned by a firm from China, and 0 otherwise. The information is taken from the Dafne data base. To test how the independent variable affects the dependent variable *Target Firm Performance*, *Target Chinese Ownership* is one-year lagged, as it takes some time before it manifests its effect on the target firms. The variable *Target Austrian ownership* in the replication study is used in an analogous manner.

#### *1.3.4.3 Control variables: Target and control attributes*

In accordance with other studies, several variables that influence a firm's performance are employed for a correct understanding of the proposed relationship (Abdallah and Ismail, 2017; Cheung *et al.*, 2011; Bhagat and Bolton, 2007; Black, Jang, and Kim, 2006a; Black, Love, and Rachinsky, 2006b).

Using information from Dafne and Bundesanzeiger, the study controls for *Target Firm Size* (natural logarithm of total assets) and *Target Firm Age* (years since foundation), as larger and older firms are considered to better exploit economies of scale and scope and to own better bargaining power (Buckley *et al.*, 2014; Bertrand and Betschinger, 2011). *Target Financial Leverage* (debt/total assets) is also included as control variable, because a high ratio can indicate missing free cash-flow to invest in activities which increase firm

performance (Bertrand and Betschinger, 2011). Moreover, *Target Public Listing* (dummy variable taking the value of 1, if firm is publicly listed, 0 otherwise), *Target Region* (dummy variable taking the value of 1, if firm is located in former West Germany, 0 otherwise), *Target Industry Group* (based on the two-digit North American Industry Classification System), and *Target Industry Performance* (development of target industry per year) are employed as control variables. The variables *Target Financial Leverage*, *Target Firm Size*, *Target Public Listing*, and *Target Industry Performance* are lagged by one year. Finally, year dummies are added to account for time specific effects. The detailed descriptions of all the above variables are given in Table 4.

**Table 4. Variable description**

Variable	Description / Information	Source
<b>Dependent Variable</b>		
Target Firm Performance	Return on assets calculated as net income divided by total assets.	Dafne and firm's annual statements (Bundesanzeiger)
<b>Independent Variable</b>		
Target Chinese Ownership	Dummy that takes the value of (1) if the target firm is owned ( $\geq 50\%$ ) by a Chinese firm and (0) otherwise.	Dafne
Target Austrian Ownership	Dummy that takes the value of (1) if the target firm is owned ( $\geq 50\%$ ) by an Austrian firm and (0) otherwise.	Dafne
<b>Control Variables</b>		
Target Financial Leverage	Calculated by dividing the firm's debt with the firm's total assets. Lagged by 1 year.	Dafne and firm's annual statements (Bundesanzeiger)
Target Firm Size	Natural logarithm of the firm's total assets. Lagged by 1 year.	Dafne and firm's annual statements (Bundesanzeiger)
Target Firm Age	Calculated as years since the firm's foundation.	Dafne
Target Public Listing	Dummy that takes the value of (1) if the firm is publicly listed and (0) otherwise. Lagged by 1 year.	Dafne
Target Region	Dummy that takes the value of (1) if the firm is located in former West Germany and (0) otherwise.	Dafne
Target Industry Group	Two-digit North American Industry Classification System.	Amadeus
Target Industry Performance	Calculated as development of firm's industry per year. Lagged by 1 year.	Amadeus



### 1.3.5 Estimation method

The study employs the Feasible Generalized Least Square (FGLS) approach to estimate the equations. FGLS comes with three major advantages: the estimated coefficients are more efficient than the OLS model, there are unbiased standard errors whether the firm effect is temporary or permanent, and controlling for fixed effects through firm dummies, which would generate a degree of freedom problem, can be avoided (Petersen, 2008; Buckley *et al.*, 2014).

## 1.4 Results

Table 5 provides the means, standard deviations, and correlations of the variables in the main regression model (model 2).

**Table 5. Means, standard deviations, and correlation coefficients**

	<i>Mean</i>	<i>S.D.</i>	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
(1) Target Firm Performance	0.010	0.170	1							
(2) Target Chinese Ownership	0.174	0.379	-0.107*	1						
(3) Target Financial Leverage	0.602	0.633	-0.090*	0.008	1					
(4) Target Firm Size	16.671	1.826	0.069*	0.150*	-0.191*	1				
(5) Target Firm Age	31.349	31.785	0.061*	0.023	-0.065*	0.224*	1			
(6) Target Public Listing	0.070	0.255	-0.205*	0.113*	-0.045	0.193*	0.052*	1		
(7) Target Region	0.822	0.382	0.060*	0.065*	-0.094*	0.065*	0.122*	0.127*	1	
(8) Target Industry Performance	0.058	0.013	-0.026	-0.077*	0.006	-0.073*	0.044	0.031	-0.012	1

*Note: N=1,216.*

\* $p < 0.1$ .

The dependent variable *Target Firm Performance* exhibits the highest correlations with the control variables *Target Public Listing* (- 0.205), *Target Financial Leverage* (- 0.090), and *Target Firm Size* (0.069). Moreover, some small correlations between various control variables can be observed.

Therefore, the Variance Inflation Factor (VIF) values are estimated to control for potential multicollinearity problems. Table 6 shows the VIF values, which are all well below

3.0 in all models, showing that multicollinearity is not a problem in the regression analysis (Chatterjee and Hadi, 2000; O'Brien, 2007).

The hypothesis was tested using FGLS with *Target Firm Performance* as dependent variable. The results are reported in Table 6. Model 1 – Model 3 report the results for the sample of Chinese acquired firms and their matched control firms. Model 1 shows the result for the baseline model, which includes the dependent variable *Target Firm Performance* and the control variables. In Model 2, the independent variable *Target Chinese Ownership* is added. Model 3 reports the result for the subsample, which only includes manufacturing and service firms. Model 4 – Model 6 show the results for the Austrian acquired and matched control firms, accordingly.

**Table 6. Regression analysis**

<b>Dependent Variable: Target Firm Performance</b>	<b>Model 1</b>	<b>Model 2</b>	<b>Model 3</b>	<b>Model 4</b>	<b>Model 5</b>	<b>Model 6</b>
<i>Control Variables</i>						
Target Financial Leverage	-0.047*** (0.008)	-0.042*** (0.008)	-0.037*** (0.009)	-0.073*** (0.013)	-0.072*** (0.014)	-0.004 (0.024)
Target Firm Size	0.004** (0.001)	0.005** (0.002)	0.006*** (0.002)	-0.002 (0.003)	-0.002 (0.003)	-0.016*** (0.005)
Target Firm Age	0.000*** (0.000)	0.000*** (0.000)	0.000** (0.000)	0.000 (0.000)	0.000 (0.000)	0.001*** (0.000)
Target Public Listing	-0.080*** (0.014)	-0.076*** (0.015)	-0.088*** (0.020)	0.022 (0.022)	0.022 (0.021)	0.058** (0.022)
Target Region	-0.009 (0.007)	-0.006 (0.006)	-0.008 (0.006)	0.008 (0.012)	0.005 (0.012)	0.010 (0.013)
Target Industry Performance	-0.241 (0.371)	-0.299 (0.380)	0.048 (0.507)	0.509* (0.216)	0.547* (0.215)	0.461 (0.267)
<i>Independent Variables</i>						
Target Chinese Ownership		-0.020** (0.007)	-0.024*** (0.007)			
Target Austrian Ownership					-0.016 (0.010)	-0.006 (0.015)
Constant	-0.025 (0.042)	-0.032 (0.043)	-0.014 (0.46)	0.022 (0.081)	0.025 (0.079)	0.228* (0.095)
Year Dummies	Yes	Yes	Yes	Yes	Yes	Yes
Industry Group Dummies	Yes	Yes	Yes	Yes	Yes	Yes
Chi-square	192.02***	189.36***	162.35***	133.74***	129.88***	71.98***
Max. VIF	1.14	1.16	1.12	1.21	1.24	1.36
Number of Observations	1,216	1,216	1,004	598	598	346
Number of Firms	126	126	104	64	64	36

\*\*\* p<0.001; \*\* p<0.01; \* p<0.05. Standard errors in parentheses.

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Model 1 shows that *Target Financial Leverage* is negatively and significantly related to *Target Firm Performance* ( $b = -0.047$ ;  $p = 0.000$ ). This underlines the argument that less money is available to finance activities which improve firm performance. As expected, *Target Firm Size* ( $b = 0.004$ ;  $p = 0.003$ ) and *Target Firm Age* ( $b = 0.000$ ;  $p = 0.000$ ) are positively and significantly related to *Target Firm Performance*. The control variable *Target Public Listing* has a significant negative effect on *Target Firm Performance* ( $b = -0.080$ ;  $p = 0.000$ ).

Hypothesis 1 predicted that Chinese ownership has a negative effect on target firm performance. Model 2 in Table 6 tests this prediction. In this model, the coefficient for the main effect of *Target Chinese Ownership* on *Target Firm Performance* is negative and significant ( $b = -0.020$ ;  $p = 0.005$ ). Thus, this finding supports the argument that developed-market firms owned by emerging-market acquirers have a lower financial performance than firms, which have not been acquired by emerging-market acquirers. The effects of the statistically significant control variables remain similar to those in Model 1: *Target Financial Leverage* ( $b = -0.042$ ;  $p = 0.000$ ), *Target Firm Size* ( $b = 0.005$ ;  $p = 0.003$ ), *Target Firm Age* ( $b = 0.000$ ;  $p = 0.000$ ), and *Target Public Listing* ( $b = -0.076$ ;  $p = 0.000$ ). After the application of controls at different levels that could influence target firm performance, the findings of this study suggest that developed-market firms owned by emerging-market acquirers have a lower firm performance than firms, which have not been acquired by emerging-market acquirers. Hence, hypothesis 1 is supported.

Model 3 in Table 6 shows that the effect is even more pronounced for manufacturing and service firms. In this model, the coefficient for the main effect of *Target Chinese Ownership* on target firm performance is negative and significant ( $b = -0.024$ ;  $p = 0.001$ ). The effects of the statistically significant control variables remain similar to those in Model 1 and Model 2: *Target Financial Leverage* ( $b = -0.037$ ;  $p = 0.000$ ), *Target Firm Size*

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( $b = 0.006$ ;  $p = 0.001$ ), *Target Firm Age* ( $b = 0.000$ ;  $p = 0.002$ ), and *Target Public Listing* ( $b = -0.088$ ;  $p = 0.000$ ).

Only few studies distinguish between different origins of the acquirers, when analyzing target firm performance after acquisition. Thus, this study accounts for the general takeover effect to isolate the causal effect of the origin of the acquirer. Specifically, the results obtained with a sample of Chinese acquisitions in Germany are contrasted with a sample of Austrian acquisitions in Germany. This is suitable to compare the effect of emerging-market acquisitions on target firm performance in developed markets with the effect of developed-market acquisitions.

Model 4 in Table 6 shows the result for the baseline model for the sample of Austrian acquired firms and their control firms and includes the dependent variable *Target Firm Performance* and the control variables. Similar to the Chinese sample, the control variable *Target Financial Leverage* is negatively and significantly related to *Target Firm Performance* ( $b = -0.073$ ;  $p = 0.000$ ). The control variables *Target Firm Size* ( $b = -0.002$ ;  $p = 0.456$ ), *Target Firm Age* ( $b = 0.000$ ;  $p = 0.754$ ), and *Target Public Listing* ( $b = 0.022$ ;  $p = 0.312$ ) are not significant, contrasting the Chinese sample. However, the variable *Target Industry Performance* has a significant positive effect on the dependent variable *Target Firm Performance* ( $b = 0.509$ ;  $p = 0.018$ ).

Model 5 in Table 6 includes the independent variable *Target Austrian Ownership* and shows the effect of it on target firm performance. In this model, the coefficient for the main effect of *Target Austrian Ownership* on the dependent variable *Target Firm Performance* is negative but not significant ( $b = -0.016$ ;  $p = 0.124$ ). The effects of the statistically significant control variables remain similar to those in Model 4: *Target Financial Leverage* is negatively and significantly related to *Target Firm Performance* ( $b = -0.072$ ;  $p = 0.000$ ), *Target Industry Performance* is positively and significantly related

to *Target Firm Performance* ( $b = 0.547$ ;  $p = 0.011$ ). This finding shows that German firms, which have been acquired by Austrian firms do not exhibit a lower financial performance than firms, which have not been acquired. This result contrasts the findings for Chinese acquired firms, which do exhibit lower firm performance than non-acquired firms.

Model 6 only considers firms from the manufacturing and service sector, which have been acquired by Austrian firms as well as the matched control firm. In this model, the coefficient for the main effect of *Target Austrian Ownership* on *Target Firm Performance* is also negative but not significant ( $b = -0.006$ ;  $p = 0.693$ ). In contrast to the previous model, the control variables *Target Financial Leverage* ( $b = -0.004$ ;  $p = 0.853$ ) and *Target Industry Performance* ( $b = 0.461$ ;  $p = 0.084$ ) are not significant anymore. The control variables *Target Firm Size* ( $b = -0.016$ ;  $p = 0.001$ ), *Target Firm Age* ( $b = 0.001$ ;  $p = 0.000$ ), and *Target Public Listing* ( $b = 0.058$ ;  $p = 0.007$ ) are significant. The result shows as well that there is no significant difference in firm performance between firms, which have been acquired by Austrian acquirers and firms, which have not been acquired, in the two industry sectors manufacturing and services. This also contrasts the finding for the Chinese sample, where the negative effect of acquisition was even more pronounced for firms in the manufacturing and service sector.

## 1.5 Discussion and conclusion

Acquisitions by emerging-market firms in developed markets are increasingly changing the global landscape. The phenomenon also established a vital and still ongoing discussion, whether traditional IB theories are adequate to study the internationalization of EMNEs (Chikhouni *et al.*, 2017; Cuervo-Cazurra, 2012; Ramamurti, 2012a; Dunning, 2006). The objective of this study is to investigate, how firm performance of a developed-market firm is affected after acquisition by an emerging-market acquirer. Although several

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studies have already addressed this topic, existing research provides no consistent empirical findings (Tőkés, 2019; Buckley *et al.*, 2010, 2014; Buckley and Elia, 2011; Chari *et al.*, 2012).

By using unique panel data on Chinese acquisitions in Germany over the period 2008 until 2016, the study shows that emerging-market acquirers reduce firm performance and thus destroy value at the developed-market target firms. The analysis is also run for a subsample, which only includes target firms from the manufacturing and service sectors, and finds that the negative effect is even more pronounced. By replicating the study with acquisitions by Austrian firms in Germany, I rule out a general takeover effect and document that target firm performance is not generally destroyed after acquisition, as no statistically significant effect is observed in this sample.

The findings are contrasting Chari *et al.* (2012), who found a positive effect on target firm profitability for U.S. firms acquired by EMNEs. The findings of this study are more in line with Buckley and Elia (2011), who find no significant positive influence on target firm profitability, and Tőkés (2019), who states that there is heterogeneity in the effects of acquisitions, depending on the country of origin of the acquirer. He finds that acquirers from higher income countries compared to the target country positively influence target firm performance, measured as target productivity in his study, whereas acquirers from lower income countries do not influence target firm productivity. These results indicate even one step further, by showing that target firm performance of developed-market target firms is significantly reduced after acquisition by EMNEs.

Overall, these findings possess a number of theoretical implications. First, they contrast the traditional IB theory that foreign-owned firms in general show superior performance, because foreigners import superior technology and good management practices (Gu *et al.*, 2019; Erdogan, 2013; Haskel *et al.*, 2007; Dunning, 2000). The results

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of this study show that this does not necessarily hold true for developed-market firms owned by emerging-market acquirers. In fact, when studying the effect of foreign ownership on target firm performance, the heterogeneity in the foreign acquirers cannot be ignored, as also evidenced by Tókéš (2019). Researchers therefore need to incorporate the acquirer's country-of-origin in their studies. Further, these findings are consistent with existing evidence that EMNEs venture abroad and acquire foreign firms to gain strategic assets in terms of valuable brands and superior technology as well as capabilities rather than exploiting their existing intangible assets (Ramamurti and Hillemann, 2018; Alon *et al.*, 2010; Chen and Cuervo-Cazurra, 2012).

These findings also have important implications for managerial practice. Emerging-market acquisitions often raise concerns of policymakers and the public that they negatively influence target firms and thus target economy (UNCTAD, 2017; Miozzo *et al.*, 2016; Grimpe and Hussinger, 2014; Valentini, 2012). While the international press mainly focuses on single acquisitions and their consequences, this study provides a holistic picture. The results of this study show that these acquisitions indeed destroy value. Consequently, these findings imply that policymakers should consider the possible negative outcomes and try to implement a careful screening process as well as guidance for acquired firms as well as the acquirer when it comes to the post-acquisition integration.

There are limitations to this study, which offer opportunity for future research. First, the data set does not allow to examine the impact of emerging-market ownership across different developed countries. Hence, the results should be further tested by replicating this study in different economic contexts. This applies to the acquiring as well as to the acquired nation. Future studies could concentrate on acquirers from other emerging markets, such as Brazil, Russia, and India, but also on other developed-market targets, such as the United States or Great Britain, and evaluate, whether the results of this study can be generalized.

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Second, future research can evaluate whether the findings also hold in longer time periods. Many acquisitions from emerging-market acquirers in developed markets have just occurred recently, reducing the available amount of post-acquisition data on the target firms. Third, given that the sample predominantly consists of privately held firms, I encountered difficulty in gathering further target-specific information from public sources. Inclusion of more target attributes could extend the empirical design. Additionally, owing to the limited availability of financial information, I was unable to conduct further analysis using an alternative measure, such as sales growth, for target firm performance. Another promising avenue for future research is to investigate the effect of these acquisitions on other target performance measures, such as innovation performance or productivity. This will increase the understanding of whether negative effects on target firms extend to other performance indicators.

Finally, it is interesting to know what exactly causes the reduction in target firm performance. Performance is oftentimes linked to the skills and effectiveness of the firm's management, e.g. by Karaevli (2007), who confirms that a firm's operational performance is under the control of the management. A recent study by Bilgili *et al.* (2017) confirms that executive turnover is one of the most significant factors influencing target post-acquisition performance. Therefore, the next chapter will concentrate on the development of the executive teams at the developed-market target firms and implications on target firm performance in case of acquisition by emerging-market acquirers, with the aim to be able to provide insights, which preconditions in strategic management are responsible for a negative performance outcome and which foster positive firm performance.



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## 2 Target Top Management Team Turnover and Post-acquisition Performance in Cross-border M&A by Emerging-Market Acquirers – an Empirical Analysis of Chinese Acquisitions in Germany<sup>2</sup>

### *Abstract*

*This study attempts to fill a gap in literature regarding the effect of target TMT and CEO turnover in cross-border acquisition by emerging-market firms in developed markets. Building on agency theory and the resource-based view of the firm, hypotheses are derived, how target TMT and CEO turnover affect target firm performance after acquisition. Using a sample of 45 Chinese acquisition in Germany, whereas the majority of the target firms is not publicly listed, the study finds that target TMT departure has no significant effect on target post-acquisition performance, whereas CEO departure positively influences target post-acquisition performance. The findings contribute to the emerging stream of research on emerging-market acquisitions in developed markets.*

### 2.1 Introduction

Cross-border M&A have become a popular strategy to achieve international growth and enhance profitability. Especially, firms from emerging markets use acquisitions to gain access to strategic assets and superior resources, such as know-how and technology (Ramamurti and Hillemann, 2018; Chen and Cuervo-Cazurra, 2012; Luo and Tung, 2018, 2007). However, the empirical findings whether these acquisitions create value, in particular for target firms, are conflicting (Tóké, 2019; Buckley and Elia, 2011; Buckley *et al.*, 2014; Chari *et al.*, 2012; Chen, 2011), leading to the inevitable question, which conditions favor value creation in cross-border M&A by EMNEs in developed markets. Prior studies have analyzed a variety of factors under which acquisitions in general have the potential to create value with inconclusive findings. A very complex interplay of different factors might be the

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reason for these results. It may also be the case that these factors do not affect post-acquisition performance directly, but rather induce changes in the management of the firm, which, in turn, affect firm performance.

Indeed, literature dating back to the 1980s has found that M&A induce long-term effects on the dynamics and performance of target top management teams (TMT): About 25 percent of the target TMT members leave within the first year after acquisition, a turnover rate three times higher compared to similar firms which have not been acquired. In the second year, an additional 15 percent depart, which equals twice the normal departure rate. Within five years, almost 60 percent of the target TMT is gone (Krug *et al.*, 2014; Walsh, 1988; Hayes, 1979). And even nine years after the acquisition event, the turnover rate has not returned to a normal level (Krug, 2003b). This fact led Krug (2003b) to the assumption that high turnover after M&A may be “[...] *more than just a symptom of organizational problems – it may be an important cause.*” Bilgili *et al.* (2017) confirmed this assumption in their meta-analysis.

According to the resource-based view of the firm, management continuity represents an important factor of stability. Hence, TMT and CEO replacement are believed to have a negative implication on post-acquisition performance, because of major problems, such as the loss of valuable firm knowledge as well as difficulties for outsiders to adapt to the new and complex business tasks or resentment and mistrust of middle and lower management towards the new management (Ahammad *et al.*, 2016; Bilgili *et al.*, 2017; Krishnan *et al.*, 1997). An opposite argument is brought forward by agency theory and the theory of the market for corporate control. Acquisitions occur as a result of inefficient management at the target firm and can be seen as a disciplinary and efficiency-improving measure to exploit the difference between a firm’s market value and its expected value under efficient management (Manne, 1965; Jensen and Ruback, 1983), hence turnover is desirable and positive.

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Most of the existing evidence on target TMT turnover and post-acquisition performance is based on samples of publicly listed U.S. firms, which have been targets to domestic acquisitions. Using M&A samples from the 1980s, researchers found that retaining target managers has a positive effect on post-acquisition performance. Hence, target executives are considered an important resource, especially their experience and knowledge (Cannella and Hambrick, 1993a; Krishnan *et al.*, 1997). However, more recent studies found no evidence that managerial retention benefits post-acquisition performance in domestic as well as overseas acquisitions (Devine *et al.*, 2016; Demirtas and Simsir, 2016). Quite the opposite: the researchers found that there is a negative link between TMT and CEO retention and post-acquisition performance across domestic and cross-border acquisitions. Consequently, there must be further to the relationship and surrounding conditions need to be taken into account, making additional research is necessary.

Different from these extant studies, this study specifically investigates the effect of target TMT and CEO turnover on target post-acquisition performance following acquisitions by EMNEs in developed markets. In my opinion, this is a very interesting question, as acquisitions by EMNEs have become increasingly important in the last decade (UNCTAD, 2018, 2017) and are distinctive in at least three ways: First, EMNEs are in particular attracted to target firms with superior technology and knowledge and seek to access these assets. Second, cultural differences will most likely play a more prominent role than in acquisitions between developed-market firms. Third, EMNEs are increasingly seen critical in developed markets, as for example shown by the debate on Chinese investments in German firms (Hanemann and Huotari, 2017). Hence, there is still a lack of profound theoretical and empirical knowledge on the effect of target TMT and CEO turnover on target post-acquisition performance in the case of emerging-market acquisitions in developed markets. In addition to analyzing the effect of TMT turnover in general, this study will look into the

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role of CEO turnover, as they represent key figures in the TMT and probably the firms' most influential persons and are ultimately accountable for achieving growth in sales, profitability, and market share (Finkelstein, Hambrick, and Cannella, 2009). Moreover, as prior research has also examined how board characteristics enable or hinder value creation in cross-border M&A (Datta, Basuil, and Agarwal, 2020), this study will investigate how CEO origin, namely the appointment of an acquiring firm's manager, modifies the relationship between target CEO turnover and target post-acquisition firm performance in case of emerging-market acquisitions in developed markets.

Therefore, this study analyzes the following research questions: (1) How does target TMT turnover influence target post-acquisition firm performance in case of emerging-market acquisitions in developed markets? (2) How does target CEO turnover influence target post-acquisition firm performance in case of emerging-market acquisitions in developed markets? (3) What is the moderating role of appointing an acquiring firm's manager as target CEO?

To answer these research questions, this study draws on agency theory and the resource-based view of the firm.

