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Testing Post M&A Innovation and Share Price Performance in Chinese MNEs: Implications for Emerging Market MNE Theorizing

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Submitted in accordance with the requirements for the degree of a Doctor of Philosophy in Management

Durham University Business School

University of Durham

August 2021

To My Parents,

Parents-in-law,

My Husband Le He and

My Dear Son Kailin (Benjamin)

List of Abbreviations

Chinese Multinational Enterprises---CMNEs

Cross-border Mergers and Acquisitions--CM&As

Country specific assets --CSAs

Strategic Asset Seeking Cross-border mergers and acquisitions--------------SAS CM&A

Complementary Local Resource---CLR

Difference-in-Difference---DID

Emerging Market---EM

Emerging Market Multinational Enterprises--------------------------------------EMNEs

Foreign Direct Investment---FDI

Home Country Effects---HCEs

Institution-based view---IBV

Inward Foreign Direct Investment---IFDI

Inverse Probability of Treatment Weighting-------------------------------------IPTW

Liabilities of Foreignness---LOF

Link, Leverage and Learning--LLL

Merger and Acquisition--M&A

Multinational Enterprises---MNEs

Non-location-bounded---NLB

Organisation for Economic Co-operation and Development-----------------------OECD

Outward FDI--OFDI

Original Equipment Manufacture--OEM

Original Design Manufacturing--ODM

Original Brand Manufacturing--OBM

Privately-owned Enterprises--POEs

Propensity Score Matching---PSM

Research and Development--R&D

Resource-based View---RBV

State-Owned Assets Supervision and Administration Commission--------------SASAC

Strategic Asset Seeking---SAS

Valuable, Rare, Inimitable and Non-substitutable-------------------------------VRIN

Testing Post M&A Innovation and Share Price Performance in Chinese MNEs: Implications for Emerging Market MNE Theorizing

Two Explorative Studies of Chinese MNE M&A Performance: (1) Impacts on Innovation Performance of Chinese MNEs undertaking Strategic Asset Seeking M&As and (2) Impacts of Unrelated International Acquisitions on Share Price Performance

Zheyuan Hu

Executive Summary

The initial primary motivation driving this research was to test empirical evidence relating to the 'catch up' assumption of EMNEs' strategic asset seeking outwards FDI activities, as per (for example) Luo and Tung (2007)'s springboard perspective and Mathews (2006a)'s LLL model. Specifically, researchers still know very little about whether EMNEs fulfil their firm-level catch-up purposes in terms of post-acquisition innovation performance and how these firms can absorb acquired technologies and other strategic assets, thus leading to acquiring firms' improvement of innovation performance from a combination of resource-based and knowledge-based view with special attention to the impact of home country effects. While it is argued MNEs from emerging markets acquire strategic assets by conducting cross-border M&As with a

view to strengthening their domestic innovation capacity, this presents a paradox, as EMNEs are often considered to lack both the knowledge, resources and absorptive capacity to integrate and exploit such acquisitions by engaging in reverse knowledge transfer. In this thesis, the first part applies resource and knowledge-based views to consider, in particular, how domestic market business group affiliation, prior international experience and state-ownership affect these domestic innovation outcomes. At a theoretical level, factors such as business group affiliation have been considered important and potentially distinguishing characteristics that may make emerging market MNEs somewhat different to developed market MNEs. Empirically, this study applies the propensity score matching (PSM) and difference-in-difference (DID) methods on a sample of 99 international strategic asset seeking motivation M&A deals, plus a control group of 1686 firms. The first section does find evidence of positive impacts of SAS CM&A on patent counts and citations. This first paper also finds firms with international experience and affiliated with business groups perform better, and privately-owned firms outperform state-owned firms in terms of quality of innovation outputs (i.e., patent citations). Application of resource and knowledge-based perspectives helps shed further light on the types of MNEs from emerging markets that may successfully undertake strategic asset seeking acquisitions that may lead to firm-level catch-up.

Further, as an additional study and component of this thesis, the second paper explores another question related to Chinese MNE expansion. During the research process a separate but related phenomenon caught the author's attention. When looking at the sample of CM&As, some of the international deals of CMNEs were found to be in unrelated industries. For example, Fosun Group acquired a travel group (Club Med),

Wanda Group acquired a yacht maker (Sunseeker), while Midea Group acquired an unrelated leader in robotics (Kuka, from Germany). In these cases, the target firms had little relation, in terms of product market characteristics, with the acquiring groups activities. The technology gap between developing and developed market firms is significant and such unrelated product/technologies would make such deals seem even more complicated and difficult to undertake successfully. Indeed, the dominant trend within DMNEs has been moving in the opposite direction: internationally 'horizontal' deals within the same sectors are a growing trait of DMNE internationalization. This has created greater focus on 'core competencies' (UNCTAD, 2013). International divestments of unrelated business, moreover, have led to the dismantling of the remaining iconic Western conglomerates. Siemens and General Electric, for example, as well as lesser-known examples like Maersk, are rapidly shedding non-core businesses (Gapper, 2017). In a second study of this thesis, the author uses event study and buy and hold abnormal return (BHAR) methodology to explore stock market reactions to the international acquisition of unrelated businesses. Interestingly, the results show unrelated international diversification deals perform better than related ones in the long-term but worse in the short-term. Such performance, moreover, is positively modified by diversified business group affiliation and especially in those groups that have R&D capabilities, and mostly magnified when the acquiring firms are affiliated with diversified business groups and at the same time have a strategic-asset-seeking (SAS) motivation. Thus, suggesting that the nature of diversified business group and the SAS motivation play an important role in the success or otherwise of Chinese unrelated international deals.

In sum, this thesis uses several established methodologies to explore some novel questions that are central to better understanding EMNEs (and Chinese MNEs in particular). In doing so, the thesis contributes to better understanding new theories of emerging market MNE by showing that Chinese MNEs are able to derive benefit from international deals. This suggests that they are able to 'catch up', as stated by Luo and Tung (2007), by acquiring strategic assets in foreign, often developed markets. Being affiliated to a business group supports firms with valuable, rare, inimitable and non-substitutable (VRIN) resources and may provide an excellent environment for organizational learning. Prior international experience, moreover, may provide essential knowledge for acquirers to overcome the liabilities of foreignness they face and achieving performance improvement. While state-owned firms provide sufficient resources, the lack management skills may offset such advantages in improving firm innovation performance.