I explore the effect empirically by using a unique data set of German firms which have been acquired by firms from China between 2007 and 2016. This is a particularly suitable setting. China has been the major source of emerging-market overseas M&A, accounting for around 65 percent in recent years (UNCTAD, 2018, 2019, 2020). The dramatic surge in Chinese overseas M&A is attributed to several reforms instigated by the Chinese government (Du and Boateng, 2015). In Germany, the presence of Chinese acquirers increased rapidly from 2011 onward, reaching its maximum in 2017, when the country was the largest recipient of Chinese investment in Europe with USD 13.7 billion (Ernst & Young, 2019). German firms dominate many medium and high-tech industries,

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thus offering Chinese firms a suitable location to enhance their own competitiveness (Wübbecke *et al.*, 2016). This shows the immense growth and relevance of Chinese outward FDI in Germany and highlights the timeliness of the study. Thus, this research setting allows for a rich context to analyze the hypotheses.

In addressing these research questions, this study contributes to the literature in the following ways: First, it specifically focuses on cross-border acquisitions by emerging market firms in developed markets, hence especially considering the boundary conditions in this context. Additionally, contrasting the majority of extant research, this study is the first to include a sample with a majority of not publicly listed firms. Not publicly listed firms account for the majority of acquisition targets, but so far, empirical studies mostly rely on samples of publicly listed firms because of better data availability. However, ownership differences may influence target turnover and subsequent performance in acquisitions, as privately held firms generally cannot be acquired without approval by the owner, who then is in a better position to negotiate the terms and conditions. My comprehensive data set includes manually collected information from various data sources, thus allowing to study this special setting. Third, I rely on acquisitions that took place rather recently between 2007 and 2016. Previous studies, which examined the relationship between turnover patterns in acquisitions and subsequent performance mostly rely on data from the 1980s. This allows to study whether these findings can be extended to more recent acquisitions.

Overall, this study finds that target TMT turnover has no significant effect on target post-acquisition performance, whereas target CEO turnover positively affects target post-acquisition performance. The appointment of an acquiring firm's manager as new target CEO does not weaken the positive relationship between target CEO turnover and target post-acquisition performance.

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This paper is structured as follows: The next section assesses existing research and analyzes the theoretical background, from which hypotheses are derived. Section 3 describes the data set, methodology, and variables. Section 4 presents the results of the empirical analysis. Section 5 discusses the findings in light of theory and practice.

## **2.2 Theoretical background and hypotheses**

### **2.2.1 Role of the top management**

*“[...] if we want to explain why organizations do the things they do, or, in turn, why they perform the way they do, we must examine the people at the top.” (Hambrick, 1989)*

Organizational outcomes are strongly dependent on the decisions of a small group of people at the top of the organization, who have the overall responsibility for the firm. At the individual level, CEOs are the most researched firm member. They represent key figures and probably the firms' most influential persons and are ultimately accountable for achieving growth in sales, profitability, and market share (Finkelstein *et al.*, 2009). At the group level, TMTs are oftentimes the focus of academia, which are generally defined as a small group of executives at the top of an organization, who have the overall responsibility for the organization. The TMT is not only in charge of directing the organization's course, but also responsible for formulating a shared purpose as well as developing an organizational culture including collective values (Finkelstein *et al.*, 2009). CEOs as well as other TMT members have unique knowledge of the firm and possess capabilities, which are oftentimes critical for the long-term success and make them difficult to replace (Devine *et al.*, 2016; Krug *et al.*, 2014; Cannella and Hambrick, 1993a). Considering their essential role, it is likely that the departure of a CEO or other TMT member has a considerable influence on the firm's performance (Bilgili *et al.*, 2017).

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CEO as well as TMT succession is inevitable for every firm and the decision to choose a new manager or retain an existing one is a question with far-reaching consequences, so significant research put an emphasis on this area during the last decade. The core question is: Does CEO respectively TMT member succession benefit or harm organizational performance? To answer this blunt question in a subtle way, researchers need to take the conditions into account, which surround the succession event, such as the circumstances that influence and surround the predecessor's departure, called precipitating context, the selection process of the new CEO, as well as the characteristics, such as successor origin, and actions of the successor (Karaevli and Zajac, 2013; Finkelstein *et al.*, 2009; Karaevli, 2007). Karaevli (2016) found that inside CEOs are more often promoted in stable corporate environments, e.g. when the former CEO retires, whereas outsider CEOs are preferred in case of dismissal of prior CEO and low firm performance.

Several reasons can lead to the departure of a CEO or other TMT member. First, personal reasons such as sickness, retirement, death, or voluntary leave during tenure can cause the need for CEO or TMT member succession. Academia, however, is more interested in other causes for departure than the ones named above, with a special emphasis on the dismissal of CEOs or TMT members. To understand the underlying reasons of dismissal, research focused on several precipitating contexts, particularly organizational performance, varying agency conditions, organizational conditions and external environment, as well as the predecessor's characteristics (Finkelstein *et al.*, 2009). Failure to achieve performance targets is probably the main reason for CEOs to lose their jobs, as the person at the very top needs to take the sole responsibility for not meeting targets. Hence, the main goal of CEO change at a firm is to keep or enhance profitability and realize performance goals.

### 2.2.2 Acquisitions and target TMT turnover

The departure of target CEOs or TMT members after acquisition events represents a special case of executive turnover. Owing to the substantial role of the CEO and the TMT, it is not surprising that researchers studying M&A related topics also have an increased interest in the role of executives as well as executive turnover to explain acquisition outcomes (Bilgili *et al.*, 2017; Krug *et al.*, 2014; Krug and Hegarty, 1997; Cannella and Hambrick, 1993b, 1993a; Walsh and Ellwood, 1991; Walsh, 1989, 1988). Two opposing theoretical perspectives have been adopted to explain the link between acquisitions and target executive turnover as well as the consequences on target post-acquisition performance.

Until the 1990s, agency theory and the market for corporate control theory were the driving theories to explain the rationale for acquisitions. Accordingly, outside firms try to take over control of firms, where executives fail to improve poor performance (Manne, 1965). Acquisitions are initiated by dissatisfied shareholders selling shares because they believe the management can't maximize value. At the same time, outsiders believe to have the capability to correct the poor firm performance by reorganizing or redeploying the organization's assets, such as replacing the incompetent CEO or TMT to improve efficiency and thereby create value. Thus, acquisitions occur as a result of inefficient management at the target firm and can be seen as a disciplinary and efficiency-improving measure to exploit the difference between a firm's market value and its expected value under efficient management (Manne, 1965; Jensen and Ruback, 1983). This theoretical approach led many to view post-acquisition target CEO and TMT turnover as a reasonable, even desired, consequence and supporters of this theory hence propose increased target CEO respectively TMT turnover after acquisitions and a positive effect of the increased target executive turnover on target post-acquisition performance (Demirtas and Simsir, 2016; Walsh, 1988).



Indeed, empirical studies predominantly document higher TMT turnover rates at acquisition targets compared to non-acquired control firms (Hayes, 1979; Walsh, 1988, 1989; Walsh and Ellwood, 1991; Cannella and Hambrick, 1993b). Later studies focused on target TMT turnover in cross-border acquisitions, confirming the previous results of significantly higher turnover rates in firms, which have been acquired compared to non-acquired firms and showing even higher TMT turnover rates in foreign acquisitions compared to domestic acquisitions (Davis and Nair, 2003; Krug and Hegarty, 1997; Krug and Nigh, 1998). No significant difference in target TMT turnover rate could be observed for foreign acquisitions of U.S. firms from other “Anglo” countries (UK, Canada, and Australia) compared to acquisitions from “non-Anglo” countries, however only five acquisitions from emerging-market acquirers were included in the sample (Krug and Hegarty, 1997). Table 7 summarizes the results of these studies.

**Table 7. Prior findings on cumulative target TMT turnover following acquisitions**

Study	Period	Context	Sample size target firms	Year(s) following acquisition	
				1	5
Walsh (1988)	1975-1979	domestic	50	25%	59%
Walsh (1989) Walsh and Ellwood (1991)	1975-1979	domestic	113 102	26%	61%
Cannella and Hambrick (1993b)	1980-1984	domestic	97	27%	67%
Krug and Hegarty (1997)	1986-1988	domestic + cross-border	270	20% 21%	69% 75%
Krug and Nigh (1998)	1986-1988	domestic + cross-border	264	22% 22%	69% 76%
Davis and Nair (2003)	1987	domestic + cross-border	72	32% 37%	44% 65%
Findings of this study	2007-2016	cross-border	45	41%	91%

These findings led to an increased interest in the underlying causes of post-acquisition TMT turnover. Early studies focused on a variety of merger characteristics, namely aspects of the negotiation process, such as hostile vs. friendly negotiations, type of

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payment, or premium paid, without being able to prove evidence on the influence of these aspects on increased turnover except hostility, which seemed to cause higher turnover rates (Walsh, 1989). Other research examined industry characteristics, in particular relatedness (Walsh, 1988, 1989) and firm characteristics, such as poor pre-acquisition performance (Cannella and Hambrick, 1993b), to explain higher than normal turnover rates following acquisitions. The study by Krug and Nigh (2001) found that the majority of TMT members departs from their positions after the acquisition event involuntarily. Roughly one third of the target executives was terminated, in foreign acquisition with 35 percent even significantly more than in domestic acquisitions (24 percent), whereas the majority of terminations was not caused because the acquisitions eliminated positions, but because acquirers aimed to appoint their own executives. Another third reported, they left because they felt alienated and no longer valued, whereas national cultural differences were identified as one key reason for the negative perceptions. Although strictly speaking these are voluntary exits, these departures would probably not have happened absent the acquisitions events, hence they are classified as involuntary departures. The other third departed voluntarily for reasons not related to the acquisition, e.g. retirement or personal issues.

Using the concept of relative standing, or social status, to explain executive departures, researchers found that turnover rate will be high, if acquisitions result in low relative standing for the acquired TMT, which means that target executives feel inferior or the acquirers see themselves as superior. Hence, target executives might leave voluntarily as a result of lost job status, lost autonomy, or just because they have general negative perceptions about the professional and personal effects of the acquisition (Bilgili *et al.*, 2017; Cannella and Hambrick, 1993b). Krishnan *et al.* (1997) focus on complementarity of TMTs and found that complementarity, measured as differences in functional backgrounds between the target and the acquiring executives, is negatively related to TMT turnover among

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acquired executives. Other approaches put psychological attributes into the foreground (Krug *et al.*, 2014). According to the upper echelons theory, managers base their decisions on personalized interpretations, which are influenced by their individual backgrounds, values, and experiences (Bilgili *et al.*, 2017; Hambrick, 2007). Consequently, an acquirer's choice to retain or replace managers is influenced by his interpretation of the existing management. By replacing target management acquirers try to reduce resistance during the integration process, minimize uncertainties, and raise their perception of control (Walsh, 1989). Especially in cross-border acquisitions, psychological attributes seem to play a prominent role, as communication problems and cultural differences have a particular potential to cause conflicts between acquirer and target. Therefore, in this context, as illustrated by the higher target TMT turnover rates in cross-border acquisitions, acquirers try to minimize conflicts by replacing the target management, possibly even with own expatriates (Sekiguchi, Bebenroth, and Li, 2011). However, in this case, the target middle management and employees can develop feelings of resentment, because they feel characterized as being not capable and passed over by their new parent (Karaevli and Zajac, 2013; Karaevli, 2007).

### **2.2.3 Target TMT turnover and post-acquisition performance**

During the early 1990s, the then prevailing agency theory and the market for corporate control theory were challenged, as researchers found that target firms in general outperform their competitors before acquisition, leading to the conclusion that firms are not acquired because of their not-satisfying poor performance, but rather because they possess assets that the acquirers value. Therefore, based on the resource-based view of the firm, an alternative approach is brought forward: the target TMT is considered as a valuable resource, which provides inside information, possesses firm-specific and difficult to imitate

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knowledge and competences, and can add unique value when being retained (Krug *et al.*, 2014; Walsh and Kosnik, 1993; Walsh and Ellwood, 1991), suggesting a negative link between target TMT turnover and target post-acquisition performance. The negative effect of target TMT turnover is enhanced by difficulties for new outside managers to adapt to the new and complex business tasks or resentment and mistrust of middle and lower management towards the new management, as well as disrupted stakeholder relationships and delayed or terminated strategic projects (Bilgili *et al.*, 2017; Ahammad *et al.*, 2016; Karaevli, 2007; Krishnan *et al.*, 1997; Cannella and Hambrick, 1993a). Studies on the relationship between target TMT turnover and post-acquisition performance, relying on M&A data of publicly listed U.S. target firms acquired in the 1980s, provide evidence that target TMT replacement has a negative effect on post-acquisition performance, suggesting that management continuity represents an important factor for firm success (Krishnan *et al.*, 1997; Cannella and Hambrick, 1993a).

On the contrary, in line with agency theory and market for corporate control theory, studies using data of more recent acquisition events found no evidence that target TMT retention respectively CEO retention benefits post-acquisition performance. Quite the opposite: the researchers found that there is a negative link between managerial retention and post-acquisition performance across domestic and cross-border acquisitions, suggesting that retaining target executives in fact impedes target post-acquisition performance, possibly caused by reduced control or conflicts with retained managers (Devine *et al.*, 2016; Demirtas and Simsir, 2016). Taking an institutional approach one exception was identified, namely that managerial retention becomes more important to post-acquisition performance in less developed countries (Devine *et al.*, 2016). Bilgili *et al.* (2017) conducted a meta-analysis and found that target TMT turnover negatively affects target post-acquisition performance, while target CEO turnover positively affects target post-acquisition performance. Whereas

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the departure of the CEO may give an important signal to replace inefficient leaders and symbolize strategic change, the dismissal of a large proportion of TMT members can rather cause too much disruption and loss of valuable capital.

Hence, the existing empirical results lead to the suggestion that the link between target TMT retention and target post-acquisition performance is not as straightforward as proposed by the earlier studies of Krishnan *et al.* (1997) and Cannella and Hambrick (1993a), which relied on samples of domestic U.S. acquisitions of publicly listed firms, but that it depends on the context whether retaining or replacing management contributes to acquisition success, which is supported by the findings of the more recent studies (Krug *et al.*, 2014; Demirtas and Simsir, 2016; Devine *et al.*, 2016). Consequently, there is a research call to account for different contexts and boundary conditions, especially further research considering cross-border acquisitions as well as privately held firms (Krug *et al.*, 2014). This study follows the proposed research avenue and puts a focus on cross-border acquisitions by emerging-market firms in developed markets, which occurred recently between 2007 and 2016. Additionally, the majority of the target firms are not publicly listed firms.

Besides the arguments brought forward by agency theory and resource-based view of the firm, two factors should be particularly considered, when studying the effect of target TMT turnover on target post-acquisition performance in case of cross-border acquisitions of EMNEs in developed markets: acquisition motivation and internationalization process of EMNEs.

In case of emerging-market acquisitions in developed-markets, the strategic asset-seeking motive stands in the foreground, which describes that EMNEs aim to access superior assets, such as knowledge and technologies, through the acquisition (Ramamurti and Hillemann, 2018; Chen and Cuervo-Cazurra, 2012; Luo and Tung, 2018, 2007). Thus, agency theory and market for corporate control theory provide a fairly weak argument in

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this setting. Instead, in line with the resource-based view of the firm, acquirers seem to value the achievements of the target TMT, appreciating their competences, idiosyncratic knowledge, and capabilities. Adequate replacement is considered difficult, because newly appointed managers oftentimes lack the knowledge and experience to continue where predecessors have left, so the loss of TMT members will probably negatively influence post-acquisition performance (Krug and Nigh, 2001; Krishnan *et al.*, 1997; Cannella and Hambrick, 1993a).

Typically, firms enter foreign markets country-by-country, beginning with those closest in terms of cultural distance, as stated by the Uppsala internationalization process model. Characteristically, at the beginning, engagement only involves exporting, then in the second step, with increased sales, setting up own sales subsidiaries, and in the final step the establishment of own production facilities to overcome trade barriers (Johanson and Vahlne, 1977). In contrast, firms from emerging markets internationalize very rapidly and, instead of entering country-by-country, see a highly integrated world as their market right from the beginning (Ramamurti and Hillemann, 2018; Guillén and García-Canal, 2009). Hence, EMNEs are likely to be relatively unfamiliar with doing business in developed markets in general and tend to have few experiences with acquisition of developed-market targets. As a consequence, the acquirers most likely lack the experience to successfully integrate new executives, while the acquisition event itself already represents a disruption, especially for the target firm, and the dismissal of target executives would lead to further discontinuity instead of needed constancy (Bilgili *et al.*, 2017; Krug, 2003a; Cannella and Hambrick, 1993a).

Considering the distinctive features, namely acquisition motivation and internationalization process, of cross-border acquisitions by emerging-market firms in

developed markets, a negative relationship between target TMT turnover and post-acquisition performance is proposed:

***Hypothesis 1a.** In cross-border acquisitions by emerging-market firms in developed markets, there is a negative relation between target TMT turnover and target post-acquisition performance.*

Acknowledging the target TMT's key role and overall responsibility for the firm, earlier studies have mainly focused on the effect of target TMT turnover on post-acquisition performance (Devine *et al.*, 2016; Krishnan *et al.*, 1997; Cannella and Hambrick, 1993a), whereas CEO turnover and its effect on post-acquisition performance has received less interest so far (Bilgili *et al.*, 2017; Demirtas and Simsir, 2016). However, there could be a distinct difference in the effect of target CEO turnover on target post-acquisition performance compared to target TMT turnover in general. CEO turnover can represent a way of demonstrating organizational and strategic change as well as the disruption of established practices and norms, thereby positively affecting post-acquisition performance, while the larger proportion of the TMT stays on board to avoid too much commotion and disruption (Bilgili *et al.*, 2017). Therefore, this study theorizes that there is a positive relationship between target CEO turnover and post-acquisition performance:

***Hypothesis 1b.** In cross-border acquisitions by emerging-market firms in developed markets, there is a positive relation between target CEO turnover and target post-acquisition performance.*

#### **2.2.4 The moderating effect of appointing an acquiring firm's manager as target CEO on target post-acquisition performance**

Moreover, as prior research has also examined how board characteristics enable or hinder value creation in cross-border M&A (Datta *et al.*, 2020), this study will investigate

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how CEO origin, namely the decision to appoint an acquiring firm's manager as CEO has a moderating effect on the relationship between target CEO turnover and target post-acquisition performance in the context of cross-border acquisitions by EMNEs in developed markets. This study will build upon the insights from the literature on subsidiary-staffing decisions in multinational enterprises and cultural distance.

In case of a vacant target CEO position after the acquisition event, the acquiring firm as the new shareholder has to decide, if the target CEO position should be staffed with an acquiring firm's manager. Staffing decisions for the new subsidiary are an important lever for acquiring firms in cross-border acquisitions that have implications on power and control exertion, knowledge transfer, as well as achieving legitimacy in the host country, and the ability to deal with subsidiary employees (Singh *et al.*, 2019), and hence also subsidiary respectively target firm performance as a whole (Gong, 2003). An important dimension in this decision represents the choice between headquarter managers and host country nationals (Gong, 2003).

EMNEs still experience difficulty in bridging cultural differences between host and home country nationals (Luo and Tung, 2018). Prior research has identified cultural distance as an important factor influencing staffing decisions, documenting that in culturally distant countries firms are more likely to rely on expatriate staffing (Gaur, Delios, and Singh, 2007; Luo and Tung, 2018; Gong, 2003). However, empirical findings provide a mixed picture, ranging from a negative relationship between subsidiary staffing with parent country nationals and subsidiary performance (Singh *et al.*, 2019; Kaeppeli, 2009; Gaur *et al.*, 2007) to a positive relationship (Sekiguchi *et al.*, 2011; Gong, 2003).

Expatriate managers are generally considered as strong followers of the headquarters' strategies, because of their familiarity with the firm goals, practices, and policies. Hence, their appointment is seen as the most efficient measure to exercise control



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in foreign subsidiaries and reduce agency costs through direct monitoring (Gong, 2003). However, problems can arise due to their lower level of commitment for the subsidiary, low understanding of the host country environment, and difficulties with adjusting with host country employees (Singh *et al.*, 2019). In contrast, local managers are valued for their knowledge on the economic, social, and political environment of the host country and are considered more “local-oriented” with a high effort for their local subsidiary compared to their effort for the multinational firm as a whole (Rickleby and Karim, 2018; Reade, 2001).

Chinese culture, specifically managerial culture, is very different from the Western one (Ramamurti and Hillemann, 2018). Because of China’s long independent development, Chinese new multinationals have just started to gain experience in international business during the last two decades and Chinese managers are not as experienced in markets outside Asia, Europe in particular. Although their internationalization took place very rapidly, many Chinese managers still lack the proper infrastructure and knowledge to manage an acquisition and particularly the integration process profitably (Li, Li, and Wang, 2016; Ramamurti and Hillemann, 2018). In particular, the cultural dimension of individualism-collectivism needs to be taken into account. Managers in individualistic cultures often strive for self-achievement, which is perceived as harmed when their firm is acquired, suggesting them that they failed in successfully managing their business, having to surrender their power to the acquirers (Zhu, Zhu, and Ding, 2020). As a result, mistrust and misunderstanding can lead to conflicts between the expatriate CEO and other TMT members, target middle management, and employees. Target managers might be less willing to cooperate, if an acquiring firm’s manager is appointed as CEO. They might also feel a threat to their position, if they share their knowledge on the firm and the local market with the acquirer (Zhu *et al.*, 2020). A recent study found that an individualistic host country

culture has a significant negative effect on the post-acquisition performance of Chinese acquirers (Zhu *et al.*, 2020).

Moreover, the Chinese company landscape has especially been shaped by state-owned enterprises and government-created advantages, such as lending money via state-owned banks or by negotiating deals with other governments (Ramamurti and Hillemann, 2018). Thus, Chinese managers are not very familiar with working under differing institutional conditions. Buckley *et al.* (2018) also question, if Chinese firms as a group already exhibit the management capabilities needed for successful international expansion, which could also be the reason, why emerging-market investors like to retain or hire overseas managers.

Particularly in the post-acquisition context, new business strategies, processes, as well as communication channels need to be defined and it is essential to build up a strong partnership and trust between the target and acquiring firm. This needs a lot of expertise, knowledge, and tactfulness not to affront target employees. Thus, it helps to work efficiently and reduce mistakes as well as misunderstandings, if the target CEO is trusted by the employees and knows the national culture as well as the work culture and is aware of the local regulations, e.g. concerning taxes or labor law.

Based on consideration of the arguments above, it is expected that the positive effect of target CEO turnover on target post-acquisition performance will be weaker, if an acquiring firm's manager is appointed as CEO:

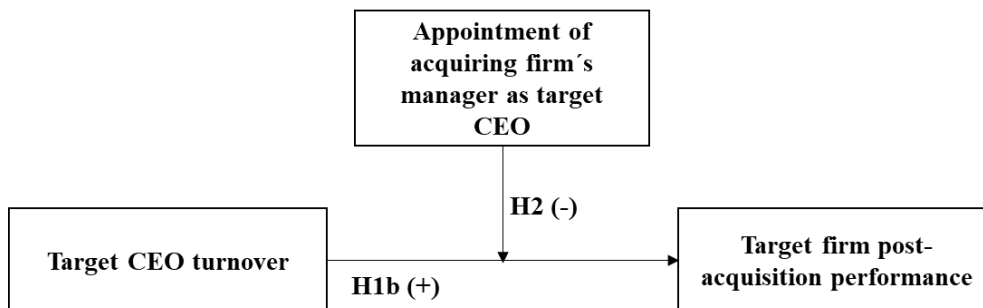
***Hypothesis 2.** The positive relationship between target CEO turnover and target post-acquisition performance in cross-border acquisition by emerging-market firms in developed markets is weaker, if an acquiring firm's manager is appointed as CEO at the target firm.*

Figure 3 and Figure 4 summarize the proposed direct effects (H1a, H1b) and interaction effect (H2) of target TMT respectively CEO turnover on target post-acquisition firm performance in case of acquisitions by emerging-market acquirers in developed markets.