What emerges across both studies is, first, the role of strategic asset seeking motivation. Both studies show an SAS motivation helps increase Chinese acquiring firms' performance, even when the target products are unrelated. Domestic complementary local resources together with the purpose of bringing such strategic assets back for exploitation and development in the domestic market explain why and how Chinese firms apply SAS CM&A to catch-up. In addition, the salient impacts of business group affiliation on post-acquisition performance are highlighted in these studies. The first study shows business group affiliation enhances innovation performance when compared with those non-affiliated firms when they undertake SAS related CM&As. Furthermore, the second study shows that even the deals are unrelated, business group affiliated firms with an SAS orientation perform better. These results shed further light

on the distinct home country effects within China and how these may influence the ability of Chinese MNEs to exploit and reap value from acquired target firms. In particular, they highlight the apparently important role that business group affiliation may play when it comes to post-acquisition performance. Finally, the negative impacts of state-ownership in both studies point towards the potentially darker side of government involvement in international deals.

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Declaration

The content of this doctoral thesis is based on the research work completed at Durham University Business School, UK. No material contained in this thesis has previously been submitted for a degree in this or any other universities.

Statement of Copy Right

Acknowledgement

Chapter 1 Introduction

The global economy has seen a new and exceptional wave of outward (O) FDI from emerging markets in the past two decades. According to World Investment Report (2020), developing economies' OFDI increased from \$13.11 billion in 1990 to \$373 billion in 2019. This is a 30-fold growth. Multinational enterprises (MNEs) from emerging economies are playing a more important role in the global economy. Particularly, China ranks as the second largest source of outward investment in the world and is the largest among emerging markets (UNCTAD, 2020). The outward (O) FDI outflows from China in 2019 captured 47.18% (176 billion dollars out of 373 billion dollars) of developing economies' OFDI while this figure was 5.60% in 1990 (UNCTAD, 2020). There are 13 tech and digital companies among the top 100 firms in the world, of which 5 are from emerging economies and 4 are from China. The Chinese new entries are amongst the quickest corporations to internationalize their businesses and stimulate the industry average in an upward direction (World Investment Report, 2020). Chinese MNEs is treated as one of the largest representative groups of erming market MNEs (EMNEs). Thus, the whole thesis mainly focuses on CMNEs as the unit of analysis.

Witnessing this trend, researchers have attempted to explain this fact by suggesting new theoretical perspectives related to emerging market MNEs (EMNEs). As suggested by Luo and Tung's (2007) springboard perspective and Mathews's (2006) LLL model, EMNEs seek advanced strategic assets, including technologies and brands, to achieve firm-level catch-up. Unlike the traditional OLI model which denotes that companies conduct OFDI with a condition of owning pre-existing 'ownership' advantages (also

denoted as firm-specific assets (FSAs)), they suggest that emerging market multinationals (EMNEs) are different, because they internationalize to 'augment', rather than to 'exploit' FSAs. However, to this end, they need to fully absorb the acquired strategic assets. Thus, understanding EMNEs' post acquisition performance helps researchers understand such phenomenon. Until now, although 'performance' has been studied in several literatures, early studies have mainly focussed on analyzing firms' short-term financial performance (e.g. Li et al., 2016; Buckley et al., 2014; Buckley et al., 2015; Ning et al., 2014; Bhagat et al., 2011; Boateng et al., 2008 and Kling and Weitzel, 2011). As Luo and Tung (2007; 2018) note, one main purpose for firms' internationalization is to obtain *technology* and *know-how*, and Matthews (2006) also clarifies that firms' internationalization strategies are applied in order to achieve the goal of industrial catch-up. Hence, looking at *long-term innovation* performance relates directly to the key body of theory in IB that has developed around models such as LLL and the 'springboard perspective'. This is where the motivation for first main part of this thesis originates. To date, there has been a lot of discussion of the motivations for OFDI from emerging markets like China, but far fewer studies investigating the actual outcomes of such FDI.

Although some recent studies have tried to look at innovation outcomes related to OFDI activities, their samples are often restricted (for example, collected and tested at a provincial not firm-level (Li et al., 2016; Hong et al., 2019; Li, Lee and Park, 2020), and have not looked at the specific *strategic asset-seeking (SAS)* motivation (Jindra et al., 2016). Besides, the moderating factors are mainly focused on knowledge base/R&D intensity (Li et al., 2016; Amendolagine, 2018; Li, Lee and Park, 2020), location choice (Piperopoulos et al., 2018; Fu, Hou and Liu, 2018; Dong, Miao and Zhang, 2021) or

organization learning environment of acquirers (Yi et al., 2020), acquiring firms' home country effects are overlooked, while it is emphasized by many researchers as these are the most significant differences found in emerging markets when compared with developed markets (Cuervi-Cazurra, 2012). Among the discussion of EMNEs' antecedents' literature, one of the mainstreams of studies that discuss the significant role of EMNEs' home country environment such as business group affiliation and state ownership suggest there may be important factors that may influence the ability of EMNEs to benefit from SAS (i.e. the LLL model) or the 'springboard' perspective (Luo and Tung, 2007). In short, this literature has implied that successful SAS is moderated by a number of conditions that are affected by its distinctive home country environments, which are referred to as 'home country effects' (HCEs). HCEs can be defined as an impact from the domestic environment from which the EMNEs have evolved (Cuervo-Cazurra, 2012). The logic behind such arguments is that HCEs, such as links between business and state (i.e. via ownership); business group affiliation; previous experience of 'linking' with and 'learning' from developed market MNEs (as per the LLL model) may influence acquiring firms' absorptive capacity. Luo and Tung (2018) develop this 'spring-board perspective' by pointing out the importance of focusing on the domestic institutional environment and the parent firms' characteristics especially their special home country characteristics in their latest work. By examining 334 M&A studies published in the 16 top management and business journals in both strategic management and international business disciplines, Ferreira et al., (2014:2556) note: '….future research should…examining the role of the home country environment and governments for emerging multinationals undertaking M&As abroad' (Peng, et al., 2009). As a result, it can be seen that analyzing and exploring EMNEs' home country effect helps researchers to find the answers regarding why EMNEs are able to conduct

OFDI and how they can improve their innovation performance to achieve firm level catch-up. Thus, home country effects are added as the important moderating factors that would impact the performance of SAS CM&As in the first paper in Chapter 4.