**Figure 3. Conceptual model target TMT turnover**



**Figure 4. Conceptual model target CEO turnover and moderating effect**



## 2.3 Sample and methodology

### 2.3.1 Sample construction

The data selection process took place in several steps. First, I collected data on M&A from the SDC data base by Thomson Reuters which has been widely used in earlier studies (Ben-Amar and Andre, 2006; Masulis *et al.*, 2007; Wang and Xie, 2009; Ellis *et al.*, 2017; Bhagat *et al.*, 2011). I took all acquisitions into account where the acquiring nation is China and the target nation is Germany up to the year 2016. Before 2000, Chinese FDI was strictly controlled by the Chinese government and only very few acquisitions took place (Buckley *et al.*, 2018). From 2000 onwards policies towards FDI have been liberalized (Buckley *et*

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*al.*, 2008). In total, SDC data base reports 131 acquisitions with these premises. Furthermore, I added 35 acquisitions from this period which have not been included in the SDC data base, but on the German website Investment Plattform M&A China/Deutschland as well as another 82 acquisitions reported in a study by SMB consultants (SMB Consultants, 2017). I validated all data entries with the ownership data reported in Dafne. Altogether, I was able to identify 248 Chinese acquisitions in Germany through this process. The final data set is the result of a careful screening process: 49 transactions were excluded, as these could be identified as rumored deals, which have not been completed, and asset deals. By limiting this study to acquisitions, where more than 50 percent of the target firm was acquired, I ensure that the study only analyzes acquisitions, where the target after the completion of the acquisition is fully controlled by the acquirer (Bertrand and Betschinger, 2011; Wang and Xie, 2009). This reduced the sample by further 29 acquisitions.

Second, I collected additional firm-level panel data for both the acquiring and the target firms from Dafne and the internet. Moreover, I downloaded the target firms' financial statements from the German data base Bundesanzeiger to observe the firms for several years before and after the acquisition. I had to discard 99 acquisitions, where no data was available, as the German commercial code allows for size-related exemptions for certain disclosure requirements, e.g. revenue. Additionally, I had to drop 26 more acquisitions, because not enough information on the Chinese acquirer could be obtained.

Hence, a refined sample of 45 acquisitions was produced, where firm-level data on the target as well as the acquiring firm was available. Information on target and acquiring firms can be found in the appendix (Table 21). The acquisitions occurred between 2007 and 2016 in the six industry sectors manufacturing, service, trade, energy, construction, and transportation, whereas the first two account for approximately 80 percent. The sample is composed of 45 firms and 181 observations. Due to different acquisition years and data

availability, the panel is not balanced, but each firm is observed at least two years after the acquisition. On average, four years after the acquisition event are observed.

### 2.3.2 Sample characteristics

As a different sample is utilized than in chapter 1 due to data unavailability for the Chinese acquirers, first an overview on the most important characteristics will be given. As illustrated in Table 8, the sample reflects the general observation that Chinese acquisitions in Germany have increased rapidly from 2011 onwards. More than half of the observed acquisitions occurred between 2014 and 2016. Thus, the sample corresponds with the general development of Chinese acquisitions in Germany, as explained in the introduction.

**Table 8. Acquisitions by acquisition year (sample 2)**

Year	Frequency	Cumulative Frequency	Cumulative Percentage
2007	1	1	2.22
2008	2	3	6.67
2009	1	4	8.89
2010	0	4	8.89
2011	6	10	22.22
2012	5	15	33.33
2013	4	19	42.22
2014	8	27	60.00
2015	9	36	80.00
2016	9	45	100.00

The sample has been restricted to acquisitions, where more than 50 percent have been acquired. Although in all observed acquisitions, the Chinese acquirer executes full control over the target, it is interesting to find out which strategy Chinese acquirers follow. Specifically, whether Chinese firms tend to fully acquire their German target or if they prefer to undertake partial acquisitions. In the sample, 18 percent of the acquisitions involved the takeover of more than 50 percent but less than 75 percent, while approximately 22 percent of the firms acquired more than 75 percent but less than 100 percent. 60 percent of the

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acquisitions involved the takeover of all target shares. This indicates that Chinese acquirers favor to be the sole owner and do not want to deal with minority owners.

The industry sector distribution again shows very clearly that Chinese acquirers are interested in the core industries named by the Chinese political agenda “Made in China 2025” (Wübbeke *et al.*, 2016; Zenglein and Holzmann, 2019). Chinese acquirers mostly targeted German firms from the manufacturing and service sectors with 51 percent and 29 percent, respectively. 11 percent of the acquisitions took place in the trade sector, while the energy, construction, and transportation sectors were targeted less.

Considering the regional distribution of the acquisitions in Germany, a regional clustering in a few states can be observed. Approximately 75 percent of the Chinese acquisitions in Germany considered in this sample occurred in the six states North Rhine-Westphalia, Baden-Württemberg, Hesse, Lower Saxony, Saxony, and Bavaria. These states have a strong economic importance in Germany, which can be observed by their contribution to the German gross domestic product (Statistische Ämter des Bundes und der Länder, 2019). Thus, it is not surprising that most of the acquisitions also occurred in this states.

In contrast to most previous studies on target post-acquisition performance, which mainly used data on publicly listed target firms due to better data availability (Chari *et al.*, 2012; Chen, 2011), this sample includes 84 percent not publicly listed target firms in form of a German limited liability company called Gesellschaft mit beschränkter Haftung (GmbH). In contrast, 89 percent of the Chinese acquirers are publicly listed.

Table 9 displays the distribution of size of the target firms in terms of assets. In more than 65 percent of the acquisition events, the target firm exhibits less than 25 Mio. EUR in total assets. This corresponds to the high share of not publicly listed firms.

**Table 9. Acquisitions by target size (sample 2)**

Target assets	Frequency	Cumulative Frequency	Cumulative Percentage
< 5 Mio. EUR	6	6	13.33
> 5 Mio. EUR	15	21	46.67
> 25 Mio. EUR	9	30	66.67
> 50 Mio. EUR	4	34	75.56
> 100 Mio. EUR	8	42	93.33
> 500 Mio. EUR	2	44	97.78
> 1,000 Mio. EUR	1	45	100.00

The analysis of the age of the acquired firms in this sample shows that the majority, almost 75 percent, is 25 years or younger, while roughly 7 percent are between 51 and 100 years old. Only 5 percent of the firms are older than 100 years.

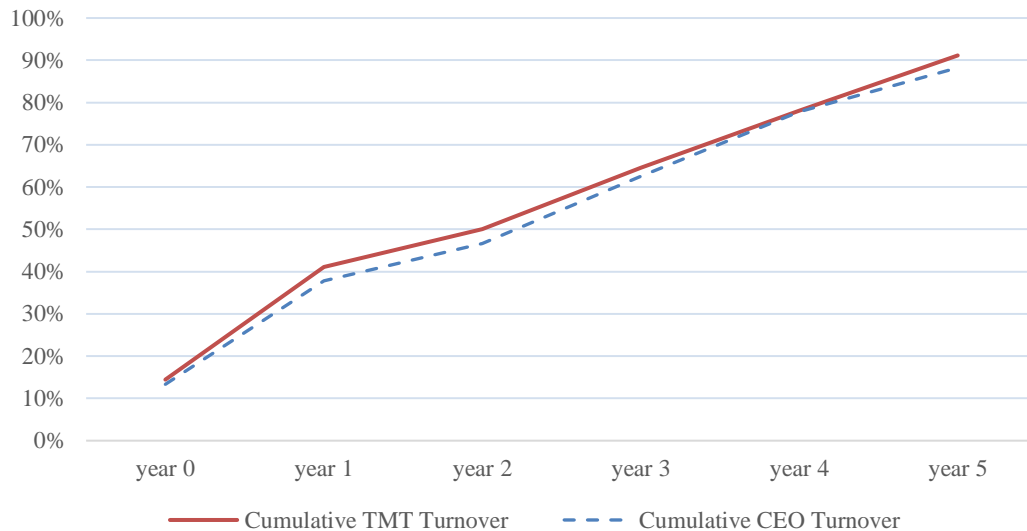
In accordance with the sample in the previous chapter an analysis of the ownership status of the acquiring Chinese firms in the sample used in this chapter was conducted. The distribution is similar and 69 percent of the acquiring firms are state-owned.

Lastly, it is also examined for this sample whether the acquirer and the target firm come from the same industry. With 51 percent, half of the acquisitions in the sample occurred between firms from the same industry (2-digit industry classification).

Additionally to these general sample characteristics, specific information on TMT and CEO turnover at the German target firms after acquisition by Chinese firms are now introduced.

In a first step, the TMT turnover in the sample is examined. This analysis gives a more detailed understanding, whether the existing empirical findings, which document high target TMT turnover following acquisitions by foreign acquirers (Krug and Hegarty, 1997) also apply to emerging-market acquirers conducting acquisitions in developed markets.

Figure 5 shows the cumulative target TMT and CEO turnover for the five years following the acquisition event.

**Figure 5. Cumulative target TMT and CEO turnover**

As the acquisition events took place in different years between 2007 and 2016, the available post-acquisition timespan varies for the acquired firms. As a number of acquisitions occurred rather recently, not all firms can be observed for the total of five years following the acquisition event. Therefore, to calculate the cumulative target TMT turnover per year, only those firms are considered, where information is available or can be extrapolated. Extrapolation is used in cases, where all target TMT members employed one year prior to the acquisition event have already left the firm, as in this case the firm-specific cumulative target turnover has already reached the maximum of 100 percent for the firm under investigation. Table 10 indicates, how many firms are considered in the respective years.

This analysis reveals that already in the year of acquisition (year 0) 14.4 percent of the target TMT leave the target firm. In the year after the acquisition (year 1) already more than one-third of the target TMT is not employed by the target firm anymore. 32 out of 45



target firms could be observed for a time period of five years after the acquisition event. Cumulative turnover of the original target TMT has increased to 91.1 percent in year 5.

**Table 10. Sample size cumulative target TMT turnover**

Year	0	1	2	3	4	5
Cumulative target TMT turnover	14.4%	41.1%	50.0%	64.6%	78.1%	91.1%
Firms	45	45	45	40	35	32

These findings correspond with earlier studies which also documented high target TMT turnover following acquisition events, as shown in Table 7. In comparison, these results for target TMT turnover one year after the acquisition event represent, next to the findings of Davis and Nair (2003) for cross-border acquisitions, one of the highest turnover rates documented so far. With a cumulative target TMT turnover of 91.1 percent after five years, the results of this study represent the highest value for this time period. Earlier studies analyzing cross-border acquisitions have already found higher turnover rates for these acquisitions compared to domestic acquisitions as well (Davis and Nair, 2003; Krug and Hegarty, 1997; Krug and Nigh, 1998).

The considerable increase compared to earlier studies for the 5-year timespan could be caused by several reasons: first, the time period under investigation could be the reason for the increase, as earlier studies used samples from the 1980s, so it is possible that turnover has increased in general for acquisitions occurring in the 2000s and 2010s. Second, this study specifically investigates acquisitions by Chinese firms in Germany, representing overseas acquisitions by EMNEs in developed markets. This constellation could also be the cause for higher target TMT turnover rates than in other cross-border acquisitions not specifically distinguishing the origin of the acquirer. Because the sample only includes 32 firms for the 5-year timespan, the results should be reviewed when information is available for more firms.

Table 11 reports the cumulative target CEO turnover. The analysis shows that already in the year of acquisition (year 0) 13.3 percent of the target CEOs leave the target firm. In the year after the acquisition (year 1) already more than one-third of the target CEOs is not employed by the target firm anymore. 34 out of 45 target firms could be observed for a time period of five years after the acquisition event. Cumulative turnover of the original target CEO has increased to 88.2 percent in year 5.

**Table 11. Sample size cumulative target CEO turnover**

Year	0	1	2	3	4	5
Cumulative target CEO turnover	13.3%	37.8%	46.7%	62.5%	77.8%	88.2%
Firms	45	45	45	40	36	34

### 2.3.3 Measures

#### 2.3.3.1 Dependent variable: Target firm performance

In research papers, firm performance is typically operationalized through a profitability index such as return on assets or Tobin's Q. Subjective measurements, e.g. managers' evaluation of success, have been used less. Tobin's Q measures the ratio between the market value of assets and its replacement value, therefore it can't be used for privately held firms, for which no measure on market value is publicly available. As the vast majority of firms in the data set involves companies not publicly listed ROA is used, which shows the percentage of how profitable a firm's assets are in generating value. ROA is calculated as net income divided by total assets. The data have been collected from the target firms' annual statements which are provided by the German Federal Ministry of Justice and Consumer Protection on Bundesanzeiger.

The use of accounting data has several advantages: it reports actual performance, contrary to market value, which represents the investors' expectations on future

performance. Second, it is more objective than managers' subjective assessment of success. Third, it is more suitable to examine the long-term impact of acquisitions on performance (Aureli, 2015).

#### *2.3.3.2 Independent variables: Cumulative target TMT turnover and Cumulative target CEO turnover*

The variable *Cumulative Target TMT Turnover* is used as independent variable and captures the percentage of target TMT members that have been employed by the target firm in the year prior to the acquisition, who departed the firm during the time since the acquisition event until the year under investigation. This is similar to the approach used by earlier studies (Devine *et al.*, 2016; Krishnan *et al.*, 1997). As TMT characteristics are increasingly examined in empirical studies, the question who actually belongs to the TMT is an important issue. So far, no consensus has been reached among researchers how to operationalize the definition of the TMT. Among the different measures are for example all board members, all managers identified by the CEO as belonging to the TMT, all managers at the vice-president level and higher, or the five highest paid executives. Scholars propose that the operationalization should correspond to the research question (Finkelstein *et al.*, 2009). In case of publicly listed firms the TMT is defined as all members belonging to the board of directors. In case of not publicly listed firms all managing directors are considered as members of the TMT. The information on each target firm's TMT team immediately prior to the acquisition is taken from the annual reports provided by the German data base Bundesanzeiger. Each member was followed in the post-acquisition period, using annual reports as data base as well.

The variable *Cumulative Target CEO Turnover* is used as independent variable and captures the percentage of target CEOs that have been employed by the target firm in the

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year prior to the acquisition, who departed the firm during the time since the acquisition event until the year under investigation. The information on each target firm's CEO immediately prior to the acquisition is taken from the annual reports provided by the German data base Bundesanzeiger. Each member was followed in the post-acquisition period, using annual reports as data base as well.

For both independent variables, the study concentrates on turnover of managers employed in the firm in the year prior to the acquisition, as it is interested in the effect of the acquisition on the target TMT and target CEO, respectively. Departures of managers hired after the acquisition are excluded from the turnover calculation. As no information on the reason for departure is available, e.g. if it is voluntary or involuntary, voluntary turnover cannot be separated from involuntary turnover.

#### *2.3.3.3 Moderating variable: Appointment of acquiring firm's manager as target CEO*

This variable captures if a manager of the acquiring firm is appointed at the target firm as CEO in the post-acquisition phase. An affiliation to the acquirer is assumed, if the CEO is of Chinese nationality. Thus, the moderating variable *Appointment of acquiring firm's manager as target CEO* is operationalized as dummy variable, coded as 1, if the target firm is managed by a CEO of Chinese nationality, and 0 otherwise. The information is taken from the annual reports provided by the German data base Bundesanzeiger.

#### *2.3.3.4 Control variables: Target attributes*

In line with other studies, this study controls for several variables that influence a firm's performance for a correct understanding of the proposed relationship (Abdallah and Ismail, 2017; Cheung *et al.*, 2011; Bhagat and Bolton, 2007; Black *et al.*, 2006a; Black *et al.*, 2006b).

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I include *Target TMT Size* (number of TMT members) as control variable. There are opposing views how TMT size affects firm performance. On the one side, a greater number of directors can cause more coordination cost, communication problems, as well as conflicts and thus result in slower and inefficient decision-making. Accordingly, researchers argue that small boards are more effective and enhance firm performance (Liang, Xu, and Jiraporn, 2013; Kota and Tomar, 2010; Guest, 2009). In contrast, other authors reason that a greater number of directors can bring along more expertise, experience, diversity, and connections, as suggested by the resource-based view, which promotes better performance (Mohapatra, 2017; Naseem *et al.*, 2017; Coles, Daniel, and Naveen, 2008). Additionally, the study controls for *Target Firm Size* (natural logarithm of total assets) and *Target Firm Age* (years since foundation), as larger and older firms are believed to be able to better exploit economies of scale and scope and to own better bargaining power (Buckley *et al.*, 2014; Bertrand and Betschinger, 2011). *Target Financial Leverage* (debt/total assets) is also included as control variable. A high ratio can point to missing free cash-flow to invest in activities which increase firm performance. In firms with more financial resources, change initiatives with uncertain outcomes are typically more tolerated. (Bertrand and Betschinger, 2011; Karaevli and Zajac, 2013). Furthermore, the study controls for *Target Public Listing* (dummy variable taking the value of 1, if firm is publicly listed, 0 otherwise), *Target Region* (dummy variable taking the value of 1, if firm is located in former West Germany, 0 otherwise), *Target Industry Group* (based on the two-digit North American Industry Classification System), and *Target Industry Performance* (development of target industry per year). The variables *Target Financial Leverage*, *Target Firm Size*, *Target Public Listing*, and *Target Industry Performance* are lagged by one year. Furthermore, year dummies are added to account for time specific effects. Finally, to capture information on the appointment of Chinese managers to the target board, the variable *Target Chinese TMT Ratio* is

employed. This variable reflects the number of Chinese TMT members to the total number of TMT members. Therefore, I collected information on the nationality of the TMT team from the firms' financial statements. The information is sourced from Dafne and Bundesanzeiger.

#### 2.3.3.5 Control variables: Acquirer attributes

The study further controls for the acquirer attributes *Acquirer Firm Size* (natural logarithm of total assets), *Acquirer Age* (years since foundation), *Acquirer Public Listing* (dummy variable taking the value of 1, if firm is publicly listed, 0 otherwise), and *Acquirer State Ownership* (dummy variable taking the value of 1, if firm is state-owned, 0 otherwise). The variables *Acquirer Firm Size* and *Acquirer Public Listing* are lagged by one year. The information on the acquirer attributes was obtained through the data base LexisNexis and internet research.

#### 2.3.3.6 Control variables: Deal attributes

Moreover, the study includes the following deal attributes: *Relatedness* (dummy variable taking the value of 1 if target and acquirer operate in the same two-digit North American Industry Classification System, 0 otherwise), as affiliation to the same industry might positively influence target firm performance as a result of the emergence of economies of scale and scope and increased market power. *Percentage Acquired* (percentage of ownership of acquirer in target firm) is also included. To account for the timespan between the completion of the acquisition and the observation, the control variable *Time since Acquisition* (number of years since acquisition event, whereas 0 represents the year of acquisition) is included. The information was sourced from Dafne, SDC data base by Thomson Reuters, and internet research.

The detailed descriptions of all the above variables are given in Table 12.

**Table 12. Variable description**

Variable	Description / Information	Source
<b>Dependent Variable</b>		
Target Firm Performance	Return on assets calculated as net income divided by total assets.	Dafne and firm's annual statements (Bundesanzeiger)
<b>Independent Variables</b>		
Cumulative Target TMT Turnover	Percentage of target TMT members that have been employed by the target firm in the year prior to the acquisition, who departed the firm during the time since the acquisition event until the year under investigation.	Firm's annual statements (Bundesanzeiger)
Cumulative Target CEO Turnover	Percentage of target CEOs that have been employed by the target firm in the year prior to the acquisition, who departed the firm during the time since the acquisition event until the year under investigation.	Firm's annual statements (Bundesanzeiger)
<b>Moderating Variable</b>		
Appointment of acquiring firm's manager as target CEO	Dummy that takes the value of (1) if the CEO has Chinese nationality and (0) otherwise.	Firm's annual statements (Bundesanzeiger)
<b>Control Variables</b>		
<b>Target attributes</b>		
Target TMT Size	Number of target TMT members. Count variable.	Firm's annual statements (Bundesanzeiger)
Target Chinese TMT Ratio	Calculated by dividing the number of Chinese target TMT managers divided by the total number of target TMT members.	Firm's annual statements (Bundesanzeiger)
Target Financial Leverage	Calculated by dividing the firm's debt with the firm's total assets. Lagged by 1 year.	Dafne and firm's annual statements (Bundesanzeiger)
Target Firm Size	Natural logarithm of the firm's total assets. Lagged by 1 year.	Dafne and firm's annual statements (Bundesanzeiger)
Target Firm Age	Calculated as years since the firm's foundation. Count variable.	Dafne
Target Public Listing	Dummy that takes the value of (1) if the firm is publicly listed and (0) otherwise. Lagged by 1 year.	Dafne
Target Region	Dummy that takes the value of (1) if the firm is located in former West Germany and (0) otherwise.	Dafne
Target Industry Group	Two-digit North American Industry Classification System.	Amadeus
Target Industry Performance	Calculated as development of firm's industry per year. Lagged by 1 year.	Amadeus
<b>Acquirer attributes</b>		
Acquirer Firm Size	Natural logarithm of the firm's total assets. Lagged by 1 year.	WRDS data base and internet research
Acquirer Firm Age	Calculated as years since the firm's foundation. Count variable.	Internet research
Acquirer Public Listing	Dummy that takes the value of (1) if the firm is publicly listed and (0) otherwise. Lagged by 1 year.	LexisNexis and internet research
Acquirer State Ownership	Dummy that takes the value of (1) if the firm is state-owned and (0) otherwise.	Internet research
<b>Deal attributes</b>		
Relatedness	Dummy that takes the value of (1) if the acquiring firm and the target firm operate in the same two-digit North American Industry Classification System and (0) otherwise.	LexisNexis and internet research
Percentage Acquired	Percentage of ownership of acquirer in target firm. Count variable.	Dafne and firm's annual statements (Bundesanzeiger)
Time Since Acquisition	Calculated as years since acquisition event, whereas 0 represents the year of acquisition. Count variable.	Firm's annual statements (Bundesanzeiger)

### **2.3.4 Estimation method**

The study employs the FGLS approach to estimate the equations. FGLS comes with three major advantages: the estimated coefficients are more efficient than the OLS model, there are unbiased standard errors whether the firm effect is temporary or permanent, and controlling for fixed effects through firm dummies, which would generate a degree of freedom problem, can be avoided (Petersen, 2008; Buckley *et al.*, 2014).

## **2.4 Results**

Table 13 provides the means, standard deviations, and correlations of the variables in the main regression model.



**Table 13. Means, standard deviations, and correlation coefficients**

	<i>Mean</i>	<i>S.D.</i>	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)
(1) Target Firm Performance	-0.005	0.123	1.000																		
(2) Target TMT size	2.033	1.038	0.114	1.000																	
(3) Target Chinese TMT Ratio	0.277	0.347	-0.118	-0.215*	1.000																
(4) Target Financial Leverage	0.542	0.278	-0.227*	-0.149*	0.252*	1.000															
(5) Target Firm Size	17.483	1.703	0.175*	0.415*	-0.394*	-0.035	1.000														
(6) Target Firm Age	28.111	24.275	0.017	0.184*	0.030	0.112	0.284*	1.000													
(7) Target Public Listing	0.166	0.373	0.139*	0.259*	-0.209*	-0.353*	0.323*	0.020	1.000												
(8) Target Region	0.862	0.346	0.247*	0.152*	0.020	0.063	0.096	0.231*	0.178*	1.000											
(9) Target Industry Performance	0.055	0.009	-0.141*	-0.150*	0.293*	0.208*	-0.204*	0.120	-0.352*	-0.051	1.000										
(10) Acquirer Firm Size	21.154	1.808	0.124*	0.190*	-0.312*	0.100	0.569*	0.334*	0.060	0.071	-0.203*	1.000									
(11) Acquirer Firm Age	24.890	14.004	-0.262*	0.022	-0.065	-0.155*	-0.124*	-0.054	-0.121	-0.528*	0.027	-0.195*	1.000								
(12) Acquirer Public Listing	0.906	0.293	-0.032	-0.191*	-0.064	-0.149*	-0.119	-0.090	0.144*	0.091	0.206*	-0.383*	0.012	1.000							
(13) Acquirer State Ownership	0.276	0.448	-0.061	0.291*	-0.202*	0.102	0.345*	0.288*	0.123*	-0.147*	-0.045	0.421*	0.225*	-0.140*	1.000						
(14) Relatedness	0.503	0.501	0.035	0.267*	0.020	0.133*	0.022	0.133*	-0.270*	-0.046	-0.063	-0.100	0.101	-0.320*	0.293*	1.000					
(15) Percentage Acquired	91.794	13.110	0.112	0.118	0.248*	0.198*	0.084	0.183*	-0.315*	0.025	0.310*	0.079	0.005	-0.129*	0.132*	0.202*	1.000				
(16) Time Since Acquisition	3.309	2.066	0.045	-0.070	0.286*	-0.124*	-0.064	0.018	0.012	0.122	-0.101	0.066	0.080	-0.025	-0.159*	-0.065	0.088	1.000			
(17) Cumulative Target TMT Turnover	0.564	0.442	-0.041	-0.033	0.300*	-0.022	-0.046	0.165*	-0.222*	-0.069	-0.024	0.010	0.182*	-0.083	0.117	0.072	0.206*	0.260*	1.000		
(18) Cumulate Target CEO Turnover	0.569	0.497	-0.033	-0.069	0.512*	0.195*	-0.152*	0.219*	-0.332*	0.007	0.208*	-0.013	0.120	-0.127*	0.064	-0.018	0.364*	0.304*	0.783*	1.000	
(19) Appointment of acquiring firm's manager as Target CEO	0.265	0.443	-0.152*	-0.164*	0.740*	0.146*	-0.255*	0.180*	-0.201*	0.023	0.205*	0.027	-0.055	-0.150*	-0.063	-0.078	0.262*	0.323*	0.339*	0.498*	1.000

Note:  $N=181$ . \* $p<0.1$ .

The dependent variable *Target Firm Performance* exhibits the highest correlations with the control variables *Acquirer Age* (- 0.262), *Region* (0.247), *Target Financial Leverage* (- 0.227), *Target Firm Size* (0.175), *Appointment of acquiring firm's manager as Target CEO* (- 0.152), and *Target Industry Performance* (- 0.141). Moreover, some high, medium, and small correlations between various control variables can be observed.

Therefore, the Variance Inflation Factors (VIF) are estimated to control for potential multicollinearity problems. The VIF values are documented in Table 14. For Model 1 – 3, all VIF values are well below the threshold value of 10, showing that multicollinearity is not a problem in the regression analysis (Chatterjee and Hadi, 2000; O'Brien, 2007). The VIF values for Model 4, including the interaction between the independent variable *Cumulative Target CEO Turnover* and the moderator variable *Appointment of acquiring firm's manager as Target CEO* are also well below the threshold value of 10 with two exceptions: the VIF value for the interaction effect *Cumulative Target CEO Turnover x Appointment of acquiring firm's manager as Target CEO* has a value of 41.83 while the VIF value for the moderating variable *Appointment of acquiring firm's manager as Target CEO* is 40.97. Although these values are above the threshold of 10, there is no need for concern as the high VIF values are a result of including the interaction term as well as the main effects.

The results of the regression analysis are reported in Table 14.

**Table 14. Regression results for target post-acquisition firm performance**

<b>Dependent Variable: Target Firm Performance</b>	<b>Model 1</b>	<b>Model 2</b>	<b>Model 3</b>	<b>Model 4</b>
<i>Control Variables</i>				
Target TMT Size	0.005 (0.006)	0.005 (0.006)	0.001 (0.005)	0.001 (0.005)
Target Chinese TMT Ratio	0.035 (0.029)	0.018 (0.030)	-0.008 (0.030)	-0.006 (0.030)
Target Financial Leverage	-0.067* (0.028)	-0.084** (0.029)	-0.086** (0.028)	-0.088** (0.028)
Target Firm Size	0.004 (0.005)	0.005 (0.005)	0.005 (0.005)	0.005 (0.005)
Target Firm Age	-0.000 (0.000)	-0.000 (0.000)	-0.000 (0.000)	-0.000 (0.000)
Target Public Listing	-0.009 (0.022)	-0.002 (0.022)	0.004 (0.021)	0.004 (0.021)
Target Region	0.027 (0.031)	0.032 (0.032)	0.038 (0.033)	0.036 (0.033)
Target Industry Performance	-1.386 (1.154)	-1.187 (1.142)	-1.137 (1.095)	-1.156 (1.094)
Acquirer Firm Size	0.008 (0.005)	0.009 (0.005)	0.008 (0.005)	0.009 (0.005)
Acquirer Firm Age	-0.001 (0.001)	-0.001 (0.001)	-0.001 (0.001)	-0.001 (0.001)
Acquirer Public Listing	-0.007 (0.029)	-0.006 (0.029)	-0.008 (0.029)	-0.004 (0.030)
Acquirer State Ownership	-0.018 (0.017)	-0.023 (0.016)	-0.029 (0.015)	-0.030 (0.015)
Relatedness	0.038 (0.022)	0.056* (0.023)	0.057** (0.022)	0.059** (0.022)
Percentage Acquired	0.001* (0.001)	0.001* (0.001)	0.001* (0.001)	0.001* (0.001)
Time Since Acquisition	0.006 (0.004)	0.002 (0.004)	0.001 (0.004)	0.001 (0.004)
<i>Moderating Variable</i>				
Appointment of acquiring firm's manager as Target CEO	-0.068** (0.025)	-0.066** (0.025)	-0.060* (0.026)	-0.026 (0.061)
<i>Independent Variables</i>				
Cumulative Target TMT Turnover		0.029 (0.017)		
Cumulative Target CEO Turnover			0.034** (0.013)	0.036** (0.013)
<i>Interaction Effect</i>				
Cumulative Target CEO Turnover x Appointment of acquiring firm's manager as Target CEO				-0.036 (0.060)
Constant	-0.320 (0.183)	-0.380* (0.184)	-0.362* (0.179)	-0.376* (0.180)
Year Dummies	Yes	Yes	Yes	Yes
Industry Group Dummies	Yes	Yes	Yes	Yes
Chi-square	244.59***	223.99***	205.40***	205.97***
Max. VIF	3.70	3.74	3.88	41.83
Number of Observations	181	181	181	181
Number of Firms	45	45	45	45

\*\*\* p<0.001; \*\* p<0.01; \* p<0.05. Standard errors in parentheses.

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Model 1 in Table 14 is the baseline model, which includes the dependent variable *Target Firm Performance* and the control variables. In Model 2, the independent variable *Cumulative Target TMT Turnover* is added. Model 3 reports the result for the independent variable *Cumulative Target CEO Turnover*. Model 4 introduces the interaction effect between *Cumulative Target CEO Turnover* and *Appointment of acquiring firm's manager as Target CEO*.

Model 1 shows that *Target Financial Leverage* is negatively and significantly related to *Target Firm Performance* ( $b = -0.067$ ;  $p = 0.016$ ). This underlines the argument that less free money is available to finance activities which improve firm performance. *Percentage Acquired* is positively and significantly related to *Target Firm Performance* ( $b = 0.001$ ;  $p = 0.047$ ), documenting that a higher percentage of ownership by the Chinese acquirer is beneficial for target firm performance. As expected, the moderating variable *Appointment of acquiring firm's manager as Target CEO* is negatively and significantly related to *Target Firm Performance* ( $b = -0.068$ ;  $p = 0.007$ ), supporting the argument that expertise, knowledge, and trust are especially important in the post-acquisition context. It helps to work efficiently, if the target CEO is trusted by the employees and knows the national culture as well as the work culture and the local regulations, e.g. concerning taxes or labor law. Chinese managers are generally less familiar with working under differing institutional conditions.

Hypothesis 1a proposed that *Cumulative Target TMT Turnover* has a negative effect on target post-acquisition *Target Firm Performance*. Model 2 in Table 14 tests this prediction and shows that there is no statistically significant effect of *Cumulative Target TMT Turnover* on target post-acquisition *Target Firm Performance* ( $b = 0.029$ ;  $p = 0.083$ ). The effects of the statistically significant control variables remain similar to those in Model 1: *Target Financial Leverage* ( $b = -0.084$ ;  $p = 0.004$ ) and *Percentage Acquired* ( $b = 0.001$ ;  $p = 0.039$ ). Additionally, the control variable *Relatedness* is positively and

significantly related to target *Target Firm Performance* ( $b = 0.056$ ;  $p = 0.015$ ), showing that membership to the same industry indeed positively influences target firm performance as expected. The variable *Appointment of acquiring firm's manager as Target CEO* remains negatively and significantly related to *Target Firm Performance* ( $b = - 0.066$ ;  $p = 0.009$ ). Hypothesis 1a is thus not supported, suggesting that cumulative target TMT turnover has no negative effect on target post-acquisition firm performance.

To further investigate the effect of cumulative target TMT turnover on target firm post-acquisition performance, Hypothesis 1b specifically looked into the effect of target CEO departure, to analyze whether it makes a difference if the CEO leaves the firm. Model 3 in Table 14 tests the hypothesis that target CEO turnover is positively related with target post-acquisition firm performance. The regression result shows that *Cumulative Target CEO Turnover* is positively and significantly related to *Target Firm Performance* ( $b = 0.034$ ;  $p = 0.008$ ). The effects of the statistically significant control variables remain similar to those of Model 2: *Target Financial Leverage* ( $b = - 0.086$ ;  $p = 0.002$ ), *Percentage Acquired* ( $b = 0.001$ ;  $p = 0.032$ ), *Relatedness* ( $b = 0.057$ ;  $p = 0.008$ ), and *Appointment of acquiring firm's manager as Target CEO* ( $b = - 0.060$ ;  $p = 0.020$ ). The result confirms that the departure of the target CEO actually benefits target firm performance and supports Hypothesis 1b. This is in accordance with previous studies which also found a positive effect of CEO departure on target firm financial performance in case of publicly listed U.S. target firms (Demirtas and Simsir, 2016) as well as a result of meta-analysis (Bilgili *et al.*, 2017).

Next, Model 4 introduces the interaction effect between the independent variable *Cumulative Target CEO Turnover* and the moderator variable *Appointment of acquiring firm's manager as Target CEO*. The interaction term has the expected negative sign but is not significant ( $b = - 0.036$ ;  $p = 0.547$ ).

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The findings suggest that the appointment of an acquiring firm's manager as new target CEO does not negatively moderate the relationship between target CEO turnover and target firm performance. Hence, Hypothesis 2 is not supported, neither providing support for a negative effect of subsidiary staffing with parent company executives on target post-acquisition performance (Singh *et al.*, 2019; Kaeppli, 2009; Gaur *et al.*, 2007) nor for a positive relationship (Gong, 2003; Sekiguchi *et al.*, 2011).

## **2.5 Discussion and conclusion**

Acquisitions by emerging-market firms in developed markets are increasingly changing the global landscape. This study investigated the effect of target TMT and target CEO turnover on target post-acquisition performance. Although several studies have already addressed this issue, existing research provides no consistent findings and does not account for the distinct conditions of acquisitions by EMNEs (Devine *et al.*, 2016; Demirtas and Simsir, 2016; Bilgili *et al.*, 2017; Krishnan *et al.*, 1997; Cannella and Hambrick, 1993a). By using a unique panel data set on Chinese acquisitions in Germany over the period 2007 until 2016, the study shows that, in cross-border acquisitions by emerging-market firms in developed markets, target TMT turnover has no negative effect on target post-acquisition performance, whereas target CEO turnover has a positive effect on target post-acquisition performance. No support was found that the appointment of an acquiring firm's manager as new target CEO weakens the positive relationship between target CEO turnover and target post-acquisition performance.

This study extends prior research by linking current knowledge on target turnover and post-acquisition performance of target firms with the context of emerging-market cross-border acquisitions and up-to-date data. The findings contradict the majority of extant studies, which advanced that target TMTs are an important part of the acquired resource base

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and therefore have value for the post-acquisition performance (Cannella and Hambrick, 1993a; Walsh and Ellwood, 1991). The findings in this study confirm that the relationship between target turnover and target post-acquisition is not as straightforward. The relationship remains complex and differing contextual factors need to be considered, confirming the call by Krug *et al.* (2014) for further research, especially in new research contexts, such as privately-held firms and cross-border acquisitions.

These findings also have important implications for managerial practice. First, emerging-market acquisitions often raise concerns of policymakers and the public that they negatively influence target firms and thus the target economy (UNCTAD, 2017; Miozzo *et al.*, 2016; Grimpe and Hussinger, 2014; Valentini, 2012). While the international press mainly focuses on single acquisitions and their consequences, this study provides a holistic picture. This study shows that target CEO turnover is beneficial for target post-acquisition performance, and that target CEO restructuring with managers from China does not weaken the relationship.

There are limitations to this study, which offer opportunity for future research. First, the employed data set does not allow to examine the impact of emerging-market ownership across different developed countries. Hence, the results should be further tested by replicating this study in different economic contexts. This applies to the acquiring as well as to the acquired nation. Future studies could concentrate on acquirers from other emerging markets, such as Brazil, Russia, and India, but also on other developed-market targets, such as the United States or Great Britain, and evaluate, whether the results can be generalized. Second, future research can evaluate whether the findings also hold in longer time periods. Many acquisitions from emerging-market acquirers in developed markets have just occurred recently, reducing the available amount of post-acquisition data on the target firms. Third, given that the sample predominantly consists of not publicly listed firms, I encountered

difficulty in gathering further target-specific information from public sources. Inclusion of more target attributes could extend the empirical design. Additionally, owing to the limited availability of financial information, I was unable to conduct further analysis using another measure, such as sales growth, for target firm performance. Finally, another promising avenue for future research is to investigate the effect of these acquisitions on other target performance measures, such as innovation performance.



### 3 Are Firms with Technological Capability Better Acquirers? Chinese Acquisitions in Germany and Target Firm Post-Acquisition Innovation Performance<sup>3</sup>

#### *Abstract*

*The implications of cross-border acquisitions by emerging-market firms on target firm performance are increasingly attracting academic interest. This study explores if acquirers with superior technological capability are more successful in managing target innovation performance in this context. Using panel data on 45 acquisitions by Chinese acquirers in Germany during the period 2007 and 2016, the findings imply that different aspects of innovation performance need to be distinguished. The study finds a positive effect of the acquiring firm's technological capability on target innovation impact in the post-acquisition phase. For the other innovation performance measures, namely innovation rate, innovation originality, and innovation generality no statistically significant effect of the acquirer's technological capability could be observed. Moreover, results show that prior international acquisition experience does not positively moderate the relationship between the acquirer's technological capability and target innovation performance.*

#### 3.1 Introduction

Competitive advantage and the ability to satisfy highly individualized customer demands play a key role in generating high earnings and are crucial for a firm's survival. Thus, the capability to innovate is a prerequisite for firm success. During the last decades, M&A have become a frequently observed method for firms to integrate innovation and increase their competitiveness in today's dynamic and hyper-competitive business environment (Christofi *et al.*, 2019; Haleblan *et al.*, 2009). Vis-à-vis other internal and external innovation strategies, this strategy features the advantage of high speed, allowing firms to access innovative elements, such as specialized knowledge and technology, very quickly (Dezi *et al.*, 2018; Ahuja and Katila, 2001). However, in order to create competitive

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<sup>3</sup> Brunner C. 2020. *Are Firms with Technological Capability Better Acquirers? Chinese Acquisitions in Germany and Target Firm Post-Acquisition Innovation Performance*: WHU School of Management, Unpublished Working Paper.

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advantage from the acquired assets, firms need to be able to effectively use the technological knowledge so that existing technologies can be assimilated, used, adapted, and changed. This ability is referred to as technological capability (Kim, 1997; Isobe, Makino, and Montgomery, 2008; Coombs and Bierly, 2006).

Especially, firms from emerging markets use M&A to attain strategic assets, such as superior technology, advanced know-how, and brands, needed to survive in global competition (Ramamurti and Hillemann, 2018; Chen and Cuervo-Cazurra, 2012; Luo and Tung, 2018, 2007). The international context allows firms to tap a much larger pool of firms with specialized technology, capabilities, and knowledge (Grimpe and Hussinger, 2014; Valentini, 2012; Makri, Hitt, and Lane, 2010; Ahuja and Katila, 2001). In particular, the transactions, where the target is located in a developed market and the acquirer in an emerging market raise concern in the public. They are often associated with the fear of knowledge drains, technology transfer, and reduction of innovation performance of target firms (Fisch *et al.*, 2018; Bandick *et al.*, 2014; Miozzo *et al.*, 2016).

The relationship between M&A and innovation has received attention by managerial studies as well as economics studies (Colombo and Rabbiosi, 2014). Prior studies mainly analyzed under what conditions M&A can indeed increase innovation performance for the acquiring firm and thus create value, yielding controversial results with respect to post-acquisition innovation performance. Also the literature with a focus on the target firm does not yet present conclusive evidence whether foreign acquisitions indeed reduce innovation performance and destroy value for target firms. In fact, some studies find a positive relationship between foreign M&A and subsequent target innovation performance (Zhang *et al.*, 2018; Chen *et al.*, 2017; Eliasson *et al.*, 2017; Bandick *et al.*, 2014; Guadalupe *et al.*, 2012; Bertrand, 2009; Girma *et al.*, 2008), while others discover a negative impact (Fisch *et*

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*al.*, 2018; Stiebale, 2016; Szücs, 2014; Stiebale and Reize, 2011) or a dependency on the combination of acquirer and target knowledge base (Miozzo *et al.*, 2016; Makri *et al.*, 2010).

Different from these extant studies, this study examines the relevance of the target's and acquirer's country of origin as well as the acquiring firm's technological capability to promote target innovation performance successfully. There is a lack of profound empirical and theoretical knowledge how these types of acquisitions, where the acquirer is from an emerging country and the target firm from a developed country, affect target post-acquisition innovation performance. Given that M&A from EMNEs in developed markets have significantly increased during the last decade, this is a relevant research gap for both academia and practice.

Drawing on the concept of technological capability, this study analyzes the following research questions with the aim to extend prior research: (1) How is the acquirer's technological capability related to the post-acquisition innovation performance of the target firm in case of acquisitions in developed markets by emerging-market firms? (2) Does prior international acquisition experience of the acquiring firm play a moderating role in this relationship? This study attempts to enrich prior research on the effect of M&A on target innovation performance. To receive a more comprehensive and nuanced way of understanding the acquisition effect on target innovation performance, it analyzes if the acquirers technological capability is related to target post-acquisition innovation performance. In a second step, it examines if prior international acquisition experience enables the acquiring firm to increase their capability for successful target innovation performance management.

The effect is explored empirically by using a unique data set containing German firms which have been acquired by firms from China between 2007 and 2016. This is a particularly suitable setting, as China has been the major source of emerging-market overseas M&A,

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accounting for around 65 percent in recent years (UNCTAD, 2018, 2019, 2020). The dramatic surge in Chinese overseas M&A is attributed to several reforms instigated by the Chinese government (Du and Boateng, 2015). In Germany, the presence of Chinese acquirers increased rapidly from 2011 onward, reaching its maximum in 2017, when the country was the largest recipient of Chinese investment in Europe with USD 13.7 billion (Ernst & Young, 2019). German firms dominate many medium and high-tech industries, thus offering Chinese firms a suitable location to enhance their own competitiveness (Wübbecke *et al.*, 2016). This shows the immense growth and relevance of Chinese outward FDI in Germany and highlights the timeliness of the study. Thus, this research setting allows for a rich context to analyze the hypotheses.

As indicator of the acquiring firm's technological capability the number of patents applied for by the acquiring firm since its foundation is used. To measure target innovation performance the study employs the following dependent variables: innovation rate (number of patent applications each year by the target firm) and innovation quality, captured as innovation impact (number of forward citations that a patent receives in subsequent patents), innovation generality (forward citations received in few or various patent classes), and innovation originality (citations made to earlier patents from few or various patent classes).

This study aims to advance this field in the following ways: First, little is known what happens with target innovation performance when EMNEs acquire developed-market firms. In consideration of the sharp increase of emerging-market acquisitions, this study specifically focus on these cases. Second, in contrast to most previous studies, the analysis is not restricted to a single industry. The sample includes firms from the manufacturing and service sectors as well as trade, construction, energy, and transportation sectors. Additionally, as the effects of M&A on target post-acquisition innovation performance are likely to depend on characteristics of both involved firms, a framework is developed to

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examine, whether the technological capability of the acquirer determines post-acquisition innovation performance at the target firm.

The paper is organized into five sections. Section 2 assesses the existing research and analyzes the theoretical background, from which hypotheses are derived. Section 3 describes the data set, methodology and variables. In Section 4 the empirical analyses is conducted and the results of the empirical analysis are presented. Section 5 discusses the findings in light of theory and practice.

## **3.2 Theoretical background and hypotheses**

### **3.2.1 M&A as external innovation source**

Competitive advantage and the ability to satisfy highly individualized customer demands play a key role in generating high earnings and a firm's survival, making the capability to innovate a prerequisite for firm success. Innovation is defined as the practical and successful application of an invention or a discovery to a product or service, a new process, or a new administrative system. It ensures long-term success for the firm and has a positive impact on the firm's competitiveness (Dezi *et al.*, 2018; Santoro *et al.*, 2018).

Internal R&D is one possible source of innovation: whereas basic research is mainly executed by the public sector, applied research and product and process development are crucial to the competitiveness of firms, but the establishment process is oftentimes slowly and costly (UNCTAD, 2005). A focus on only internal R&D is thus no longer sufficient to deal with the technological evolution and the fast-changing environment (Ferraris, Santoro, and Dezi, 2017).

As a result, especially in today's dynamic context, external resources and knowledge play a distinctive role and can be viewed as complementary to internal knowledge to advance a firm's technology (Jiang, Waller, and Cai, 2013; Chesbrough, 2010). Amit and

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Schoemaker (1993) define *resources* as stocks of available factors, which are controlled or owned by the firm. This study follows their approach and refers to *resources* as input factors which have positive effects on the firm's strategies and business objectives, if employed in a proper way. In contrast, *capability* mirrors a firm's capacity to use and combine the available resources to reach a desired result (Amit and Schoemaker, 1993).

M&A can be an effective answer among external strategic innovation development possibilities to quickly access technological resources and innovation (Dezi *et al.*, 2018; Graebner *et al.*, 2017). Indeed, cross-border M&A increased remarkably and now represent a frequently observed way for firms to gain access to and integrate technological know-how and knowledge held by foreign firms to increase firm performance (Bloomberg, 2019; Grimpe and Hussinger, 2014; Valentini, 2012; Makri *et al.*, 2010).

The success of using M&A to access external knowledge mainly depends on the firm's capability to recognize the value of new, external information, evaluate it, integrate it, reconfigure it, and utilize it to commercial ends (Dezi *et al.*, 2018; Fisch *et al.*, 2018). This ability is called technological capability and largely a function of the level of prior related knowledge (Kim, 1997). Research on knowledge transfer studies whether firms are able to successfully transfer and benefit from the knowledge of other firms to increase innovation performance. Knowledge transfer includes the movement of explicit knowledge, which can be clearly articulated in reports, documents, or systems as well as the transfer of implicit knowledge, which cannot be easily codified and is represented by the people's skills and experience. In cross-border acquisitions, knowledge transfer, especially of implicit knowledge, is oftentimes aggravated through cultural differences and a lack of mutual trust (Yen *et al.*, 2017; Ahammad *et al.*, 2016; Bauer *et al.*, 2016). Researchers have found that frequent communication assists the transfer of tacit forms of knowledge, such as technological know-how. If the knowledge is articulated, for example in form of patents, it

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can be transferred with only little need of personal interaction (Yen *et al.*, 2017; Ahammad *et al.*, 2016; Bresman *et al.*, 1999). Additionally, a two-stage knowledge transfer process has been identified: Within the first two or three years following the acquisition, the acquiring firm one-sidedly transfers its knowledge to the target firm. Over time, though, knowledge transfer becomes reciprocal and combined knowledge development projects emerge. In phase one managers should focus on human integration, building up cultural convergence and mutual respect. In phase two, renewed task integration can be built on the success of human integration (Birkinshaw, Bresman, and Håkanson, 2000). Moreover, the implementation speed must consider the tension between preserving and transferring knowledge in order to realize synergies without disruption of the firm's capabilities. (Ranft and Lord, 2002; Bresman *et al.*, 1999).