In the strategic management discipline, diversification is a well-developed topic. Research in developed markets mainly focuses on three areas: product diversification (related vs unrelated product diversification in domestic country), geographic diversification (internationalization) and international product diversification (internationalization via product diversification). However, diversification studies for emerging market mainly restricted in the first two areas, while on the other hand, the phenomenon that CMNEs tend to acquire many unrelated firms abroad attracts much attention. This rises many research interests for international business scholars as this trend is opposite from western trends. An interesting research question arises: if CMNEs are mor likely to acquire unrelated firms in foreign market as proved by Shi et al., (2021), will such motivation bring better performance? If so, how? Thus, in order to fill in such gap, the performance study two in Chapter 5 illustrates the first attempt to investigate the role of international product diversification in EMNEs' post OFDI performance by also including the home country effects as moderating factors.

In sum, the whole thesis focuses on analyzing Chinese MNEs' post-acquisition performance with the aim to understand the role of strategic asset seeking motivation and home country effects. Specifically, it consists of six chapters. Chapter 1 firstly gives an overall introduction to the whole dissertation and then illustrates the motivation, research questions and research agenda. A comprehensive literature review of both international business and strategic management disciplines is given in Chapter 2.

Chapter 3 will review current methodological problems that arise from the empirical studies and how this thesis applies propensity score-matching, event study and BHAR approaches to overcome the 'endogeneity' problem. Chapters 4 and 5 present two CMNEs empirical 'performance studies' by looking at general strategic asset-seeking CM&A deals and isolating the unrelated diversification CM&A deals respectively together with special attention to the role of home country effects. Specifically, Chapter 4 conducts an empirical study to investigate whether the strategic asset seeking motivation would lead to better acquiring firms' performance in terms of innovation capability. And the moderating factors that are discussed are three home country effects: state-ownership, business group affiliation and prior international experience. The results show positive impact of SAS motivation, and the role of state-ownership is negative while for business group affiliation and prior international experience is positive. Chapter 5 continues to investigate acquiring firms' performance by using another measurement of performance-stock market price to validate the important role of strategic asset seeking motivation on acquiring firms' performance when the cases are under the extreme circumstance (when the deal is totally unrelated). In addition, the positive role of business group affiliation and negative role of state-ownership echoing the results of Chapter 4. All in all, firstly, the second study is another study that further covers the research area that the first study missed and they complementary with each other. Secondly, results of both studies provide solid robust evident to support the important role of strategic asset seeking, business group affiliation and also highlight the problems that raised from the state-owned firms when it comes to managing acquired strategic assets in post-acquisition stage. Thirdly, the consistency between two studies provides consistent evidence to answer the research question that relate to

Chinese acquiring firms post-acquisition performance and the related moderating factors. Finally, Chapter 6 then summarizes the results.

This thesis has the following contributions. Firstly, this research sheds further light on a conceptual debate currently raging within the field of International Business. Theoretical contributions like the Linkage-Leverage-Learning (LLL) model (Mathews, 2006) (and the related OLI); the 'springboard perspective'; the bundling model (Hennart, 2012) suggest EMNEs are using overseas M&As to 'catch-up' with developed market competitors by becoming more innovative. To date, it is known how such OFDI behaviour would impact acquiring firms' performance in terms of financial indicators. However, current research knows little about the long-term 'innovation' outcomes of such SAS deals, or how home country factors and effects influence these 'innovation' outcomes. Secondly, in addition, this thesis considers the impact of 'home country effects' (i.e., business group affiliation, state ownership, prior international experience) and their possible influence on innovation outcomes (Cuervo-Cazurra, 2012; Ramamurti, 2012). This will contribute to the conceptual literature of EMNEs by further highlighting the impact of business group affiliation and ownership structure and imperfect institutional environments in shaping EMNE outward FDI and determining its performance (Holmes et al., 2018). Thirdly, this thesis draws attention to the EMNEs' unobserved phenomenon of international product diversification. Is the acquisition of unrelated products in foreign countries really consistent with a strategy of technological learning and 'spring-boarding' or 'link, leverage and learning' (i.e. LLL)? If so, what helps them to do so if they encounter difficulties such as newness, liability of foreignness, and technology gap etc? This thesis introduces an explanation

of 'home country effects' in combination with Hennart's (2012) complementary local resources argument.

1.1   Research motivation and research questions

The internationalization of EMNEs has been a hot topic for international business discipline in recent years (Ramasamy et al., 2012). Such research interest basically arises from the debate that traditional theories of MNEs might not be appropriate to explain the internationalization of emerging market enterprises (EMNEs) (Mathews, 2006; Luo and Tung, 2007; Rui and Yip, 2008; Buckley et al., 2009; Stephen Chen and Tan, 2012). The main argument is focusing discussion on whether EMNEs are motivated to internationalize to 'augment' rather than to 'exploit' their firms' specific assets (FSAs) (Buckley et al., 2007). China, as one of the major emerging market countries, has been given great attention (Deng, 2012). China's OFDI has been increasing in recent years and witnessed a significant rise especially after 2008. In 2016, the total OFDI of China reached 256 million dollars (see Figure 1).
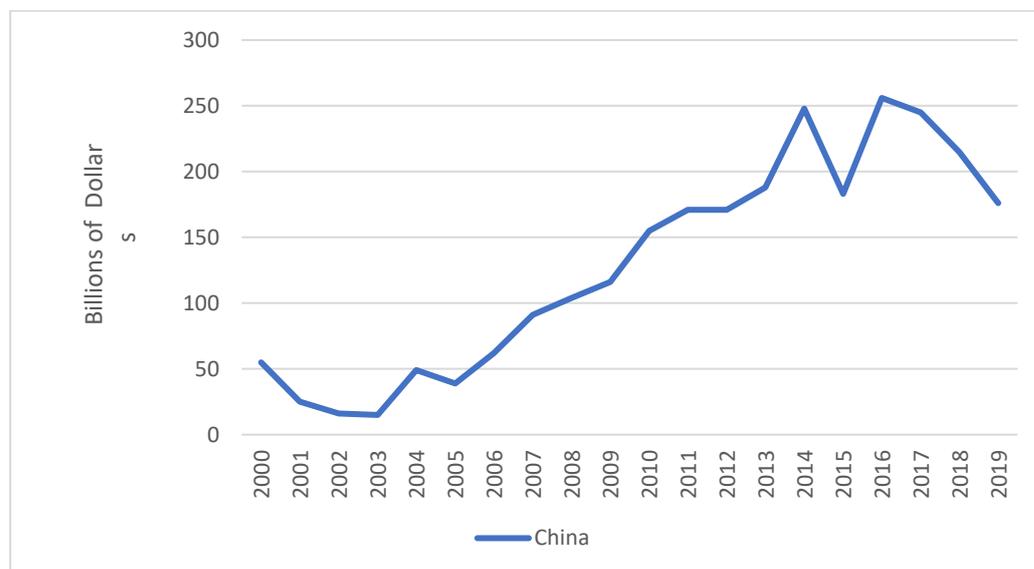
Figure 2 illustrates the comparison of OFDI between China, developing economies and developed economies. China continues as a major part of developing economies' OFDI.
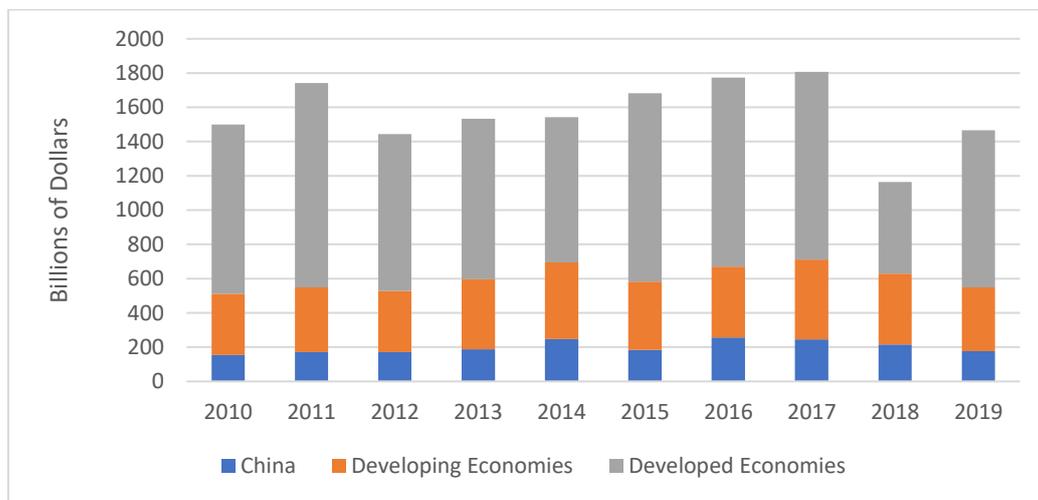
Figure 2. Comparison of OFDI between China, Developing Economies and Developed Economies (UNCTAD, 2020)

Being one of the major players in the world's OFDI, the whole world is curious about the new economy. They want to know how and why they are different from developed markets. Firstly, researchers have discussed the antecedent of EMNEs by trying to apply new 'perspectives or models to explain EMNEs. For example, Luo and Tung's (2007) spring-board perspective argues that the motivation of EMNEs is to seek strategic assets in developed economies with the purpose of catching up. A similar argument applies to Mattews' (2006) link-leverage-learn (LLL) model. Later, Hennart (2012) further proposes the importance of complementary local resources (CLRs) to

explain why DMNEs are not able to compete with EMNs in emerging markets while instead willing to sell their superior technology and know-how to EMNEs. Hennart's (2012) argument lies in the logic that an emerging market's home resources such as distribution channels, local markets and other resources (so called complementary local resources – 'CLRs') are not available to developed market firms, instead, they are only available for emerging market firms. Thus, EMNEs are able to combine the foreign technology and local resources and become successful in their home market, while at the same time, EMNEs' home market environments have attracted more attention from researchers. The role of 'home country effects' (HCEs) was widely discussed when analyzing the motivation behind Chinese MNEs' internationalization strategy. Yiu (2011) considered the important role of business group affiliation for EMNEs' internationalization. Specifically, a business group provides its affiliated firms with more financial and labour resources and a more effective internal market system. Then, researchers discussed the entry mode of EMNEs' strategic asset-seeking (SAS) FDI. The representative studies include Rui and Yip (2008); Carcia-Canal (2009) and Anderson and Sutherland (2015). Additionally, Wang et al., (2012) discussed how state-ownership acts as the supportive power for EMNEs' to go international. After theories are thoroughly discussed, researchers employed empirical studies to test if there is any solid evidence to support the view of SAS (Buckley et al., 2007; Alon, 2010; Rodriguez and Bustillo, 2011; Huang and Wang. 2013; Amighini et al., 2013; Jindra et al., 2016). The results are not conclusive. However, most of the research did not consider the issue of tax havens and used the aggregated data. This might trigger severe methodological problems due to 'onward journeying' and 'round tripping' problems (Ning and Sutherland, 2012).

Secondly, after discussing the antecedent of EMNEs, researchers want to know the result/performance of EMNES. As listed firms make it easy to obtain firm-level data, early studies regarding EMNEs' post-acquisition performance mainly use financial measurement to assess firm performance. For example, Boateng et al., (2008); Chen and Young (2010); Kling and Weitzel, (2011) and Li et al., (2016) analyzed listed firms' cross-border M&A deals and used event study to test if the performance of emerging market acquiring firms increase or not. In terms of long-term innovation performance study, current literatures mainly focus on regional data and firm-level data innovation performance study is rare. However, this is important because only by analyzing firms with SAS motivation and using the measurement of innovation performance can the springboard perspective and LLL model be explained.