### **3.2.2 M&A and innovation performance**

The research on the link between M&A and innovation performance is a large and quickly growing field, with contributions from management as well as economics researchers (Colombo and Rabbiosi, 2014). Dezi *et al.* (2018) and Christofi *et al.* (2019) provide comprehensive literature reviews on the link between M&A and innovation performance. In this section, the study does not aim to offer a comprehensive overview, but rather to summarize the theoretical arguments and to introduce a selection of related empirical studies.

#### *3.2.2.1 Theoretical findings: M&A and innovation performance*

Acquisitions can affect the target firms' and acquiring firms' innovation performance and determinants through various channels. There can be direct effects, such as the relocation and rationalization of R&D activities, but also indirect effects, as foreign acquisitions can have an impact on the determinants of R&D, for example financial factors, firm size, and

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knowledge sources (Graebner *et al.*, 2017; Stiebale, 2016). From a theoretical perspective, the relationship between M&A and innovation performance is quite ambivalent, as the following arguments will show.

On the one side, researchers argue that M&A can have a positive effect on innovation performance as these events expand the firm's knowledge base by complementing internal R&D. This expansion leads to a more efficient combination or reorganization of innovation activities resulting in better innovation performance after M&A (Fernández, Triguero, and Alfaro-Cortés, 2018; Ahuja and Katila, 2001). Similar, Cassiman *et al.* (2005) reason that innovation performance is enhanced by the redeployment of technological assets. The researchers argue that the emergence of scale and scope economies allows firms not only to spread the fixed costs of R&D, but also to leverage R&D investments due to greater diversification, resulting in different innovative products. Moreover, some scholars introduce the argument that the relationship between M&A and innovation performance is dependent on the degree of similarity of the involved firms' knowledge. Technological complementarity, having a positive effect on R&D inputs as well as innovation performance, has been identified as one key for a positive effect of M&A activities on innovation performance (Cassiman *et al.*, 2005). It makes firms more efficient in R&D as firms will try to relocate their resources to ensure greater diversification and achieve presence in a higher number of technological fields based on the newly acquired capabilities (Fernández *et al.*, 2018; Makri *et al.*, 2010; Ahuja and Katila, 2001). Whereas technological complementarity leads to economies of scope, technological similarity contributes to economies of scale (Cassiman *et al.*, 2005). Scale and scope economies in R&D may also lead to shorter innovation times. M&A can furthermore provide greater internal financial support for innovation projects and may increase the innovation performance by increasing the firms' technological capability (Miozzo *et al.*, 2016).



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On the other side, there are arguments that M&A might have a negative impact on innovation performance. Instead of increasing internal R&D activities firms acquire other firms with the desired technology, producing a substitution effect between internal R&D and the technological competences of the target firm, leading to less innovation. For firms, which have a high risk aversion associated with internally developed innovations, M&A therefore provide an alternative option, as they enable these firms to access the required capabilities without risking funds getting lost in R&D with uncertain output (Fernández *et al.*, 2018). Technological similarity between the acquiring and target firm can lead to a relocation of technological resources, resulting in the rationalization of R&D activities. So if the involved firms have the same technologies, M&A can have a negative influence on innovation performance, unless the firms are able to realize a superior technological position in the post-acquisition phase (Sears and Hoetker, 2014). M&A can also lead to restructuring with stricter financial controls, which can reduce R&D activities (Hitt *et al.*, 1991). The potential reorganization of R&D units not only disrupts R&D departments, it also causes uncertainty, which restrains the inventors' abilities to innovate and could cause decision makers to postpone research projects (Miozzo *et al.*, 2016). M&A also involve managerial as well as integration challenges and transaction costs which could exert negative effects on innovation performance (Dezi *et al.*, 2018; Zollo and Singh, 2004).

Especially in cross-border acquisitions, R&D activities might be centralized in the home country of the acquiring firms to facilitate economies of scale in research and reduce costs of managing dispersed R&D units. The majority of firms conducts its R&D at their headquarters or corporate production units. As a consequence, target firm innovation performance might be reduced or shifted away (Fernández *et al.*, 2018; Zhang *et al.*, 2018; Miozzo *et al.*, 2016).

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On the other hand, there are also reasons to expect that cross-border acquisitions enhance target innovation performance. The acquiring firm may transfer part of its technology to the target firm to be able to exploit the target firm's specific assets in the host country (Zhang *et al.*, 2018). Thus, from the theoretical standpoint, it is not clear how M&A in general, and overseas M&A in particular, affect target innovation performance.

Similar to the theoretical literature, empirical studies follow various approaches and provide mixed results. First, the following section will shortly introduce the most influential studies and recent empirical research on the effect of M&A on acquiring firms' innovation performance. Afterwards, prior studies on target firm innovation performance are discussed.

### 3.2.2.2 Empirical findings: M&A and acquiring firm innovation performance

A number of studies found evidence on a significant negative effect of M&A on the acquiring firm's innovation performance, measured as R&D intensity (R&D/sales), R&D expenditures, patent intensity (patents/sales), or new products/sales ratio as a consequence of the rationalization of technological resources (Szücs, 2014; Ornaghi, 2009; Hitt *et al.*, 1991). Based on a sample of M&A of Chinese listed manufacturing enterprises, Ma and Liu (2017) found that horizontal and conglomerate M&A reduce acquirer innovation performance, while there is no significant effect of vertical M&A. Fisch *et al.* (2018) found no significant effect of M&A on patent output of Chinese acquirers, but documented that several acquisition-specific factors (cross-border acquisitions, relatedness of acquired knowledge base, size of acquired knowledge base) positively influence post-acquisition patent output.

On the other hand, Desyllas and Hughes (2010) found that R&D intensity of acquiring firms decreases within one year after the acquisition event, however, after three years an increase can be observed. R&D productivity is not significantly influenced. Stiebale

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(2013) confirmed in his study on cross-border acquisitions that the acquiring firms display increased R&D intensity after acquisition. Valentini (2012) showed a positive effect of M&A on the acquiring firm's patent output, while patent quality, measured as patent impact, originality, and generality decreases in his sample of M&A in the U.S..

A group of researchers distinguishes between technological acquisitions, with the primary aim to transfer technology, and non-technological acquisitions as an important predictor of post-acquisition innovation performance. They show that technological M&A enhance the acquiring firm's innovation performance, whereas non-technological acquisitions induce no or a negative effect (Ma and Liu, 2017; Cloudt, Hagedoorn, and van Kranenburg, 2006; Ahuja and Katila, 2001).

Another stream of literature emphasizes the effect of technological complementarity versus technological similarity of the acquiring and target firm. A number of studies commonly identify the importance of complementary, non-overlapped knowledge, highlighting the significance of novelty for subsequent innovation performance. They found that technological complementarity between the target firm and the acquiring firm improves the quality and originality of the firms' innovations after M&A, while technological similarity has a significantly negative effect (Colombo and Rabbiosi, 2014; Makri *et al.*, 2010; Cassiman *et al.*, 2005). M&A improve innovation performance the most when the technological knowledge of the firms involved is similar enough to enable learning, but different enough to offer both firms new opportunities (Makri *et al.*, 2010: 603). These findings support the economies-of-scope effect, while the economies-of-scale effect is rejected. Han, Jo, and Kang (2018), building upon earlier studies, consider the qualitative characteristics of knowledge and documented a more complex relationship between knowledge overlap and innovation performance. The authors show that high-quality target technological similarity can increase the acquirer's post-acquisition performance. Although

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it may include some redundant technology, processes and routines may differ and facilitate the acquirer to further develop and improve the existing knowledge. On the other side, their study showed that high-quality target technological complementarity reduces the acquirer's post-acquisition performance. This is caused by the high integration costs and limited resources needed to successfully transfer high-quality technological complementarity which outweigh the great combinative potential contained in it.

### *3.2.2.3 Empirical findings: M&A and target firm innovation performance*

While there exists extensive literature on the effect of M&A on acquiring firms' post-acquisition innovation performance, a smaller group of scholars focus on the effect on target firms' post-acquisition innovation performance, providing controversial results as well.

On the one hand, some studies found a positive relationship: Zhang *et al.* (2018) analyzed the effect of foreign M&A on Chinese target firms from the manufacturing sector and show that acquired firms apply for significantly more patents than their domestic counterparts. Furthermore, foreign M&A increase innovation through expanding firm size, exports, and human capital formation. Wholly foreign-owned firms are more innovative than partially foreign-owned firms and target firms in labor-intensive industries are more innovative than those in capital-intensive industries. Chen *et al.* (2017) and Girma *et al.* (2008) also provided evidence that foreign acquisitions improve Chinese target firms' investment in R&D and target innovation performance, respectively.

Studies with European data support the positive relationship found in the studies with Chinese data: Researchers found that foreign acquisitions lead to increasing target firm R&D intensity and R&D expenditures (Bandick *et al.*, 2014; Bertrand, 2009). In line with these results, Eliasson *et al.* (2017), examining data from Sweden, discovered no evidence for the concerns circulating in the public debate that foreign acquisitions lead to reductions in R&D

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expenditures in targeted firms. Guadalupe *et al.* (2012), studying Spanish manufacturing firms, found that firms acquired by a foreign acquirer are more likely to innovate. With their case study on one Chinese acquisition in the United Kingdom, He, Khan, and Shenkar (2018) provide first evidence that the EMNE can exert a positive impact on the target firm's learning and capability upgrading. In the observed case, the lack of superior knowledge is offset by the EMNE's unique characteristics, such as its complementary capabilities.

On the other hand, several studies documented a negative impact of foreign acquisitions on target innovation performance. Szücs (2014) showed that R&D expenditures and R&D intensity are reduced after acquisition as a result of rationalization of technological resources and technological similarity. Stiebale (2016) examined the effects of cross-border M&A on the innovation performance of European firms. The results indicate a considerable increase in post-acquisition innovation in the merged entity, which is mainly driven by increased innovation performance in the acquiring firm, while innovation in the target firm tends to decline. Stiebale and Reize (2011) conducted an empirical analysis based on survey and ownership data for a large sample of small- and medium-sized German firms. They found that foreign acquisitions have a large and significantly negative impact on the propensity to engage in innovation in target firms. The negative impact may result from rationalization and from relocation of R&D activities to foreign headquarters. Furthermore, the results suggest an indirect negative effect on innovation via reduced R&D. The authors summarize that overseas M&A not necessarily lead to technology transfer and efficiency gains for acquired firms. Bauer *et al.* (2016) also studied cross-border M&A with targets in Central Europe, documenting that human integration (shared identity, employee satisfaction) is rather destructive for target innovation performance, while task integration (transfer and sharing of knowledge) is beneficial for innovation performance.

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Miozzo *et al.* (2016) focused on the technological resources of UK biopharmaceutical target firms when they are acquired by foreign firms. Based on a multiple case study they developed a theory how key determinants of the knowledge base and their combinations through M&A interact and affect post-acquisition investment in the target's R&D projects. Thereby, the authors provided a more differentiated approach and identify four types of knowledge combinations: complementary technology but similar development capabilities lead to an expansion in target R&D spending, while similar technology and complementary development capabilities lead to the continuation of target development operations but no further investment in target basic research. Acquisitions involving complementary technology as well as complementary development capabilities can be classified as knowledge-seeking, therefore further investment in the R&D projects of the target is necessary. On the other side, similar technology and similar development capabilities provide limited opportunities for recombination of knowledge, hence the shift away of R&D from host country or outright termination can be observed. Their study confirmed the important role of acquirer and target knowledge relatedness for post-acquisition innovation performance.

Even though these studies provide interesting findings, theory predicts and empirical studies find an either negative, positive, or ambiguous relation between M&A and its effect on target post-acquisition innovation performance.

### **3.2.3 Acquirer's technological capability and target innovation performance**

Considering the conflicting theoretical and empirical results of M&A on target innovation performance, it is proposed that the reason for this result lies in the fact that some acquirers might be more effective in promoting target innovation performance successfully than others. Taking the target's and acquirer's country of origin into account, in the next

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section, arguments are derived, how the acquiring firm's technological capability can influence target post-acquisition innovation performance.

### *3.2.3.1 Motives for international innovation activities*

Three waves of M&A from emerging economies can be identified. The first wave occurred when EMNEs invested in other developing countries for resource- and market-seeking reasons (Deng, 2004). In the second wave, the firms also reached out to firms from developed markets, still pursuing market- and resource-seeking strategies (Mathews, 2006, 2002). The third wave, however, is described by EMNEs entering developed countries to seek strategic assets such as knowledge and technology to increase their competitive advantage (Ramamurti and Hillemann, 2018; Chen and Cuervo-Cazurra, 2012; Rui and Yip, 2008; Deng, 2007). As a result of its strategic objective, the latest wave can also be viewed as a move of the EMNEs to internationalize their R&D and innovation activities.

The internationalization of corporate R&D and innovation activities has received interest in academia for a long time (UNCTAD, 2005; Kuemmerle, 1999). Researchers identified three general motives for international innovation activities (Schmiele, 2012): knowledge-seeking, market-seeking, and efficiency-seeking. Knowledge-seeking firms want to exploit a country's specific technologies or competences to augment their own existing knowledge. By building up innovation and R&D activities in the foreign country, the firms are able to access foreign knowledge and integrate it. Market-seeking firms wish to exploit their existing knowledge and sell their products in foreign markets. Oftentimes this requires adaptations to local preferences and environment, which is simplified by the localization of product innovations in foreign markets. Efficiency-seeking firms try to reduce the cost of innovation activities, performing them in countries with lower costs for

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innovation inputs, especially human capital. Typically, firms pursue more than one motive when internationalizing their innovation activities.

Thus, overseas R&D and innovation units support different purposes, depending on the motive to internationalize these activities. Researchers established dichotomous sets, which can be narrowed down to technology-seeking and market-seeking purposes (Cantwell and Mudambi, 2005; Kuemmerle, 1999; Zedtwitz and Gassmann, 2002). Cantwell and Mudambi (2005) use a distinction between competence-exploiting and competence-creating. Competence-exploiting, mostly occurring in the form of greenfield projects, transfers existing knowledge and resources to an overseas location to get access to a new market, almost exclusively using the existing knowledge of the parent firm, which supports market-seeking motives. Competence-creating, on the other side, mainly happening in form of joint ventures and M&A, aims to seek and create knowledge by accessing foreign resources and augmenting the existing knowledge and competences, pursuing technology-seeking motives.

As firms from China nowadays have high incentives to internationalize in order to gain access and learn from advanced foreign technologies, as depicted by the technology-seeking motive (Ramamurti and Hillemann, 2018; Luo and Tung, 2007, 2018; Child and Rodrigues, 2005), they are expected to employ the competence-creating mode in their international R&D and innovation activities rather than the competence-exploiting mode. In a case study on 14 international R&D units of 12 Chinese firms, Di Minin, Quan, and Zhang (2017) indeed found that all pursue competence-creating purposes. In addition, approximately 70 percent also mention a competence-exploitation goal. The case study also disclosed that many Chinese firms buy European firms to acquire specific technology. The target R&D facilities are retained, aiming at specific strategic products and competences. High-skilled target R&D personnel is then used to train the Chinese R&D personnel with the goal to accelerate the assimilation process in China. Gradually, part of the R&D activities



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previously undertaken by the target firm is shifted to China. In contrast with the R&D internationalization pattern of developed-market firms, which move from competence-exploiting to competence-creating, Chinese firms move from competence-creating to competence-exploiting (Di Minin, Zhang, and Gammeltoft, 2012).

Wang *et al.* (2018) examined the relationship between different types of resource endowment and the choice of international R&D subsidiaries by Chinese MNEs between competence-exploiting and competence-creating. They found that Chinese firms with more financial resources and R&D expenses tend to employ a competence-exploiting mode in international R&D, while Chinese MNEs with more R&D employees favor a competence-creating mode. The researchers also documented that Chinese firms whose R&D internationalization follows the proposed model are more innovative.

### *3.2.3.2 Technological capability and international innovation success*

The first hypothesis in the research model addresses the link between the acquiring firm's technological capability and the target firm's post-acquisition innovation performance in cross-border acquisitions by EMNEs in developed markets.

When going overseas, firms have to face increased managerial complexity, unfamiliarity with the social, political, and economic environment, as well as increased communication costs to coordinate activities across geographic borders. Thus, resources are indispensable to deal with the increased cost and risk in international activities. The RBV of the firm emerged as one perspective to analyze firm's international R&D and innovation activities. It provides a framework to define which resources and capabilities will generate sustainable competitive advantage and future success (Grant, 1991). Based on the RBV of the firm, researchers argue that resource availability as well as the capability to combine them effectively plays a crucial role in defining a firm's overseas growth and success (Tseng

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*et al.*, 2007; Amit and Schoemaker, 1993). The RBV attributes resources as factors specific to a firm, rather than factors specific to the industrial environment, in which the firm is active. Therefore, firms within an industry are heterogeneous in the resources they control and as the resources are not perfectly mobile across firms, firm heterogeneity remains over time. Corporate international activities are assumed to be based on the firm's individual resource endowments, which are combined to exploit the unique skills and employ the existing resources in the best way (Tseng *et al.*, 2007). Hence, firms from the same country will exhibit different levels of overseas growth and success.

The literature on the internationalization of corporate R&D and innovation activities has shown that firm-specific resource endowment and capabilities are important drivers and success factors for international R&D and innovation, traditionally focusing on developed-market firms (Kuemmerle, 1999). Extending this concept to cross-border acquisitions, this study argues that the firm-specific resources and capabilities not only influence the internationalization growth and success of international R&D and innovation activities of the firm itself, but also its capability to promote innovation performance at target firms acquired in cross-border acquisitions. The study investigates whether firm-specific resources and capabilities of the acquirer affect target post-acquisition innovation performance. The study will focus on the effect of the acquiring firm's technological capability and the mediating role of the acquiring firm's prior international acquisition experience.

Grant (1996) explained that the success factor for sustainable competitive advantage is not proprietary knowledge, such as patents, copyrights, and trade secrets, itself, but the technological capability, meaning the integration of this knowledge, which allows to generate new knowledge. The definition of technological capability depends on the perspective and the aim of the researchers. According to Lall (1992), technological capability denotes the ability to execute all technical functions, such as operating and

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improving a firm's production facilities. This narrow definition has been broadened by Kim (1997). He stated that technological capability represents the ability to effectively use technological knowledge in order that existing technologies are assimilated, used, adapted, and changed, supporting firms to react to the changing economic environment. The researcher also highlighted that it is not the possession of knowledge, but the efficiency with which the knowledge is used and applied in investment, production, and knowledge-creating activities. Therefore, he proposed that the term technological capability can be used synonymously with the term absorptive capacity, which was established by Cohen and Levinthal (1990). Hence, firms with greater technological capability are anticipated to better identify and integrate external knowledge, develop internal capabilities, thus showing better performance than firms with less technological capability.

Because of its intangible nature, technological capability is difficult to imitate (Coombs and Bierly, 2006). Thus, technological capability can be regarded as one of the most important sources of competitive advantage. Already back in the beginning of the 20<sup>th</sup> century, this concept was developed by Schumpeter, who recognized the relationship between economic development and technical progress and stated that innovation lies in combining inputs (Becker, Knudsen, and Swedberg, 2012). Technological capability not only generates product innovations, which increases the value of a product, but can also improve processes, thereby reducing the firm's cost (Tang *et al.*, 2020).

Prior studies have analyzed the relationship between technological capability and firm performance (Tang *et al.*, 2020; Liao, Fu, and Liu, 2020; Coombs and Bierly, 2006; Jin and Zedtwitz, 2008; Reichert and Zawislak, 2014; Isobe *et al.*, 2008), some also with a focus on EMNEs. Tsai (2004), using a panel data set of Taiwanese electronics firms, documented that technological capability has a significant and positive effect on productivity growth. In line with this finding, Tang *et al.* (2020) showed that technological capability has a

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statistically positive effect on the performance of Chinese small and medium-sized enterprises in the manufacturing and service sectors.

Based on the theoretical arguments and empirical findings, firms with superior technological capability are believed to perform better compared to firms with a lower level of technological capability. Extending this model to cross-border acquisitions, it can be argued that acquirers with a higher level of technological capability are better able and more successful in recognizing, absorbing, and using target knowledge, therefore promoting target innovation performance.

Thus, a positive relationship between the acquirer's technological capability and target innovation performance is proposed:

***Hypothesis 1.** In cross-border acquisitions by emerging-market firms in developed markets, the technological capability of the acquiring firm is positively related to the innovation performance of the target firm in the post-acquisition period.*

#### **3.2.4 The moderating effect of the acquirer's prior international acquisition experience**

Past experience has been identified as one key antecedent of a firm's technological capability. Firms can learn from their own experiences and history. Exposure to knowledge sources, such as inter-organizational relations and learning-by-doing mechanisms, contributes to the establishment of routines and creation of managerial cognition, which in turn affects the firm's ability to manage knowledge and technology. Repeated practice allows a firm to develop dynamic capabilities, such as organizational and strategic routines, through which new resource combinations can be achieved (Galavotti *et al.*, 2020; Ma *et al.*, 2016).

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In particular, when EMNEs enter developed markets, they are confronted with an environment oftentimes very different from their home market. Zaheer (1995) established the term liability of foreignness for this phenomenon, stating that firms which operate abroad have to face additional costs compared to local firms. The costs arise from lacking knowledge and unfamiliarity with the norms, social expectations, political, and economic differences in foreign markets as well as the increased expenses to coordinate activities across geographic borders (Zaheer, 1995; Hymer, 1960).

Firms operating abroad can mitigate their liability of foreignness and improve their capabilities by accumulating prior international experience: Previous international acquisition experience will provide the acquirers with routines for screening potential target firms, the ability to learn about integration processes, and skills to solve acquisition-related organizational challenges. At the same time, the acquirers' information, control, and reporting systems as well as their strategic planning are refined, positively influencing the execution of future acquisition events (Ma *et al.*, 2016). In addition, acquirers can accumulate tacit knowledge and develop their absorptive capacity in this specific domain, which can be valuable to later deals (Cohen and Levinthal, 1990). Knowledge about host country conditions helps to obtain local legitimacy and develop social knowledge.

Hence, prior international acquisition experience can reduce operational difficulties and the firm's liability of foreignness, thereby increasing its ability to cope with foreign environments. Firms with prior acquisition experience will be more flexible in management and open for necessary change. Acquisitions, especially across borders, require both involved firms to continuously improve their processes and routines. As a result, their structural flexibility allows them to cope with the post-acquisition processes more easily (Puranam and Srikanth, 2007). Moreover, prior international acquisition experience helps to effectively transfer organizational practices and strategic resources from the target to the

acquiring firm, while also building up new resources that can be transferred to the target firm (Galavotti *et al.*, 2020).

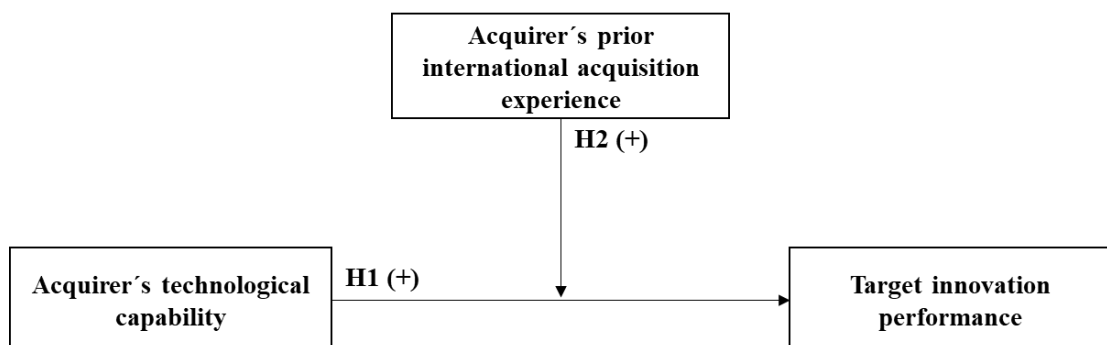
Extant research has studied the effect of prior acquisition experience on the survival of foreign investments as well as acquisition performance. Researchers found that there is a positive relationship between prior acquisition experience and acquisition survival as well as acquisition performance (Delios and Beamish, 2001; Galavotti *et al.*, 2020; Ma *et al.*, 2016; Zhou *et al.*, 2016; Chen and Lin, 2009).