Thus, the primary motivation driving this research is, therefore, to contribute to testing to see if there is any empirical evidence to support the 'catch-up' assumption of EMNEs' SAS OFDI activities as mentioned in Luo and Tung's (2007) springboard perspective and Mathews' (2006) LLL model. In other words, little is known regarding whether EMNEs fulfil their catch-up purposes in terms of long-term innovation performance. In addition, although home country effect has been discussed in certain location choice studies, it needs to be discovered if they are also important for EMNEs' post innovation performance. For example, media and press report widely consider how Geely acquired Volvo to obtain its superior technology. However, it is not known whether Geely really absorbed the acquired technology and benefited from the acquisition. If so, what helps them to achieve the SAS goal? Does the nature of the home country effect such as private ownership/business group affiliation facilitate the post-acquisition innovation performance of the acquiring firm (in China)? In addition, as the media only report huge

deals like Geely, how do other firms that are not widely reported perform? Do home country effects still matter for them? Finally, when applying theorical framework to explain the factors that moderating firm performance. Current research only focuses on solely one aspect. For example, research-based view (RBV) are most commonly used to explain how acquiring firms' absorptive capacity impact their innovation performance (Li et al., 2016; Amendolagine et al., 2018; Hong et al., 2019; Li, Lee and Park, 2020), or institutional-based view such as location choice (Piperopoulos et al., 2018; Fu, Hou and Liu 2018; Deng, Miao and Zhang, 2021), institutional differences (Anderson et al., 2015; Huang and Zhang, 2020) is another theorical framework that is commonly used. Recent years, a growing number of studies emphasize the important of applying knowledge-based view (KBV) to explain why firms are able to catch up because knowledge management or excellent organizational learning environment are more important than resources (Yi et al., 2020). However, improving EMNEs' home market performance is a complicated process, only focus on one perspective could not fulfil the task of understanding the post-acquisition management process. Current research needs a comprehensive view (a combination of the above view) to help analyze EMNEs. Therefore, in order to fill in the gaps, the following initial research questions are proposed :

Stage One Research questions:

i. *What are the impacts on long-term innovation performance for Chinese MNEs undertaking strategic asset-seeking (SAS) acquisitions?*

ii. *How do home country effects/influences impact the innovation performance (i.e., business group affiliation, role of ownership and international experience) from a combination of RBV and KBV?*

At the later stage of stage one, new phenomenon became apparent. When looking at the sample of CM&As, some of the international deals are in unrelated industries. For example, Fusun acquired a football club and travel company, as well as a circus troupe (Cirque du Soleil). This unrelated deal making, particularly when it has an SAS orientation, is even more interesting because the technology gap between developing and developed market firms is large, while the unrelated product/technology would make the deal even more complicated and difficult to complete. Interestingly, by contrast, the dominant trend within DMNEs has been moving in the opposite direction: internationally 'horizontal' deals within the same sectors are a growing trait of DMNE internationalization. This has created greater focus on 'core competencies' (UNCTAD, 2013). International divestments of unrelated business, moreover, have led to the dismantling of the remaining iconic Western conglomerates. Siemens and General Electric, for example, as well as lesser known examples like Maersk, are rapidly shedding non-core businesses (Gapper, 2017). This era has been referred to as the 'end of conglomerates' by the activist value investors driving developed market specialisation trends.

Previous studies have analyzed the phenomenon of both domestic (Palich et al., 2000; Miller, 2006; Chari et al., 2008; Purkayastha, 2013; Liebeskind, 2000; Hitt et al., 1991, 1996) and international (Chakrabarty et al., 2007; Kumar, 2009; Colombo and Rabbiosi, 2014; Geringer et al., 2000; Wan and Hoskisson, 2017) product diversification for firms in developed markets, and the phenomenon of domestic diversification for firms in emerging markets (Du, Lu and Tao, 2015; Fan, et al., 2008; Jiang, 2008; Li, He, Lan and Yiu, 2012; Lu, Liu, Filatotchev, and Wright, 2014; Sun, Peng, and Tan, 2017; Wu,

Pangarkar and Wu, 2016; Zhou and Delios, 2012; Chakrabarti, Singh and Mahmood, 2007). Little research has paid special attention to the international product diversification phenomenon of EMNEs, especially CMNEs. So, it is worth finding out if the unrelated deals will lead to a better performance if they need to overcome so many difficulties. If so, what features of acquiring firms do they have to help them? Do the special characteristics of home country effects provide an appropriate explanation for those firms? In addition, Backman, (1999), Kock and Guillen (2001), Wan (2003) as well as Hennart (2012) also prove that the unique home country environment plays a significant role in a firm's diversification strategy and this is the main reason to explain the different diversification strategy between developed market firms and emerging market firms. However, does the unique home country effects moderate the relationship between diversification and firm performance?

As the above-mentioned area is not analyzed by researchers, this research moves to stage two to fill in the gap in this area.

Stage two research questions:

i.   *How does international product diversification affect Chinese acquiring firms' post-acquisition performance?*

ii.   *How does the role of home country effects (eg. business group affiliation) and the motivation of SAS impact the relationship between diversification and post-acquisition performance?*

Understanding the relationship between diversification and EMNEs' firm performance helps researchers have a better understanding regarding how EMNEs are unique in

terms of the consequences of their different diversification strategies. And the reason behind such a phenomenon helps researchers to better understand how home country effects of EMNEs would lead to different EMNEs' internationalization performance.