Building on these arguments, it is proposed that the acquiring firm's prior international acquisition experience fosters the firm's technological capability and the firm's ability to adapt and transfer strategic resources and knowledge to the target firm, thus, positively moderating the relationship between the acquirer's technological capability and target post-acquisition innovation performance.

***Hypothesis 2.*** *The positive relationship between the acquiring firm's technological capability and target innovation performance is stronger if the acquiring firm has prior international acquisition experience.*

Figure 6 summarizes the proposed direct (H1) and interaction effect (H2) of acquisitions by emerging-market firms on target innovation performance.

**Figure 6. Conceptual model acquirer's technological capability and moderating effect**



### 3.3 Sample and methodology

#### 3.3.1 Sample construction

To examine the effect of the acquiring firm's technological capability on target firm post-acquisition innovation performance in cross-border acquisitions by emerging-market firms in developed markets, this study uses a sample of Chinese acquisitions in Germany which occurred between 2007 and 2016.

The data selection process took place in several steps. First, I collected data on M&A from the SDC data base by Thomson Reuters which has been widely used in earlier studies (Ben-Amar and Andre, 2006; Masulis *et al.*, 2007; Wang and Xie, 2009; Ellis *et al.*, 2017; Bhagat *et al.*, 2011). I took all acquisitions into account where the acquiring nation is China and the target nation is Germany up to the year 2016. Before 2000, Chinese FDI was strictly controlled by the Chinese government and only very few acquisitions took place (Buckley *et al.*, 2018). From 2000 onwards policies towards FDI have been liberalized (Buckley *et al.*, 2008). In total, SDC data base reports 131 acquisitions with these premises. Furthermore, I added 35 acquisitions from this period which have not been included in the SDC data base, but reported on the German website Investment Plattform M&A China/Deutschland as well as another 82 acquisitions reported in a study by SMB consultants (SMB Consultants, 2017). I validated all data entries with the ownership data reported in Dafne, a data base with comprehensive information on German firms. Altogether, I identified 248 Chinese acquisitions in Germany through this process. The final data set is the result of a careful screening process: 49 transactions were excluded, as these could be identified as rumored deals, which have not been completed, and asset deals. By limiting the study to acquisitions, where more than 50 percent of the target firm was acquired, I ensure that the study only analyzes acquisitions, where the target after the completion of the acquisition is fully

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controlled by the acquirer (Bertrand and Betschinger, 2011; Wang and Xie, 2009). This reduced the sample by further 29 acquisitions.

Second, I collected additional firm-level panel data for both the acquiring and the target firms from Dafne and the internet. Moreover, I downloaded the target firms' financial statements from the German data base Bundesanzeiger for several years before and after the acquisition. I had to discard 99 acquisitions, where no data was available, as the German commercial code allows for size-related exemptions for certain disclosure requirements, e.g. revenue. Additionally, I had to drop 26 more acquisitions, because not enough information on the Chinese acquirer could be obtained.

Hence, a refined sample of 45 acquisitions was produced, where firm-level data on the target as well as the acquiring firm was available. Information on target and acquiring firms can be found in the appendix (Table 21). The acquisitions occurred between 2007 and 2016 in the six industry sectors manufacturing, service, trade, energy, construction, and transportation, whereas the first two account for approximately 80 percent. The sample is composed of 45 firms and 181 observations. Due to different acquisition years and data availability, the panel is not balanced, but each firm is observed at least two years after the acquisition. On average, four years after the acquisition event are observed.

### **3.3.2 Sample characteristics**

As the same sample as in chapter 2 is employed, the general sample characteristics (acquisition year, share acquired, target firm industry sector, target state, target and acquirer legal status, target size, target age, target ownership type, relatedness) explained in the previous chapter also apply. To gain a more detailed understanding on the innovation performance of German target firms as well as the Chinese acquirers' technological capability, insights on further sample characteristics will be given.



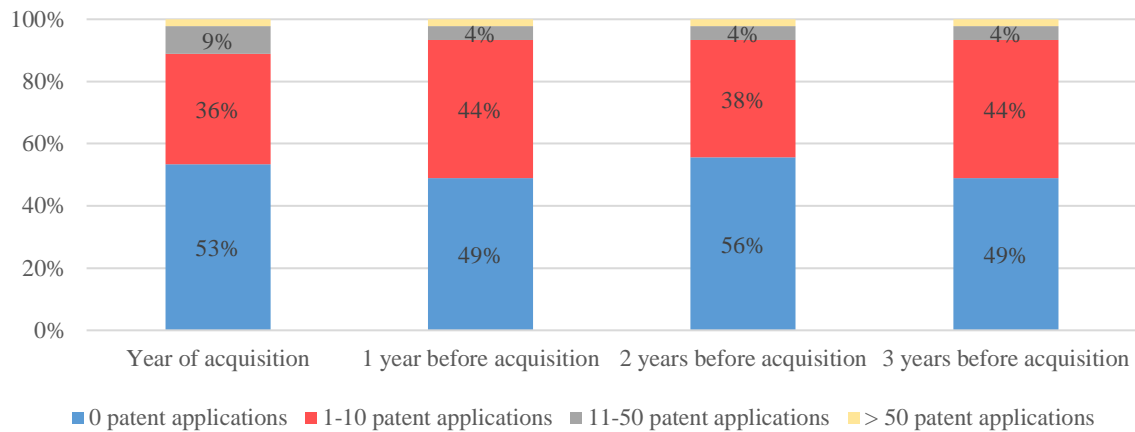
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First, the study will look at the innovation specific target characteristics innovation rate (number of patent applications each year by the target firm) and innovation impact (number of forward citations that a patent receives in subsequent patents) at the time of the acquisition as well as in the 3-year-period before the acquisition. This helps to draw conclusions, by which kind of German firms Chinese acquirers are attracted. Particularly, EMNEs are assumed to use M&A as a strategy to acquire strategic assets, such as superior technology and advanced know-how (Ramamurti and Hillemann, 2018; Chen and Cuervo-Cazurra, 2012; Luo and Tung, 2018, 2007). In this context, especially, the acquisitions, where the target firm is from a developed market and the acquirer from an emerging market, are associated with the fear of knowledge drains, technology transfer, and reduction of innovation performance of target firms, thereby raising concern in the public (Fisch *et al.*, 2018; Bandick *et al.*, 2014; Miozzo *et al.*, 2016; Bertrand, 2009; UNCTAD, 2005). Figure 7 gives an overview on the development of the innovation rate of the German target firms used in the sample in the year of the acquisition, as well as one year, two years, and three years prior to the acquisition. In each of these time periods, approximately 50 percent of the firms did not apply for any patents, while roughly 40 percent of the firms applied for 1 to 10 patents. Only one firm applied for more than 50 patents in the year of acquisition as well as in each of the three years before acquisition.

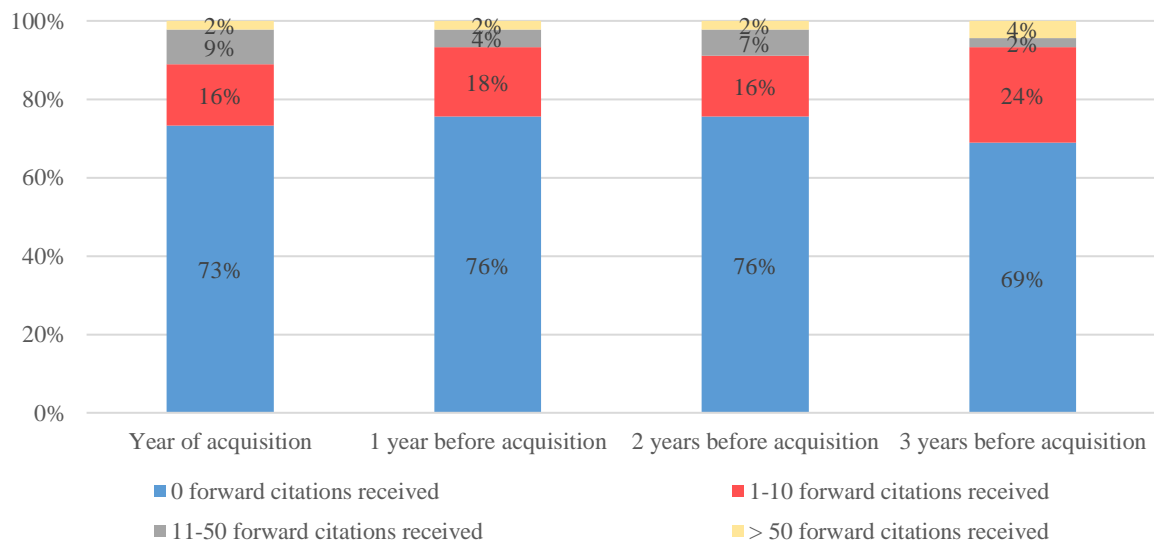
Second, the development of the target firms' innovation impact, as one perspective of innovation quality, is examined. As shown in Figure 8, in each of the observed periods, approximately 75 percent of the target firms did not receive forward citations in subsequent patents for their patent applications. This result corresponds with the result for innovation rate. If a firm has applied for no patent in the year under investigation, forward citations received are 0, as there are no patents, which could be cited in subsequent patents. Hence, there are even more firms with an innovation impact of 0 than firms with an innovation rate

of 0, as – in addition to the firms with no patent applications – also firms with patent applications partially did not receive any forward citations in subsequent patents.

**Figure 7. Development of target firms' innovation rate**



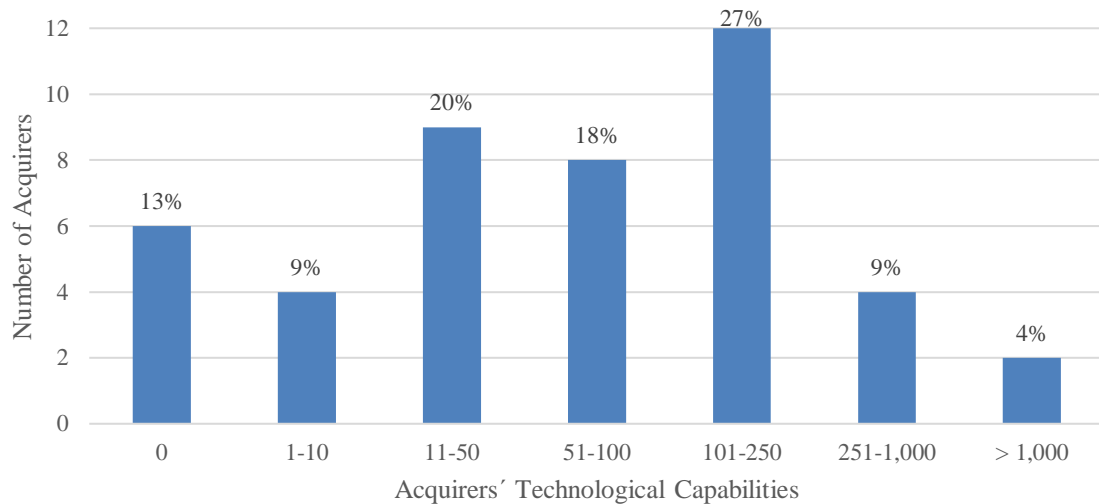
**Figure 8. Development of target firms' innovation impact**



Next, the acquiring firms' technological capability and experience in international acquisitions will be analyzed. Figure 9 shows the level of technological capability at the time of the acquisition event, measured as the number of patent applications by the acquiring firm. Approximately 40 percent of the Chinese firms has applied for more than 100 patents since

their foundation. Roughly 40 percent has between 11 and 100 patent applications, 13 percent has not applied for any patents since their foundation.

**Figure 9. Acquirers' technological capability**



Moreover, it is analyzed how many of the acquiring firms already engaged in foreign acquisitions prior to the focal acquisition event. Roughly 60 percent have not undertaken international acquisitions before, while approximately one third has already acquired one foreign company before the focal acquisition event. One acquirer has already conducted two international acquisitions, while three Chinese acquirers have already acquired three foreign firms. One acquirer in the sample has already conducted four international acquisitions.

### 3.3.3 Measures

#### 3.3.3.1 Dependent variable: target firm innovation performance

Patents provide a rich source of information for innovation research and are extensively used as a measure of innovation performance (Makri *et al.*, 2010; Fisch *et al.*, 2018; Zhang *et al.*, 2018; Ahuja and Katila, 2001; Valentini, 2012; Boone *et al.*, 2019). Compared to information on R&D expenditures, patent information is publicly available and all patents are externally validated through the screening process, so consistency and

objectiveness can be assured (Boone *et al.*, 2019; Stiebale, 2016; Ahuja and Katila, 2001). One limitation of using patent data to measure innovation performance is that patented innovations vary in their degree of technical and economic value. Furthermore, the propensity to protect inventions by patents differs across firms (Boone *et al.*, 2019). In this study, two measures are used to examine target innovation performance: innovation rate and innovation quality, both based on patent information (Argyres and Silverman, 2004; Valentini, 2012). With these, diverse aspects of innovation performance can be captured. Table 15 provides an overview of the employed dependent variables:

**Table 15. Measures of innovation performance**

1	<b>Innovation Rate:</b> number of patent applications each year		
2	<b>Innovation quality:</b> Measured by three dimensions		
	<u>Impact:</u> number of forward citations <i>received</i>	<u>Generality:</u> forward citations <i>received</i> in few (low) or various patent classes (high)	<u>Originality:</u> citations <i>made</i> to earlier patents from few (low) or various patent classes (high)

The first, *Target Innovation Rate*, is captured by the number of patent applications each year with the European patent office (EPO). In the models, where the other innovation measures take the role of the dependent variable, *Target Innovation Rate* is used as control variable. It is expected that the number of patent applications affects the other measures positively.

The second, innovation quality, is captured by three distinct variables: *Target Innovation Impact* is represented by the number of forward citations a patent receives in subsequent patents and mirrors a patent's ability to foster future inventions. It not only measures the influence of a patent, but also its economic value (Valentini, 2012; Makri *et al.*, 2010; Argyres and Silverman, 2004). Next, *Target Innovation Generality*, takes a more

specific look and evaluates, whether a patent receives citations concentrated in few fields or if it stimulates inventions in a variety of areas. The generality of patent  $i$  is measured as  $generality_i = 1 - \sum_{j=1}^n s_{ij}^2$ , where  $s_{ij}$  represents the proportion of citations received by patent  $i$  that belongs to patent class  $j$ , out of  $n$  patent classes. So, the generality of a patent will be low, if most citations received are concentrated in a few fields, whereas, if the citing patents belong to a wide range of areas, it will be high, suggesting the patent has a widespread influence (Valentini, 2012; Argyres and Silverman, 2004).

Lastly, *Target Innovation Originality* is employed as the third variable to reflect innovation quality. Originality of patent  $i$  is measured as  $originality_i = 1 - \sum_{j=1}^n t_{ij}^2$ , where  $t_{ij}$  represents the percentage of citations made by patent  $i$  to patents from patent class  $j$ . For example, if a patent refers to previous patents belonging to a narrow field of technology, the originality value will be low, as it is the outcome of a confined search. The reasoning is that the combination of divergent ideas from various fields produces better patents and is therefore characteristic of highly original inventions (Valentini, 2012: 340; Argyres and Silverman, 2004).

### 3.3.3.2 Independent variable: acquirer's technological capability

Although intensively studied, technological capability is mostly an intangible and unobservable construct (Coombs and Bierly, 2006). Kim (1997) suggests that technological capability has three dimensions: The first dimension is production capability, which refers to the operative task to run, optimize, and maintain established production facilities and related logistics processes. The second dimension, called investment capability relates to the expansion of capacities and building up new production sites. The last dimension, innovation capability, refers to the ability to generate new technological ideas, involving basic as well as applied research, as well as the subsequent transfer of these ideas into concrete products,

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services, or processes. In theory, the number of new products or processes might be the best measure of technological capability, but in practice nearly not possible to observe. Previous studies have used measures of R&D activities, such as R&D expenditures or R&D expenditures divided by total sales, or patent information, such as number of patents, as indicators of technological capability (García-Muiña and Navas-López, 2007; Tsai, 2004; Coombs and Bierly, 2006; Reichert and Zawislak, 2014). The use of R&D measures as indicators of technological capability comes with at least two problems. First, R&D measures represent input factors. R&D might not be successful, thus not generating new technological capability. Second, R&D is not measured consistently across different firms (Coombs and Bierly, 2006). Patents, on the other side, are output measures of technological capability. The advantages and downsides of using patents as an indicator have already been explained above. This study is interested in, whether acquirers with a higher level of technological capability positively influence target post-acquisition innovation performance. Therefore, the output side of technological capability is more relevant, as this is what the acquirers can employ to manage target innovation performance successfully.

Hence, to identify the effect of the acquirer's technological capability on target innovation performance, the variable *Acquirer Technological Capability*, representing the number of patents applied for by the acquiring firm since its foundation, is employed. The EPO data base is used as source.

#### 3.3.3.3 Moderating variable: acquirer's prior international acquisition experience

To examine, whether the acquiring firm's prior international acquisition experience has a moderating effect on the relationship between the acquirer's level of technological capability and target innovation performance, the moderating variable *Acquirer's Prior International Acquisition Experience*, measured as the number of acquisitions in foreign

countries completed by the acquirer before the focal acquisition, is used (Hayward, 2002; Hutzschenreuter, Kleindienst, and Schmitt, 2014; Leshchinskii and Zollo, 2004; Zollo and Singh, 2004). The SDC data base and internet research are utilized to find the necessary information.

#### 3.3.3.4 Control variables: target attributes

In accordance with other studies, this study controls for several variables that influence a firm's innovation performance for a correct understanding of the proposed relationship (Fisch *et al.*, 2018; Zhang *et al.*, 2018; Chen *et al.*, 2017; Eliasson *et al.*, 2017; Boone *et al.*, 2019). The study includes *Target Firm Age* (years since foundation) and *Target Firm Size* (natural logarithm of total assets), as larger and older firms tend to be able to achieve higher innovation performance. However, there is also an opposing view, which states that older firms tend to maintain their existing product range because lower cost and thus might have a lower tendency to innovate (Zhang *et al.*, 2018). To account for the possibility that more profitable firms are able to dedicate more resources to innovation, the study controls for *Target Financial Leverage* (debt/total assets) and *Target Firm Performance* (net income/total assets). The control variable *Target Previous Year Innovation Rate* (1-year lagged value of Target Innovation Rate) is included for the dependent variable *Target Innovation Rate* to account for the possibility that innovation rate is driven by a high innovation rate in the previous year. Furthermore, the control variables *Target Public Listing* (dummy variable taking the value of 1, if firm is publicly listed, 0 otherwise), *Target Region* (dummy variable taking the value of 1, if firm is located in former East Germany, 0 otherwise), *Target Industry Performance* (development of target industry per year) and *Target Industry Group* (based on the two-digit German Classification of Economic Activities, issue 2008, WZ2008) are employed, to account for the variation across

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industries and regions that may influence the firms' incentives to innovate. The variables *Target Financial Leverage*, *Target Firm Size*, *Target Public Listing*, and *Target Industry Performance* are lagged by one year. Furthermore, year dummies are added to account for time specific effects. The information was sourced from Dafne, Bundesanzeiger, Amadeus, and the EPO.

#### 3.3.3.5 Control variables: acquirer attributes

I further control for the acquirer attributes *Acquirer Firm Size* (natural logarithm of total assets), *Acquirer Age* (years since foundation), *Acquirer Public Listing* (dummy variable taking the value of 1, if firm is publicly listed, 0 otherwise), and *Acquirer State Ownership* (dummy variable taking the value of 1, if firm is state-owned, 0 otherwise). The variables *Acquirer Firm Size* and *Acquirer Public Listing* are lagged by one year. The information on the acquirer attributes was obtained through the data base LexisNexis and internet research.

#### 3.3.3.6 Control variables: deal attributes

Moreover, the following deal attributes are included: *Relatedness* (dummy variable taking the value of 1 if target and acquirer operate in the same two-digit North American Industry Classification System, 0 otherwise), as affiliation to the same industry might positively influence the transfer of resources beneficial to target innovation performance. Also, *Percentage Acquired* (percentage of ownership of acquirer in target firm) is included as control variable, because acquisitions with a higher volume of shares acquired should better facilitate knowledge transfer. To account for the timespan between the completion of the acquisition and the observation, the control variable *Time since Acquisition* (number of years since acquisition event, whereas 0 represents the year of acquisition) is employed. The



information was sourced from Dafne, SDC data base by Thomson Reuters, and internet research.

The detailed descriptions of all the above variables are given in Table 16.

**Table 16. Variable description**

Variable	Description / Information	Source
<b>Dependent Variable: Target Innovation Performance</b>		
Target Innovation Rate	Natural logarithm of the target firm's number of patent applications each year.	European Patent Office
Target Innovation Impact	Natural logarithm of the number of forward citations a patent receives in subsequent patents.	European Patent Office
Target Innovation Generality	Measured as $generality_i = 1 - \sum_{j=1}^n s_{ij}^2$ , where $s_{ij}$ represents the proportion of citations received by patent $i$ that belongs to patent class $j$ , out of $n$ patent classes. Will be low, if most citations received are concentrated in few fields.	European Patent Office
Target Innovation Originality	Measured as $originality_i = 1 - \sum_{j=1}^n t_{ij}^2$ , where $t_{ij}$ represents the percentage of citations made by patent $i$ to patents from patent class $j$ . If a patent refers to previous patents belonging to a narrow field of technology, the originality value will be low.	European Patent Office
<b>Independent Variable</b>		
Acquirer's Technological Capability	Natural logarithm of the number of patents applied for by the acquiring firms.	European Patent Office
<b>Moderating Variable</b>		
Acquirer's Prior International Acquisition Experience	Number of international acquisitions completed by the acquiring firm before the focal acquisition. Count variable.	SDC data base and internet research
<b>Control Variables</b>		
<b>Target attributes</b>		
Target Firm Performance	Return on assets calculated as net income divided by total assets. Lagged by 1 year.	Dafne and firm's annual statements (Bundesanzeiger)
Target Previous Year Innovation Rate	Target Innovation Rate lagged by 1 year.	European Patent Office
Target Financial Leverage	Calculated by dividing the firm's debt with the firm's total assets. Lagged by 1 year.	Dafne and firm's annual statements (Bundesanzeiger)
Target Firm Size	Natural logarithm of the firm's total assets. Lagged by 1 year.	Dafne and firm's annual statements (Bundesanzeiger)
Target Firm Age	Calculated as years since the firm's foundation. Count variable.	Dafne
Target Public Listing	Dummy that takes the value of (1) if the firm is publicly listed and (0) otherwise. Lagged by 1 year.	Dafne
Target Region	Dummy that takes the value of (1) if the firm is located in former West Germany and (0) otherwise.	Dafne
Target Industry Group	Two-digit North American Industry Classification System.	Amadeus
Target Industry Performance	Calculated as development of firm's industry per year. Lagged by 1 year.	Amadeus
<b>Acquirer attributes</b>		
Acquirer Firm Size	Natural logarithm of the firm's total assets. Lagged by 1 year.	WRDS data base and internet research

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Acquirer Firm Age	Calculated as years since the firm's foundation. Count variable.	Internet research
Acquirer Public Listing	Dummy that takes the value of (1) if the firm is publicly listed and (0) otherwise. Lagged by 1 year.	LexisNexis and internet research
Acquirer State Ownership	Dummy that takes the value of (1) if the firm is state-owned and (0) otherwise.	Internet research
<b>Deal attributes</b>		
Relatedness	Dummy that takes the value of (1) if the acquiring firm and the target firm operate in the same two-digit North American Industry Classification System and (0) otherwise.	LexisNexis and internet research.
Percentage Acquired	Percentage of ownership of acquirer in target firm. Count variable.	Dafne and firm's annual statements (Bundesanzeiger)
Time Since Acquisition	Calculated as years since acquisition event, whereas 0 represents the year of acquisition. Count variable.	Firm's annual statements (Bundesanzeiger)

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### 3.3.4 Estimation method

To test the hypotheses, the study employed feasible generalized least square regressions, which produce a matrix-weighted average of the “random effect” as well as of the “within” results. FGLS comes with three major advantages: the estimated coefficients are more efficient than the ordinary least square model, there are unbiased standard errors whether the firm effect is temporary or permanent, and controlling for fixed effects through firm dummies, which would generate a degree of freedom problem, can be avoided (Buckley *et al.*, 2014; Petersen, 2008).

## 3.4 Results

Table 17 provides the means, standard deviations, and pairwise correlations for the variables.

The dependent variable *Target Innovation Rate* exhibits the highest correlations with the control variables *Target Previous Year Innovation Rate* (0.876), *Target Firm Size* (0.626), *Acquirer State Ownership* (0.421), *Acquirer Firm Size* (0.369), *Target Public Listing* (0.277), and *Target Firm Age* (0.251), as well as with the independent variable *Acquirer's Technological Capability* (0.222) and the moderating variable *Acquirer's Prior International Acquisition Experience* (0.189).

**Table 17. Means, standard deviations, and correlation coefficients**

	<i>Mean</i>	<i>S.D.</i>	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)
(1) Target Innovation Rate	0.775	1.149	1.000																				
(2) Target Innovation Impact	0.432	0.985	0.842*	1.000																			
(3) Target Innovation Generality	0.030	0.074	0.608*	0.777*	1.000																		
(4) Target Innovation Originality	0.171	0.253	0.668*	0.445*	0.432*	1.000																	
(5) Target Firm Performance	-0.020	0.150	0.125*	0.139*	0.102	0.080	1.000																
(6) Target Financial Leverage	0.542	0.278	-0.130*	-0.168*	-0.053	-0.059	-0.268*	1.000															
(7) Target Firm Size	17.483	1.703	0.626*	0.481*	0.391*	0.555*	0.167*	-0.035	1.000														
(8) Target Firm Age	28.111	24.275	0.251*	0.151*	0.159*	0.189*	0.045	0.112	0.284*	1.000													
(9) Target Public Listing	0.166	0.373	0.277*	0.279*	0.231*	0.183*	0.209*	-0.353*	0.323*	0.020	1.000												
(10) Target Region	0.862	0.346	0.129*	0.154*	0.088	0.114	0.316*	0.063	0.096	0.231*	0.178*	1.000											
(11) Target Industry Performance	0.055	0.009	-0.022	-0.022	-0.063	-0.051	-0.242*	0.208*	-0.204*	0.120	-0.352*	-0.051	1.000										
(12) Target Previous Year Innovation Rate	0.808	1.144	0.876*	0.745*	0.492*	0.553*	0.096	-0.113	0.632*	0.286*	0.300*	0.129*	-0.012	1.000									
(13) Acquirer Firm Size	21.154	1.808	0.369*	0.198*	0.132*	0.286*	0.075	0.100	0.569*	0.334*	0.060	0.071	-0.203*	0.401*	1.000								
(14) Acquirer Firm Age	24.890	14.004	-0.117	-0.129*	-0.121	-0.137*	-0.162*	-0.155*	-0.124*	-0.054	-0.121	-0.528*	0.027	-0.149*	-0.195*	1.000							
(15) Acquirer Public Listing	0.906	0.293	-0.023	-0.046	-0.001	0.111	-0.079	-0.149*	-0.119	-0.090	0.144*	0.091	0.206*	-0.012	-0.383*	0.012	1.000						
(16) Acquirer State Ownership	0.276	0.448	0.421*	0.324*	0.234*	0.256*	-0.132*	0.102	0.345*	0.288*	0.123*	-0.147*	-0.045	0.446*	0.421*	0.225*	-0.140*	1.000					
(17) Relatedness	0.503	0.501	0.145*	0.203*	0.118	-0.018	0.040	0.133*	0.022	0.133*	-0.270*	-0.046	-0.063	0.125*	-0.100	0.101	-0.320*	0.293*	1.000				
(18) Percentage Acquired	91.794	13.110	0.135*	0.125*	0.058	-0.031	0.029	0.198*	0.084	0.183*	-0.315*	0.025	0.310*	0.104	0.079	0.005	-0.129*	0.132*	0.202*	1.000			
(19) Time Since Acquisition	3.309	2.066	-0.077	-0.086	-0.112	-0.137*	0.151*	-0.124*	-0.064	0.018	0.012	0.122	-0.101	-0.054	0.066	0.080	-0.025	-0.159*	-0.065	0.088	1.000		
(20) Acquirer's Technological Capability	4.303	2.070	0.222*	0.185*	0.064	0.162*	0.130*	-0.067	0.314*	0.144*	-0.040	0.052	0.091	0.223*	0.379*	0.073	0.127*	0.125*	-0.144*	0.071	0.120	1.000	
(21) Acquirer's Prior International Acquisition Experience	0.564	0.956	0.189*	0.229*	0.075	0.096	0.035	-0.045	0.223*	-0.080	0.204*	0.086	-0.061	0.194*	0.036	-0.120	-0.088	-0.041	0.032	0.003	-0.224*	-0.065	1.000

Note:  $N=181$ .

\* $p < 0.1$ .

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The dependent variable *Target Innovation Impact* exhibits the highest correlations with the control variables *Target Innovation Rate* (0.842), *Target Firm Size* (0.481), *Acquirer State Ownership* (0.324), *Target Public Listing* (0.279), and *Relatedness* (0.203) as well as with the moderating variable *Acquirer Acquirer's Prior International Acquisition Experience* (0.229) and the independent variable *Acquirer's Technological Capability* (0.185).

The dependent variable *Target Innovation Generality* exhibits the highest correlations with the control variables *Target Innovation Rate* (0.608), *Target Firm Size* (0.391), *Acquirer State Ownership* (0.234), *Target Public Listing* (0.231), and *Target Firm Age* (0.159).

The dependent variable *Target Innovation Originality* exhibits the highest correlations with the control variables *Target Innovation Rate* (0.668), *Target Firm Size* (0.555), *Acquirer Firm Size* (0.286), *Acquirer State Ownership* (0.256), and *Target Firm Age* (0.189) as well as with the independent variable *Acquirer's Technological Capability* (0.162). Moreover, some high, medium, and small correlations between various control variables can be observed.

Hence, the Variance Inflation Factors (VIF) are calculated to control for potential multicollinearity problems. All VIF values are well below the threshold value of 10, showing that multicollinearity should not distort the results of the regression analysis (Chatterjee and Hadi, 2000; O'Brien, 2007). The VIF values are documented in Table 18 and Table 19.

The results of the regression analysis are reported in Table 18 and Table 19. Table 18 shows the results for the main model, whereas the results for the interaction effects of the acquirer's technological capability with the acquirer's prior international acquisition experience are reported in Table 19.

**Table 18. Regression results for target post-acquisition innovation performance (1)**

<i>Dependent Variable:</i>	<b>Model 1</b> <i>Target Innovation Rate</i>	<b>Model 2</b> <i>Target Innovation Impact</i>	<b>Model 3</b> <i>Target Innovation Generality</i>	<b>Model 4</b> <i>Target Innovation Originality</i>
<i>Control Variables</i>				
Target Firm Performance	0.141 (0.146)	-0.020 (0.150)	0.006 (0.013)	0.030 (0.037)
Target Previous Year Innovation Rate	0.824*** (0.048)			
Target Innovation Rate		0.629*** (0.043)	0.032*** (0.004)	0.141*** (0.015)
Target Financial Leverage	-0.138 (0.128)	-0.209 (0.121)	-0.000 (0.012)	-0.006 (0.030)
Target Firm Size	0.083** (0.031)	0.006 (0.028)	-0.002 (0.003)	0.024* (0.010)
Target Firm Age	-0.001 (0.002)	-0.001 (0.002)	-0.000 (0.000)	0.001 (0.000)
Target Public Listing	-0.101 (0.174)	0.038 (0.115)	0.007 (0.013)	-0.124** (0.040)
Target Region	0.040 (0.110)	0.078 (0.101)	0.007 (0.010)	0.034 (0.035)
Target Industry Performance	-3.212 (5.012)	-0.200 (4.582)	0.073 (0.445)	-0.419 (0.982)
Acquirer Firm Size	0.005 (0.027)	-0.053* (0.025)	-0.003 (0.003)	-0.008 (0.008)
Acquirer Firm Age	0.001 (0.003)	-0.004 (0.003)	-0.000 (0.000)	0.001 (0.001)
Acquirer Public Listing	-0.121 (0.111)	-0.223* (0.105)	-0.000 (0.012)	0.085 (0.052)
Acquirer State Ownership	0.014 (0.117)	0.163 (0.091)	0.010 (0.008)	-0.012 (0.030)
Relatedness	-0.057 (0.130)	0.343** (0.113)	0.011 (0.009)	-0.085* (0.037)
Percentage Acquired	-0.003 (0.003)	-0.002 (0.002)	0.000 (0.000)	-0.001 (0.001)
Time Since Acquisition	0.018 (0.021)	0.040* (0.017)	0.000 (0.002)	-0.002 (0.004)
<i>Moderating Variable</i>				
Acquirer's Prior International Acquisition Experience	0.103 (0.065)	0.133* (0.056)	-0.001 (0.005)	-0.014 (0.016)
<i>Independent Variable</i>				
Acquirer's Technological Capability	-0.007 (0.017)	0.032* (0.016)	-0.000 (0.002)	-0.003 (0.004)
Constant	-1.012 (0.785)	1.179 (0.702)	0.120 (0.069)	-0.075 (0.231)
Year Dummies	Yes	Yes	Yes	Yes
Industry Group Dummies	Yes	Yes	Yes	Yes
Chi-square	1,289.92***	525.41***	112.36***	492.79***
Max. VIF	3.54	3.53	3.53	3.53
Number of Observations	181	181	181	181
Number of Firms	45	45	45	45

\*\*\* p<0.001; \*\* p<0.01; \* p<0.05. Standard errors in parentheses.

Hypothesis 1 proposed that the acquiring firm's technological capability is positively related to target innovation performance in the post-acquisition period. The study employed four dependent variables (*Target Innovation Rate*, *Target Innovation Impact*, *Target Innovation Generality*, and *Target Innovation Originality*) to capture the diverse aspects of innovation performance. Models 1 – 4 in Table 18 report the results of the four dependents variables including control variables.

Model 1 shows that there is no statistically significant positive effect of the independent variable *Acquirer's Technological Capability* on *Target Innovation Rate* ( $b = -0.007$ ;  $p = 0.664$ ). As such, Hypothesis 1 is rejected. The control variable *Target Previous Year Innovation Rate* is positively and significantly related to *Target Innovation Rate* ( $b = 0.824$ ;  $p = 0.000$ ). This result confirms that innovation rate is driven by a high innovation rate in the previous year. *Target Firm Size* ( $b = 0.083$ ;  $p = 0.008$ ) is positively and significantly related to *Target Innovation Rate*. This underlines the argument that larger firms tend to be able to achieve higher innovation performance (Zhang *et al.*, 2018).

Next, Model 2 reports the result for the dependent variable *Target Innovation Impact*. The independent variable *Acquirer's Technological Capability* is positively and significantly related to *Target Innovation Impact* ( $b = 0.032$ ;  $p = 0.049$ ), which offers support for Hypothesis 1. The moderating variable *Acquirer's Prior International Acquisition Experience* is also positively and significantly related to *Target Innovation Impact* ( $b = 0.133$ ;  $p = 0.017$ ), providing support for the argument that prior experience in international acquisitions will increase the acquirer's ability to cope in foreign environments and helps to effectively transfer organizational practices and strategic resources. The control variable *Target Firm Size* ( $b = 0.006$ ;  $p = 0.824$ ), which has been statistically significant in Model 1, loses its significance. The control variable *Target Innovation Rate* is positively and significantly related to *Target Innovation Impact* ( $b = 0.629$ ;  $p = 0.000$ ), confirming the

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expectation that the number of patent applications affects the other measures positively. Moreover, *Acquirer Firm Size* ( $b = -0.053$ ;  $p = 0.034$ ) has a significant negative effect on *Target Innovation Impact*, not lending support to the argument that larger firms tend to be able to promote higher innovation performance (Zhang *et al.*, 2018). Furthermore, *Acquirer Public Listing* is negatively and significantly related to *Target Innovation Impact* ( $b = -0.223$ ;  $p = 0.034$ ). Additionally, *Relatedness* is positively and significantly related to *Target Innovation Impact* ( $b = 0.343$ ;  $p = 0.002$ ), showing that affiliation to the same industry positively influences target innovation impact. Earlier studies found that technological similarity of acquiring and target firm can lead to a relocation of technological resources, resulting in the rationalization of R&D activities, hence having a negative influence on innovation (Sears and Hoetker, 2014; Makri *et al.*, 2010; Cassiman *et al.*, 2005; Colombo and Rabbiosi, 2014; Szücs, 2014). However, the finding of this study suggests that relatedness is beneficial to the impact of the target firm's innovations. One possible explanation could be that in case of cross-border acquisitions by EMNEs in developed-markets, similarity helps to establish a shared knowledge base from which innovations can be developed that possess the ability to foster future inventions. *Time Since Acquisition* is positively and significantly related to *Target Innovation Impact* ( $b = 0.040$ ;  $p = 0.021$ ), showing that a longer time span since the acquisition event is beneficial for the innovation rate. This is as expected and shown by Bresman *et al.* (1999), because knowledge transfer becomes reciprocal and combined knowledge development projects emerge over time (Ranft and Lord, 2002; Birkinshaw *et al.*, 2000).

In Model 3, there is no statistically significant positive effect of the *Acquirer's Technological Capability* on *Target Innovation Generality* ( $b = -0.000$ ;  $p = 0.970$ ), hence not supporting Hypothesis 1. As in Model 2, the control variable *Target Innovation Rate* is positively and significantly related to *Target Innovation Generality* ( $b = 0.032$ ;  $p = 0.000$ ).

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The control variables *Acquirer Firm Size* ( $b = -0.003$ ;  $p = 0.205$ ), *Acquirer Public Listing* ( $b = -0.000$ ;  $p = 0.986$ ), *Relatedness* ( $b = 0.011$ ;  $p = 0.238$ ), *Time Since Acquisition* ( $b = 0.000$ ;  $p = 0.858$ ), and the moderating variable *Acquirer's Prior International Acquisition Experience* ( $b = -0.001$ ;  $p = 0.894$ ) lose significance.

Model 4 also shows no statistically significant positive effect of the *Acquirer's Technological Capability* on *Target Innovation Originality* ( $b = -0.003$ ;  $p = 0.539$ ), not supporting Hypothesis 1. As expected, the control variable *Target Innovation Rate* is positively and significantly related to *Target Innovation Originality* ( $b = 0.141$ ;  $p = 0.000$ ). Furthermore, *Target Firm Size* ( $b = 0.024$ ;  $p = 0.018$ ) has a significant positive effect on *Target Innovation Originality*, also underlining the argument that larger firms tend to be able to achieve higher innovation performance (Zhang *et al.*, 2018). Moreover, *Target Public Listing* is negatively and significantly related to *Target Innovation Originality* ( $b = -0.124$ ;  $p = 0.002$ ). Additionally, *Relatedness* is negatively and significantly related to *Target Innovation Originality* ( $b = -0.085$ ;  $p = 0.022$ ). This shows that affiliation to the same industry negatively influences target innovation originality, contrasting the result from Model 2, where relatedness positively influenced target innovation impact. One possible explanation for this result could be that the knowledge bases from both firms are very similar and therefore related knowledge is employed to create future innovations and thus, innovations rely on patents from few patent classes (Sears and Hoetker, 2014; Makri *et al.*, 2010; Cassiman *et al.*, 2005; Colombo and Rabbiosi, 2014; Szücs, 2014).

These results only give partial support to Hypothesis 1 that the acquiring firm's technological capability is positively related to target innovation performance in the post-acquisition period. Different aspects of innovation performance need to be distinguished. First of all, for target innovation rate, target innovation generality, and target innovation originality no significant effect of the acquiring firm's technological capability could be



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identified. However, the results show support for a positive effect of the acquiring firm's technological capability on innovation impact, as documented in Model 2. This documents that higher acquiring firm's technological capability leads to an increase in target post-acquisition innovation impact, which is reflected by the number of forward citations a patent receives in subsequent patents and represents a patent's ability to foster future inventions and not only measures the influence of a patent, but also its economic value (Valentini, 2012; Makri *et al.*, 2010; Argyres and Silverman, 2004). This result is an indication that target firms benefit from the acquiring firms' technological capability as the acquiring firms' technological capability provide target firms with the opportunity to improve the quality and hence impact of their innovations (Chen *et al.*, 2017).

Models 5 – 8 in Table 19 introduce the interaction effect between *Acquirer's Technological Capability* and *Acquirer's Prior International Acquisition Experience* for the different dependent variables. For the dependent variable *Target Innovation Rate* (Model 5), the interaction of *Acquirer's Technological Capability* and *Acquirer's Prior International Acquisition Experience* shows the expected sign but is not significant ( $b = 0.040$ ;  $p = 0.384$ ).

For the dependent variable *Target Innovation Impact* (Model 6), the interaction of *Acquirer's Technological Capability* and *Acquirer's Prior International Acquisition Experience* is negative but not significant ( $b = -0.031$ ;  $p = 0.406$ ). For the dependent variable *Target Innovation Generality* (Model 7), the analysis also reports a negative but not significant interaction of *Acquirer's Technological Capability* and *Acquirer's Prior International Acquisition Experience* ( $b = -0.002$ ;  $p = 0.582$ ). Last, also for the dependent variable *Target Innovation Originality* (Model 8), the interaction of *Acquirer's Technological Capability* and *Acquirer's Prior International Acquisition Experience* is negative but not significant ( $b = -0.006$ ;  $p = 0.666$ ).

**Table 19. Regression results for target post-acquisition innovation performance (2)**

<i>Dependent Variable:</i>	<b>Model 5</b> <i>Target Innovation Rate</i>	<b>Model 6</b> <i>Target Innovation Impact</i>	<b>Model 7</b> <i>Target Innovation Generality</i>	<b>Model 8</b> <i>Target Innovation Originality</i>
<i>Control Variables</i>				
Target Firm Performance	0.147 (0.146)	-0.041 (0.148)	0.004 (0.014)	0.032 (0.040)
Target Previous Year Innovation Rate	0.831*** (0.048)			
Target Innovation Rate		0.635*** (0.044)	0.031*** (0.005)	0.141*** (0.015)
Target Financial Leverage	-0.100 (0.136)	-0.243 (0.128)	-0.002 (0.014)	-0.002 (0.032)
Target Firm Size	0.089** (0.031)	0.003 (0.029)	-0.002 (0.003)	0.024* (0.010)
Target Firm Age	-0.001 (0.002)	-0.001 (0.002)	-0.000 (0.000)	0.001 (0.000)
Target Public Listing	-0.104 (0.176)	0.031 (0.117)	0.009 (0.013)	-0.124** (0.041)
Target Region	0.007 (0.113)	0.099 (0.110)	0.010 (0.011)	0.029 (0.036)
Target Industry Performance	-3.953 (5.045)	-0.626 (4.775)	0.078 (0.398)	-0.464 (1.044)
Acquirer Firm Size	0.001 (0.027)	-0.051 (0.026)	-0.003 (0.003)	-0.007 (0.008)
Acquirer Firm Age	0.000 (0.003)	-0.004 (0.003)	-0.000 (0.000)	0.001 (0.001)
Acquirer Public Listing	-0.105 (0.117)	-0.248* (0.111)	-0.002 (0.012)	0.087 (0.052)
Acquirer State Ownership	0.029 (0.112)	0.136 (0.096)	0.007 (0.009)	-0.013 (0.031)
Relatedness	-0.080 (0.138)	0.365** (0.123)	0.012 (0.010)	-0.084* (0.040)
Percentage Acquired	-0.003 (0.003)	-0.001 (0.002)	0.000 (0.000)	-0.001 (0.001)
Time Since Acquisition	0.022 (0.020)	0.035* (0.018)	0.000 (0.002)	-0.002 (0.004)
<i>Moderating Variable</i>				
Acquirer's Prior International Acquisition Experience	-0.092 (0.242)	0.279 (0.186)	0.010 (0.022)	0.014 (0.066)
<i>Independent Variable</i>				
Acquirer's Technological Capability	-0.017 (0.019)	0.041* (0.020)	0.000 (0.002)	-0.003 (0.005)
<i>Interaction Effect</i>				
Acquirer's Technological Capability x Acquirer's Prior International Acquisition Experience	0.040 (0.046)	-0.031 (0.037)	-0.002 (0.004)	-0.006 (0.014)
Constant	-0.985 (0.779)	1.218 (0.726)	0.111 (0.069)	-0.080 (0.244)
Year Dummies	Yes	Yes	Yes	Yes
Industry Group Dummies	Yes	Yes	Yes	Yes
Chi-square	1,390.96***	522.74***	113.71***	499.91***
Max. VIF	7.49	7.43	7.43	7.43
Number of Observations	181	181	181	181
Number of Firms	45	45	45	45

\*\*\* p<0.001; \*\* p<0.01; \* p<0.05. Standard errors in parentheses.

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Hence, these results do not support Hypothesis 2 and the acquiring firm's prior international acquisition experience does not moderate the baseline relationship in such a way that the effect of the acquiring firm's technological capability on target innovation performance becomes more positive, if the acquiring firm has gained prior international acquisition experience. Quite the contrary is suggested by the results: for the dependent variables representing target innovation quality, namely target innovation impact, target innovation generality, and target innovation originality, the interaction term reports a negative sign. Although not significant, this indicates that the positive effect of the acquiring firm's technological capability on target innovation impact, generality, and originality is weakened in case the acquirer has already accumulated prior international acquisition experience. Only for target innovation rate the interaction term possesses the expected sign.

In addition, I performed a sensitivity analysis to assess the robustness of the results toward alternative variable specification for the variable *Acquirer's Prior International Acquisition Experience*. Specifically, instead of considering all international acquisitions completed by the acquiring firm before the focal acquisition independent from if they occurred in other emerging markets, developed markets, or neighboring Asian countries, I narrowed down the scope of the variable to two other possible specifications: First, prior international acquisition experience in developed markets and, second, prior international acquisition experience in European countries. In these cases, experiences from prior acquisitions might be more helpful, because they are more similar to the acquisition event under observation in a developed market.

First, the analysis was repeated with the restriction that only prior international acquisitions by the acquirer undertaken in developed markets are considered (count variable coded as number of international acquisitions completed by the acquiring firm in developed markets before the focal acquisition).

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Approximately 70 percent of the acquirers in the sample have not conducted acquisitions in developed markets before the focal acquisition event. While 27 percent have already acquired one developed-market firm, only one firm in the sample has already acquired three developed-market firms and one firm already four developed-market firms. As in Model 1, 3, and 4, no significant effect on target innovation rate, generality, and originality can be observed. However, the previously positive effect of *Acquirer's Prior International Acquisition Experience* on *Target Innovation Impact*, as documented in Model 2, becomes insignificant ( $b = -0.015$ ;  $p = 0.828$ ) with the new variable specification *Acquirer's Prior International Acquisition Experience in Developed Markets*, implying that the acquirer's prior international acquisition experience in developed markets does not positively influence target innovation impact.

I also introduced the variable with the new specification as moderator and found a positive and significant effect ( $b = 0.054$ ;  $p = 0.007$ ) of the interaction between *Acquirer's Technological Capability* and *Acquirer's Prior International Acquisition Experience in Developed Markets* for the dependent variable *Target Innovation Originality*. This finding implies that the effect of the acquirer's technological capability on the target firm's innovation originality becomes more positive, when the acquirer has accumulated prior international acquisition experience in developed markets, leading to a higher originality value of the target firm's patent applications.

Second, the analysis was repeated with the restriction that only prior international acquisition experience by the acquirer in European countries is considered (count variable coded as number of international acquisitions completed by the acquiring firm in European countries before the focal acquisition). In the sample, 80 percent have not previously acquired European firms, while the other 20 percent have already conducted one acquisition in Europe. The positive effect of the *Acquirer's Prior International Acquisition Experience*

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on *Target Innovation Impact* as documented in Model 2 remains and even becomes stronger with the new variable specification as *Acquirer's Prior International Acquisition Experience in European Markets* ( $b = 0.214$ ;  $p = 0.019$ ). As in Model 1, 3, and 4, no significant effect on the other innovation performance measures can be observed.