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┌─────────────┐        ┌────────────────────────────────┐
│  Stage One  │        │ Starting from review of IB     │   IB discipline
└─────────────┘        │ literatures in EMNES OFDI      │
                       └────────────────────────────────┘        +
                       ┌────────────────────────────────┐
                       │   Identifying research gap 1   │   SM discipline + HCE
                       └────────────────────────────────┘
┌────────────────────────────┐              ┌────────────────────────────┐
│ (Innovation performance of │              │ (Home country effect       │
│  SAS CM&A)                 │              │  factors)                  │
└────────────────────────────┘              └────────────────────────────┘

┌─────────────┐        ┌────────────────────────────────┐
│  Stage Two  │        │ New phenomenon observed in     │   IB discipline
└─────────────┘        │ EMNES OFDI                     │
                       └────────────────────────────────┘        +
                       ┌────────────────────────────────┐
                       │   Identifying research gap 2   │   SM discipline + HCE+SAS
                       └────────────────────────────────┘
┌────────────────────────────┐              ┌────────────────────────────┐
│ (The important role of     │              │ (Home country effect       │
│  diversification is        │              │  factors) + SAS            │
│  overlooked)               │              │                            │
└────────────────────────────┘              └────────────────────────────┘
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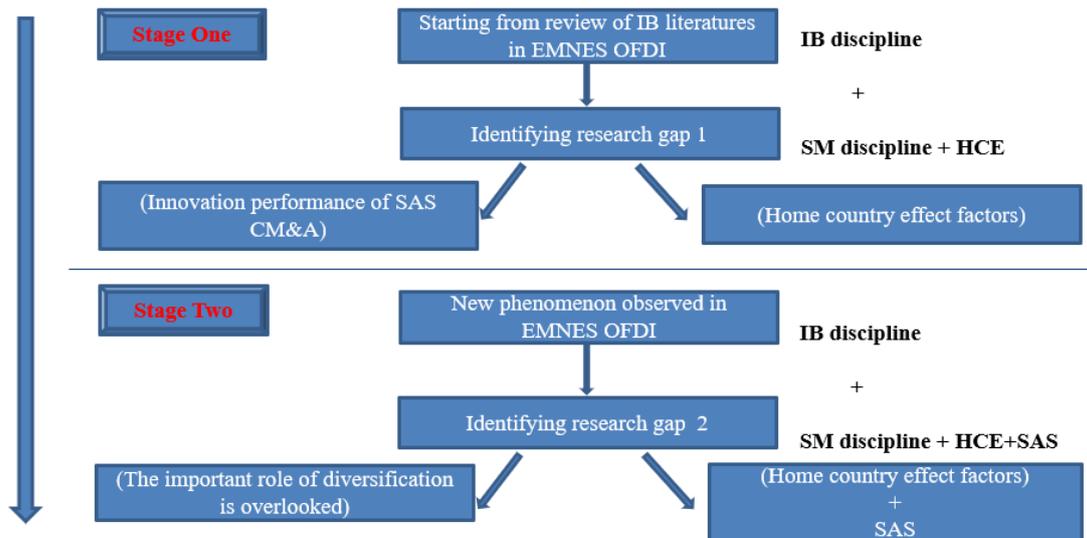
Figure 3. Research Procedure

1.2   Research agenda

Thus, the main body of the thesis consists of two subject areas which both shed further light on the nature of Chinese MNEs. The work firstly draws from the current literature and then moves forward to present another paper by identifying another research gap discovered during the Ph.D. study process. The two papers focus on analyzing Chinese EMNEs' post CM&A performance and the relationship with home country effects from both international business and strategic management perspectives. The angles are different as they are developed by identifying different gaps in the research topic area. The first paper contributes to the burgeoning Chinese FDI literature by contributing to

the current conceptual debate in the IB literature as well as strategic management literature in terms of EMNEs' innovation performance of technology- seeking CM&A. The second paper then follows by further identifying the research gap of EMNEs' diversification in internationalization, which helps to better understand EMNEs' diversification (which is usually discussed in strategic management disciplines) in combination with IB literature.

Chapter 2 Literature review

The research questions of the thesis originate from the trend and pattern of Chinese firms' internationalization. However, understanding the phenomenon requires a comprehensive understanding of literatures in both international business and strategic management disciplines. Specifically, basic theories of international business is built as the theory foundation of the whole thesis, innovation management literatures in strategic management discipline helps to know the impact of Chinese firms' SAS OFDI, the diversification literature provides novel perspective to look at the pattern of Chinese OFDI from different perspective and considering the moderating factors of home country effects contributes to strategic management literatures to compensate its current research gap of 'lack of discussion on institutional factors' (Ferreira et al., 2014) as well as echoes the popular discussion of topics such as 'ownership', 'business group affiliation' in international business literatures. Therefore, the literature review includes five parts: the first part discusses the traditional internationalization theories and new perspectives regarding EMNEs; the second part reviews the post M&A performance studies; third part reviews diversification literatures and the final part reviews the role of home country effects such as business group affiliation, ownership structure and fit these factors into strategic management theories such as industry-based view, RBV, KBV, thus comprehensively explain how EMNEs are able to catch-up. By reviewing the literatures, I also following propensity score matching methods and event-study model in this thesis, which are barely used by international business scholars, which will be discussed in detail in Chapter 3.

2.1. Literature review on firm internationalization

2.1.1. Traditional theories of MNEs

Early studies regarding firms' internationalization are based on the analysis of developed market multinational enterprises (DMNEs). The earlies model is 'Uppsala model' proposed by Johanson and Vahlne (1977, 1990). The model notes that firms need to undertake an incremental learning process if they want to go international. Given the fact that EMNEs are often undertake aggressive CM&A for internationalization (Luo and Tung, 2007), which is contradict with the key view of this model, Uppsala model is rarely used by IB scholars to explain the phenomenon of EMNEs. The OLI model proposed by John Dunning (1977) is a comparatively static model of international business. The model explains the reasons why an organization can become a multinational enterprise (MNE). It mainly emphasizes the role of ownership (O), location (L) and internalization (I). The central idea of the model is that the most crucial condition for firms to become a MNE is that it must have ownership advantages so called firm-specific advantages. The logic under such argument is that the FSA is able to help the enterprises to tackle with the problem due to the rising costs of running business in other countries. Interestingly, however, a number of IB scholars have challenged the validity and use of the OLI model in the case of EMNEs. For example, they note that EMNEs are basically different from MNEs (Mathews, 2002; Ramamurti, 2012), because they lack FSAs such as technological, managerial and other experience, which are normally held by developed market MNEs (Mathews, 2002). This has led to the questions: Is the OLI model redundant? Do international business researchers need a new theory/theory to explain EMNEs?