Consistent with the finding above, I also found a positive and significant effect ( $b = 0.066$ ;  $p = 0.005$ ) of the interaction between *Acquirer's Technological Capability* and *Acquirer's Prior International Acquisition Experience in European Markets* for the dependent variable *Target Innovation Originality*, implying that the effect of the acquirer's technological capability on the target firm's innovation originality becomes more positive, when the acquirer has accumulated prior international acquisition experience in European countries, leading to a higher originality value of the target firm's patent applications. The effect is even stronger than for the variable specification *Acquirer's Prior International Acquisition Experience in Developed Markets*.

In contrast, a negative and significant effect ( $b = -0.110$ ;  $p = 0.027$ ) of the interaction between *Acquirer's Technological Capability* and *Acquirer's Prior International Acquisition Experience in European Markets* for the dependent variable *Target Innovation Impact* could be observed. This finding indicates that the effect of the acquirer's technological capability on the target firm's innovation impact is weakened, when acquirers have accumulated prior international acquisition experience in European markets.

The sensitivity analysis mostly confirms the prior results and gives further insights if all kinds of prior acquisition experience impose the same effect or if there is a difference, where the acquisition experience has been accumulated: no significant relationship between the acquirer's prior international acquisition experience and target innovation rate, target innovation generality, and target innovation originality could be found for either specification. Target innovation impact is only positively influenced, if the acquiring firm

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either has prior international acquisition experience in general or in European markets, whereas prior international acquisition experience in developed markets does not impose a significant effect on target innovation impact.

While the interaction effect between *Acquirer's Technological Capability* and *Acquirer's Prior International Acquisition Experience* is not significant for either target innovation performance measure, there is a positive and significant effect of the interaction for the dependent variable *Target Innovation Originality* if the acquirer has gained prior international acquisition experience in developed markets or European countries.

Surprisingly, the effect of the *Acquirer's Technological Capability* on the target firm's innovation impact is weakened, when acquirers have accumulated prior international acquisition experience in European markets. The results show that acquisition experience has to be differentiated: for some aspects of target innovation performance it matters where the acquirer has gained prior acquisition experience. All results of the sensitivity analysis are available upon request.

### **3.5 Discussion and conclusion**

The purpose of this research was to examine the role of the acquiring firm's technological capability on target firm post-acquisition innovation performance. In recent years, M&A have reached unprecedented levels at a global stage. Cross-border M&A are a frequently observed method for firms, especially from emerging markets, to grow and increase their competitiveness by integrating superior technological know-how and advanced knowledge held by foreign firms to survive in global competition.

Existing research has offered valuable insights on the effect of an acquisition event on target innovation performance. Yet, empirical evidence is still inconclusive with findings for a negative, positive, or ambiguous relation between M&A and its effect on target

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innovation performance. This study took the question one step further and took a closer look if the acquirer's technological capability and prior international acquisition experience make a difference for target innovation performance. Extant studies have so far largely overlooked the relevance of the target's and acquirer's country of origin as well as the acquiring firm's capability to promote target innovation performance successfully. Moreover, I specifically chose a sample of EMNEs which acquired firms from developed markets. Country of origin matters, because, in contrast to most developed-market firms, which internationalize gradually and exploit their own firm-specific advantages abroad, EMNEs venture abroad and acquire foreign firms to gain competitive advantage in terms of strategic assets, such as brands and superior technology (Ramamurti and Hillemann, 2018; Alon *et al.*, 2010; Chen and Cuervo-Cazurra, 2012). Hence, this setting is especially interesting, as these acquirers are mainly interested in gaining access to superior know-how and technology and brings up the question if the emerging-market acquirers themselves also have to offer something in terms of innovativeness for the target firms.

Using a panel data set on Chinese acquisitions in Germany over the period from 2007 until 2016, this study shows that target firm innovation performance is partly positively affected by the acquirer's technological capability. In terms of target innovation impact, as one aspect of innovation quality, target firms benefit from the acquirer's technological capability. Hence, target firms, which have been acquired by firms with higher technological capability, experience increased innovation impact in the post-acquisition phase. Furthermore, there was no statistically significant effect of the acquirer's technological capability in regard with the other dimensions of target innovation performance, namely innovation rate, innovation originality, and innovation generality. Therefore, Hypothesis 1 received partial support.

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Moreover, this study analyzed if the relationship between acquirer's technological capability and innovation performance is altered by the acquirer's prior international acquisition experience in such a way that the relationship becomes more positive, as these acquirers have already gained experience with international acquisitions prior to the focal acquisition event. However, no support for this hypothesis could be found. In addition, a sensitivity analysis was performed with alternative specification of the acquirer's prior international acquisition experience. It mostly confirms the prior results and gives further insights that for some measures of innovation performance it matters, where the acquisition experience has been accumulated.

The findings emphasize that various aspects of innovation performance have to be differentiated, when conducting research on innovation performance. Varying measures for innovation performance might also be the reason for the inconclusive results on the effect of cross-border acquisitions on target innovation performance in prior studies so far.

There are limitations to this study, which offer opportunities for further research. First, the data set mainly includes not publicly listed target firms. Hence, there was only little information available on their R&D activities in general. Future studies should further test the findings by replicating the study with data that provides further characteristics important in innovation research, such as R&D expenditures, number of R&D employees, and skill intensity (e.g. share of employees with higher education). Moreover, this is also applicable for the acquiring firms. Second, this study focuses on Chinese acquisitions in Germany and the results might therefore not be generalizable to other cultural contexts. Thus, future studies should replicate this study with acquirers from other emerging markets and target firms from other developed countries. Third, the results should be tested for a longer time period. Many acquisitions from emerging-market acquirers in developed markets have just occurred recently, reducing the available amount of post-acquisition data on the target firms,



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in this study an average of four years per firm is observed. Knowledge transfer does not happen immediately after acquisition, it rather develops over time and requires frequent communication, trust, and personal interaction. Post-merger integration is especially challenging for knowledge-intensive firms, because a balance must be kept in order to realize synergies without disruption of the target firm's capabilities (Ranft and Lord, 2002; Bresman *et al.*, 1999).

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## Conclusion

Using unique comprehensive longitudinal panel data on acquisitions by Chinese acquirers in Germany that occurred in the time period 2007 until 2016 and involved the takeover of a majority stake in the German firm, this thesis investigated the implications of acquisitions by emerging-market firms on target firm performance in developed markets. More specifically, the thesis focused on the following research questions drawing on the growing literature on cross-border acquisitions by EMNEs: (1) How do acquisitions by EMNEs in developed markets influence target post-acquisition firm performance? (2) How do TMT and CEO turnover influence target post-acquisition firm performance in case of EMNEs acquisitions in developed markets and what is the moderating role of appointing an acquiring firm's manager as target CEO? (3) How does the acquirer's technological capability influence target post-acquisition innovation performance in case of EMNEs acquisitions in developed markets and does prior international acquisition experience of the acquiring firm play a moderating role in this relationship?

Table 20 provides an overview on the results and which hypotheses were confirmed. In Chapter 1, the thesis found that emerging-market acquirers reduce target firm post-acquisition performance, measured as return on assets, and thus destroy value at the developed-market target firms. I replicated the analysis with a sample of German firms, which have been acquired by Austrian firms, to rule out the general foreign acquisition effect. No negative effect of the acquisition event on target firm post-acquisition performance could be evidenced in this sample, underlining that the destroyed value in the Chinese acquired sample cannot be attributed to a general negative effect of foreign takeovers.

Moreover, in Chapter 2, the thesis analyzed the development of the executive teams at the developed-market target firms in the post-acquisition phase and provided no evidence that target TMT turnover has a negative effect on target post-acquisition performance, whereas evidence was found that target CEO turnover has a positive effect on target post-acquisition performance. The study found no support that the appointment of an acquiring firm's manager as new target CEO weakens the positive relationship between target CEO turnover and target post-acquisition performance.

**Table 20. Findings of the thesis**

Chapter 1	H1	Emerging-market ownership has a negative effect on developed-market target firm performance.	<i>Confirmed</i>
Chapter 2	H1a	In cross-border acquisitions by emerging-market firms in developed markets, there is a negative relation between target TMT turnover and target post-acquisition performance.	<i>Not confirmed</i>
	H1b	In cross-border acquisitions by emerging-market firms in developed markets, there is a positive relation between target CEO turnover and target post-acquisition performance.	<i>Confirmed</i>
	H2	The positive relationship between target CEO turnover and target post-acquisition performance in cross-border acquisition by emerging-market firms in developed markets is weaker, if an acquiring firm's manager is appointed as CEO at the target firm.	<i>Not confirmed</i>
Chapter 3	H1	In cross-border acquisitions by emerging-market firms in developed markets, the technological capability of the acquiring firm is positively related to the innovation performance of the target firm in the post-acquisition period.	<i>Partly confirmed (only for dependent variable target innovation impact)</i>
	H2	The positive relationship between the acquiring firm's technological capability and target innovation performance is stronger if the acquiring firm has prior international acquisition experience.	<i>Not confirmed</i>

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Furthermore, the study found partial support that target firm innovation performance is positively affected by the acquirer's technological capability. In terms of target innovation impact, as one aspect of innovation performance, target firms benefit from the acquirer's technological capability. Besides, there was no statistically significant effect of the acquirer's technological capability on the other dimensions of target innovation performance, namely target innovation rate, target innovation originality, and target innovation generality. Moreover, the study analyzed if the relationship between the acquirer's technological capability and target firm innovation performance is altered by the acquirer's prior international acquisition experience in such a way that the relationship becomes more positive, as these type of acquirers have already gained experience with international acquisitions prior to the focal acquisition event. However, no support for this hypothesis could be found.

The findings of this thesis possess a number of theoretical implications and contribute to the existing literature on emerging-market firms and the advancement of international business theories. First, they contrast traditional IB theory that foreign-owned firms in general show superior performance, because foreigners import superior technology and good management practices (Gu *et al.*, 2019; Erdogan, 2013; Haskel *et al.*, 2007; Dunning, 2000). The results of this thesis show that this does not necessarily hold true for developed-market firms owned by emerging-market acquirers. In fact, when studying the effect of foreign ownership on target firm performance, the heterogeneity in the foreign acquirers cannot be ignored, as also evidenced by Tóké (2019). Researchers therefore need to incorporate the acquirer's country-of-origin in their studies. Further, these findings are consistent with existing evidence that EMNEs venture abroad and acquire foreign firms to gain strategic assets in terms of valuable brands and superior technology as well as capabilities rather than exploiting their existing intangible assets (Ramamurti and Hillemann, 2018; Alon *et al.*,

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2010; Chen and Cuervo-Cazurra, 2012). Second, this thesis extends prior research by linking current knowledge on target turnover and target firm post-acquisition performance in the context of emerging-market cross-border acquisitions. Specifically focusing on emerging-market acquisitions in developed markets and using unique up-to-date data including a majority of privately held firms, the findings contradict the majority of extant studies, which advanced that target TMTs are an important part of the acquired resource base and therefore have value for the target post-acquisition performance (Cannella and Hambrick, 1993a; Walsh and Ellwood, 1991). The findings in this study confirmed that the relationship between target turnover and target post-acquisition is not as straightforward. The relationship remains complex and differing contextual factors need to be considered, confirming the call by Krug *et al.* (2014) for further research, especially in new research contexts, such as privately-held firms and cross-border acquisitions. Third, the thesis contributes to innovation literature. The results documented that different aspects of innovation performance need to be differentiated when analyzing effects on innovation performance.

These findings also have important implications for managerial practice. Emerging-market acquisitions often raise concerns of policymakers and the public that they negatively influence target firms and thus target economy (UNCTAD, 2017; Miozzo *et al.*, 2016; Grimpe and Hussinger, 2014; Valentini, 2012). While the international press mainly focuses on single acquisitions and their consequences, this study provides a holistic picture. The results of this study show that these acquisitions indeed destroy value for the target firms. Consequently, these findings imply that policymakers should consider the possible negative outcomes and try to implement a careful screening process as well as guidance for target firms as well as the acquirer when it comes to the post-acquisition integration.

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This thesis provides results on the implications of emerging-market cross-border M&A on developed-market target firm performance based on in-depth data research and analyses. As any scientific research, it comes along with several limitations, which offer promising avenues for future research. First, the hypotheses are tested with a sample of Chinese acquisitions in Germany. China is the major source of emerging-market cross-border acquisitions and therefore one important example of emerging-market acquisitions in developed countries. By restricting the research setting, I was able to establish a unique and comprehensive data set including a majority of privately held firms. However, the drawback is that the hand-collected data set does not allow to examine the impact of emerging-market ownership across different developed countries and emerging-market acquirers. Hence, the results should be further tested by replicating the studies in different economic contexts. This applies to the acquiring as well as to the target nation. Future studies could concentrate on acquirers from other emerging markets, such as Brazil, Russia, and India, but also on other developed-market targets, such as the United States or Great Britain, and evaluate, whether the results of this thesis can be generalized.

Second, future research can enhance the findings of this thesis by evaluating whether the findings also hold in longer time periods. Many acquisitions from emerging-market acquirers in developed markets have just occurred recently, reducing the available amount of post-acquisition data on the target firms. On average, this thesis was able to include information for four years after the acquisition event. However, post-acquisition integration, including knowledge transfer, does not happen immediately after acquisition, it rather develops over time and requires frequent communication, trust, and personal interaction. Therefore, acquisition effects require time until they are reflected in the various aspects of target performance. Of course, with a growing time span, other impacts not necessarily related to the acquisition event also gain influence and need to be distinguished.

Third, given that the sample predominantly consists of privately held firms, I encountered difficulty in gathering additional target-specific information from public sources. Inclusion of more target attributes could extend the empirical design.

Another limitation of this study, also owing to the limited availability of financial information, is that I was unable to conduct further analysis using other measures. Future studies could pick up here and additionally test the findings for other measures of target firm performance, e.g. sales growth, and also replicate the study on innovation performance with data that provides further characteristics important in innovation research, such as R&D expenditures, number of R&D employees, and skill intensity (e.g. share of employees with higher education).

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## Appendix

Table 21. List with target firms and acquiring firms

TARGET FIRM	ACQUISITION YEAR	ACQUIRING FIRM	CHAPTER
FUYAO EUROPE GMBH	2007	FUYAO GLASS GROUP INDUSTRIES CO., LTD., CHINA	2, 3
MWH GMBH	2008	YOTRIO GROUP COMPANY LTD., CHINA	1, 2, 3
VENSYS ENERGY AG	2008	XINJIANG GOLDWIND SCIENCE & TECHNOLOGY COMPANY LTD., URUMQI, CHINA	2, 3
BULLMER GMBH	2009	NEW JACK SEWING MACHINE CO., LTD., ZHEJIANG, CHINA	1, 2, 3
KOEBO GMBH & CO. KG	2010	HANGZHOU DONGHUA CHAIN GROUP CO., LTD, CHINA	1
CITIC DICASTAL (EUROPE) INVESTMENT HOLDINGS GMBH & CO. KG	2011	CITIC DICASTAL CO., LTD., CHINA	1, 2, 3
CQLT SAARGUMMI DEUTSCHLAND GMBH	2011	CQLT INTERNATIONAL INVESTMENT COMPANY LTD., CHONGQING, CHINA	1
ELAC ELECTROACUSTIC GMBH	2011	GLOBAL LEGEND HOLDINGS CO., LTD., CHINA	1
FORMAT TRESORBAU GMBH & CO. KG	2011	DUTECH HOLDINGS LTD., CHINA	1, 2, 3
MEDION AG	2011	LENOVO GROUP LTD., CHINA	1, 2, 3
PREH HOLDING GMBH	2011	NINGBO JOYSON INVESTMENT HOLDING CO. LTD., NINGBO, CHINA	1, 2, 3
SMARTHEAT DEUTSCHLAND GMBH	2011	SMARTHEAT (CHINA) INVESTMENT CO., LTD., SHANGHAI, CHINA	1, 2, 3
TRANSMODE OVERSEAS TRANSPORTGESELLSCHAFT MBH	2011	KERRY LOGISTICS LTD., CHINA	1, 2, 3
VIVANCO GRUPPE AKTIENGESELLSCHAFT	2011	NINGBO SHIP INVESTMENT GROUP CO. LTD., CHINA	1
HYTERA MOBILFUNK GMBH	2012	HYTERA COMMUNICATIONS CO., LTD., SHENZHEN, CHINA	1, 2, 3
KIEKERT AKTIENGESELLSCHAFT	2012	GOLD RACE INVESTMENT LTD., CHINA	1, 2, 3
PUTZMEISTER HOLDING GMBH	2012	SANY HEAVY INDUSTRY CO., LTD., CHINA	1, 2, 3
SCHWING GMBH	2012	XUZHOU CONSTRUCTION MACHINERY GROUP CO., LTD., CHINA	1, 2, 3
SOLIBRO GMBH	2012	BEIJING BEIJIAO SIYUAN TECHNOLOGY DEVELOPMENT CO., LTD., CHINA	1, 2, 3
WUMAG TEXROLL GMBH & CO. KG	2012	SIYOU YAN, CHINA	1

TARGET FIRM	ACQUISITION YEAR	ACQUIRING FIRM	CHAPTER
ASOLA TECHNOLOGIES GMBH	2013	TUSAI HOLDING LTD., CHINA	1
BFG FEINGUSS NIEDERRHEIN GMBH	2013	IMPRO INTERNATIONAL LTD., CHINA	1, 2, 3
GILUPI GMBH	2013	HEBEI DE LUTONG BIOLOGICAL SCIENCE AND TECHNOLOGY CO., LTD., CHINA	1
KUGEL- UND ROLLENLAGERWERK LEIPZIG GMBH	2013	WAFANGDIAN BEARING GROUP CORPORATION, DALIAN, CHINA	1, 2, 3
PEINE GMBH	2013	SHANDONG RUYI TECHNOLOGY GROUP, JINING, CHINA	1, 2, 3
PFAFF INDUSTRIESYSTEME UND MASCHINEN GMBH	2013	SHANG GONG GROUP CO., LTD., SHANGHAI, CHINA	1, 2, 3
PREMA SEMICONDUCTOR GMBH	2013	CHENGMAN WANG, CHINA	1
AVANCIS GMBH	2014	BENGBU DESIGN & RESEARCH INSTITUTE FOR GLASS INDUSTRY, BENGBU, CHINA	1, 2, 3
KACO GMBH + CO. KG	2014	ANHUI ZHONGDING SEALING PARTS CO. LTD, ANHUI, CHINA	1, 2, 3
KHD HUMBOLDT WEDAG GMBH	2014	AVIC BEIJING, CHINA	1, 2, 3
KOKINETICS GMBH	2014	AVIC ELECTROMECHANICAL SYSTEM CO. LTD, PEKING, CHINA	1, 2, 3
M-TEC MATHIS TECHNIK GMBH	2014	ZOOMLION HEAVY INDUSTRY SCIENCE & TECHNOLOGY CO., LTD, CHANGSHA, CHINA	1, 2, 3
NBHX-NAFATEC GMBH	2014	NINGBO HUAXIANG ELECTRONIC CO., LTD., CHINA	1, 2, 3
SCHUMAG AKTIENGESELLSCHAFT	2014	MIAOCHENG GUO, CHINA	1
SUK KUNSTSTOFFTECHNIK GMBH	2014	LUXSHARE PRECISION INDUSTRY CO., LTD., CHINA	1, 2, 3
WACO GMBH FERTIGUNG VON HYDRAULIKZYLINDERN	2014	JIANGSU HENGLI HYDRAULIC CO., LTD., CHINA	1, 2, 3
WILBERT TOWERCRANES GMBH	2014	HENAN GUOYU SEAL DEVELOPMENT CO. LTD, NANYANG, HENAN, CHINA	1
APT SEDANT HOLDING GMBH	2015	SEDANT ROBA ENERGY & MATERIAL TECHNOLOGY CO., LTD., CHINA	1
BERKENHOFF GMBH	2015	POWERWAY GROUP COMPANY LTD., NINGBO, CHINA	1, 2, 3
CTF SOLAR GMBH	2015	CHINA TRIUMPH INTERNATIONAL ENGINEERING CORPORATION, CHINA	1, 2, 3
HAWE INLINE HYDRAULIK GMBH	2015	JIANGSU HENGLI HYDRAULIC CO., LTD., CHINA	1, 2, 3
HAZEMAG & EPR GMBH	2015	SINOMA INTERNATIONAL ENGINEERING CO. LTD., BEIJING, CHINA	1, 2, 3
MEDISANA AG	2015	XIAMEN COMFORT SCIENCE & TECHNOLOGY GROUP CO., LTD., CHINA	1, 2, 3
QUIN GMBH	2015	NINGBO JOYSON ELECTRONIC CORP., CHINA	1, 2, 3
ROCKSON AUTOMATION GMBH	2015	BEIJING HIGHLANDER DIGITAL TECHNOLOGY COMPANY, LTD., CHINA	1, 2, 3
WALDASCHAFF AUTOMOTIVE GMBH	2015	LINGYUN INDUSTRIAL CORPORATION LTD., CHINA	1, 2, 3
WEGU HOLDING GMBH	2015	ANHUI ZHONGDING SEALING PARTS CO. LTD, ANHUI, CHINA	1, 2, 3



<b>TARGET FIRM</b>	<b>ACQUISITION YEAR</b>	<b>ACQUIRING FIRM</b>	<b>CHAPTER</b>
AYANDA GMBH	2016	SIRIO PHARMA CO., LTD, SHANTOU GUANGDONG, CHINA	1, 2, 3
BIGPOINT GMBH & CO. KG	2016	YOUZU INTERACTIVE CO. LTD, SHANGHAI, CHINA	1, 2, 3
BROCK KEHRTECHNIK GMBH	2016	BEIQI FOTON MOTOR CO., LTD., CHINA	1
BROETJE-AUTOMATION GMBH	2016	SHANGHAI ELECTRIC GROUP COMPANY LTD., CHINA	1, 2, 3
CARCOUSTICS INTERNATIONAL GMBH	2016	SHANGHAI FUYU AUTOMOBILES COMPONENTS CO., LTD., CHINA	1, 2, 3
COMPO GMBH	2016	KINGENTA ECOLOGICAL ENGINEERING GROUP CO., LTD., LI-NYI, CHINA	1, 2, 3
EBU UMFORMTECHNIK GMBH	2016	JIANGSU XUZHOU METALFORMING MACHINE GROUP CO., LTD, CHINA	1
EFA-S GMBH	2016	BEIJING ZHONGHUAN INVESTMENT MANAGEMENT CO., CHINA	1
ELEXXION AG	2016	TIAN YING MEDICAL INSTRUMENT CO. LTD, CHINA	1
G.A.S. GESELLSCHAFT FUER ANALYTISCHE SENSORSYSTEME M.B.H.	2016	JINAN HANON INSTRUMENTS LTD., JINAN, SHANDONG PROVINCE, CHINA	1
INDUSTRIAL ACOUSTICS COMPANY GMBH	2016	BEIJING GREENTEC ACOUSTICS ENGINEERING HOLDING CO., LTD., CHINA	1
INNOMOTIVE SYSTEMS HAINICHEN GMBH	2016	SUMEC MACHINERY & ELECTRIC CO., LTD, NANJING, CHINA	1, 2, 3
ITN NANOVATION AG	2016	SHANGHAI SAFBON INVESTMENT CO., LTD., CHINA	1, 2, 3
NICI GMBH	2016	QINGDAO XUEFEIDA INTL TRADING, CHINA	1
SHIJI DEUTSCHLAND GMBH	2016	BEIJING SHIJI INFO TECH CO LTD, CHINA	1
WILHELM SCHIMMEL, PIANOFORTEFABRIK, GMBH	2016	PEARL RIVER PIANO GROUP LTD., CHINA	1
WINDMW GMBH	2016	CHINA THREE GORGES CORPORATION, BEIJING, CHINA	1, 2, 3
WITA WILHELM TAAKE GMBH	2016	SHIMGE PUMP INDUSTRY GROUP CO., LTD., WENLING CITY, CHINA	1, 2, 3