2.1.2. New explanation of EMNES

The new explanations for EMNEs argue that unlike developed market multinational enterprises (DMNEs), emerging market firms do not have FSAs and are instead motivated to seek the strategic assets[1] (i.e. technology and management know-how) they lack in strategic asset rich regions (i.e. mainly developed markets). These firms seek to overcome their disadvantages as latecomers, and use aggressive entry modes, such as M&A, when they internalize (Luo and Tung, 2007). Thus, new explanations of EMNEs mainly focus on their distinctive SAS motivation (Mathews, 2006; Luo and Tung, 2007; Buckley et al., 2007; Child and Rodrigues, 2005; Wang et al., 2012). Below this part discusses the highly influential models (or perspectives) in the current IB literature regarding the expansion of EMNEs via FDI.

2.1.2.1. The springboard perspective

Luo and Tung's (2007) 'springboard' perspective proposes that EMNEs use OFDI as an efficient approach to obtain strategic assets such as technologies, brands and know-how in developed economies with the purpose of compensating for their 'latecomer' disadvantages. That is to say, EMNEs acquire technology and know-how in other regions especially developed countries to strengthen their domestic resources and capability for improvement and further internationalization. The springboard perspective presents a new idea that MNEs from emerging market such as China are different from traditional MNEs, as MNEs have a tendency to exploit their firm specific assets in foreign countries. The springboard perspective proposes a motivation for SAS-related FDI. It does not, however, explain any sources of advantages or means by which such assets can be exploited. Advocates of OLI question whether EMNEs can really

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[1] Strategic assets are defined as 'the set of difficult to trade, imitate, scarce, appropriable and specialized resources and capabilities that bestow the firms' competitive advantage' (Amit and Schoemaker, 1993:36).

internalize without FSAs (Narula, 2012). How, for example, can such EMNEs absorb and harness intangible strategic assets (Hennart, 2012; Deng, 2012; Narula, 2012)?

2.1.2.2. The LLL model

If the springboard idea is just a perspective, Mathews' (2006b) LLL (linkage, leverage and learning) model is more forthright in challenging the traditional OLI approach. According to this model (Mathews, 2006a, 2006b), by using linkage (prior experience of achieving intangible assets such as technology, brand and know-how with foreign countries), leverage (achieving resources and networks by building connections to partners), and learning (upgrading via repetition and improvement). By repeat such process, EMNEs' innovative capability is improved which help them to compete with their competitors.

A crucial feature of this model is that it assumes EMNEs can actually 'link' with and 'learn' from DMNEs. In other words, it assumes that EMNEs are likely to be successful in enhancing their innovation capability if they engage in FDI. However, some scholars have questioned the conceptual underpinnings of this model. As Hennart (2012) points out: why would a DMNE willingly allow its own FSAs to be appropriated by an EMNE via LLL? A crucial assumption of the LLL model is that this can (and does) happen. One purpose of my current research is to address this fundamental issue.

2.1.2.3. The Bundling model and complementary local resources (CLRs)

Following from the above, the springboard perspective and LLL model do not fully explain two fundamental issues: First, they do not explain why foreign firms are willing to sell strategic assets to those emerging market firms while they may operate in emerging markets directly by themselves. Secondly, the above explanations do not describe how SAS firms from emerging markets can successfully compete with developed market firms (Lessard and Lucea, 2009; Ramamurti, 2009), while at the same time learning from them.

The bundling model complements the SAS motivation of the springboard perspective and LLL model by providing a persuasive explanation regarding these two issues. Hennart (2012) questions Dunning's OLI assumption that country-specific advantages (CSAs) are able to be get access to all the firms all over the word. He argues that only some domestic firms possess complementary local resources (CLRs) such as distribution channels and after-sales services (Hennart, 2009) and that DMNEs are not able to access them. Hence, developed market firms exchange strategic assets for CLRs, and then CLRs are bundled with strategic assets to be exploited by the EMNEs in the domestic market (Hennart, 2012).

One important contribution of the CLR perspective is in pointing out the importance of home country CLRs on EMNEs' international strategy, thus providing a good basis to use HCEs to explain EMNEs' FDI. According to Hennart (2012), such CLRs are held mainly by state-owned firms and business group affiliates, but further explanation is needed as to how home country effects impact EMNEs' SAS motivation. Hence, there is on-going discussion about what kinds of HCEs impact EMNEs' strategies and how they may do so.

2.1.2.4. Empirical evidence of SAS: looking at SAS 'motivation' studies

As a result of the boom in motivation research, especially the SAS orientation argument, empirical studies (particularly so-called 'location choice studies') have been conducted to test whether EMNEs undertake SAS. According to the motivation studies, EMNEs that are driven by their SAS orientation would locate in strategic asset rich regions such as developed markets. Although the empirical results do not really come up with any conclusive results, quite a large literature argues and finds that SAS is common and important for emerging market firms (see Table 1 which summarizes SAS studies in CMNEs).

Some studies find no evident of SAS by using official data. For example, Buckley et al. (2007) (using quite old/outdated official OFDI data from 1984 to 2001) suggest that Chinese OFDI is not driven by SAS. Hurst (2011) investigates Chinese FDI in OECD and non-OECD countries from 2003 to 2008 based on MOFCOM official FDI data, and concludes that owing to private property rights protection, laws and enforcement, Chinese OFDI is not driven by SAS. Rodriguez and Bustillo (2011) and Wang and Yu (2014) also find no evidence of SAS motivation of Chinese MNEs' investment in OECD countries using official FDI data.

On the other hand, however, several more recent researches do find evidence that supports EMNEs' SAS orientation by using firm-level data. For instance, using firm-level data, Alon (2010) finds that state-owned Chinese MNEs are positively driven by SAS when investing in 103 foreign countries. Ramasamy et al. further (2012) suggest that Chinese OFDI is significantly driven by SAS. They analyse 63 Chinese listed

companies' investment in 59 foreign countries (for the period 2006-2008). Furthermore, Amighini, Rabellotti and Sanfilippo (2013) study a sample of 915 Chinese Greenfield FDI in 109 host countries (from 2003 to 2008) and find similar supporting evidence, mainly of SAS in state-owned enterprises. In line with this argument, Huang and Wang (2013) use the Probit model to analyse the likelihood of Chinese MNEs seeking strategic assets based on 216 Zhejiang firms' OFDI. Their findings indicate that state-owned enterprises are more likely to engage in more SAS. The most recent location choice study, conducted by Jindra et al. (2016), finds that Chinese MNEs seek strategic assets in the European Union. The authors use firm-level data for the period 1996-2010 from ORBIS. Thus, compared with early studies, which use official OFDI data, recent research using firm-level data finds supportive evidence of EMNEs' SAS motivation. Consequently, understanding SAS is vital to figuring out EMNEs' OFDI behaviours.

The reason why firm-level data is better than official FDI flow data would be that the firm-level data could be a 'real' reflection of where the location and volumes the EMNEs' OFDI go to. The official FDI data would have the issue of including 'round-trip' and 'onward journey'[2] data. But in fact, such data should be excluded. In the case of China, Sutherland and Anderson (2015) argue that tax heavens such as Hong Kong is often used as the transit points of Chinese firms' OFDI. Therefore, the official data would lead to a bias in the study of EMNEs' internationalization activities. Thus, the supportive empirical evidence of SAS which use firm-level data are considered as more acceptable. In summary, much empirical evidence shows that SAS is EMNEs' particular motivation and it affects EMNEs to locate in strategic asset rich countries, often via aggressive entry modes, i.e. CM&A.

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[2] These are the FDI data that are through tax heavens and offshore financial centers.

Table 1: Summary of representative empirical location choice studies exploring the SAS orientation

Name and year of Study	Type of OFDI Data used in the empirical study	Chinese OFDI to where?	Period and number of observations	SAS proxy in the host countries	Evidence of SAS?
Buckley et al. (2007)	Approved OFDI data	Rest of world	1984-2001	Patents, number	No
Hurst (2011)	MOFCOM, FDI flows	OECD and non OECD	2003-2008	Private property right protection, laws and enforcement	No Negative and significant
Rodriguez and Bustillo (2011)	OECD/National/ASEAN, FDI stocks (volume)	36 countries (OECD focus)	1995-2009	Granted patents, number	No
Wang and Yu (2014)	Official FDI flows	150 host countries	1991-2009	High technology exports/all manufactured exports	No
Ramasamy et al. (2012)	Firm-level data, 63 Chinese listed companies, Poisson model (count data)	59 countries, 1350 projects	2006–2008	Registered patents (number); and exports of high technology products/total exports	Yes But attraction is to commercially viable technologies, rather

					than core research content (i.e. patents insignificant), SOEs
Alon (2010)	fDi Intelligence, Financial Times, firm-level data	103 host countries	2003-2007, 800	R&D expenditure	Yes But only in SOEs
Amighini, Rabellotti, and Sanfilippo (2013)	Greenfield FDI, taken from fDi Markets data	109 host countries	2003-08, 915 observations	Human capital (gross secondary school enrolment rate), R&D, share of GDP	Yes But only in SOEs
Huang and Wang (2013)	Two sources: NDRC, 216 firms; Zhejiang, 1,270 projects. Probit model.	Rest of world.	NDRC, 2003-11; Zhejiang, 2006-2008	A national index of high-tech exports	Yes Mainly for large investors like SOEs, SMEs more market seeking
Jindra et al. (2016)	ORBIS, firm-level data (probability of investment, count model used)	European Union, at 100+ sub-regional levels	1996-2010	R&D expenditures in region, share of science and technology employees in region	Yes Comparisons with DMNEs included (DMNEs also asset seek)

Source: see column one

2.1.2.5. CM&A as an entry mode of SAS

Much research has indicated that the speed of EMNEs' internationalization is very fast, since they use CM&A as an entry mode to acquire technology. Indeed, CM&A is the dominant and primary internationalization mode for EMNEs (Athreye and Kapur, 2009; Yamakawa et al., 2013). Within this literature, Child and Rodrigues (2005) propose the idea that acquisition provides a rapid route for Chinese MNEs to gain strategic assets from the developed market. Luo and Tung (2007: 485) also indicate that EMNEs 'overwhelmingly look to rapidly catch-up via aggressive acquisitions'. Guillen and Garcia-Canal (2009) summarize how EMNEs are different from MNEs, and note that EMNEs tend to use M&A as mode of entry, while traditional MNEs tend to use wholly-owned subsidiary. In a review article in which they conceptually explore EMNEs' location and entry mode choice, Kedia et al. (2012) also argue that EMNEs tend to use aggressive risk-taking M&A to conquer their latecomer disadvantage. Furthermore, Anderson and Sutherland's (2015) empirical study finds supportive results that acquisition is the primary mode of EMNEs' SAS in developed economies.

Researchers have also discussed the reasons for EMNEs' choice of M&A as an appropriate mode to seek strategic assets. For example, the resource-based view (Wernerfelt, 1984) combined with organizational learning theory (Conner and Prahalad, 1996) offers one explanation of the popularity of M&A as an innovation strategy. According to Hitt et al. (1996), a firm improves its organizational learning awareness and has the opportunity to learn novel and superior ideas when it finds that technological capacity differs between acquirer and target. Thus, a firm's innovation performance may increase when it acquires diverse external technology or knowledge

and makes use of it. Further, several studies point out that MNE as an organization is a more effective way to transfer technology than via market mechanisms, since knowledge is diffused and spilled over more easily within the organization (Regner and Zander, 2011). Yet, as noted, few studies have looked at the impact of such aggressive forms of OFDI.

In the case of China, due to the negative effect of institutional constraints (Biediger et al., 2005), such as China's weak intellectual property rights protection system and inefficient innovation system, China's R&D development is retarded domestically (Boist, 2004). In addition, Chinese firms face intense competition in their home market and are hurrying to catch up with firms in developed markets (Rui and Yip, 2008), while international joint ventures (Rui and Yip, 2008) and other market transactions (Gubbi et al., 2009) are not effective ways to generate strategic assets. While EMNEs may be superior to DMNEs in term of 'output capabilities', they lag behind with regard to 'innovation capabilities' (Awate et al., 2012).

In short, as a result of the difficulties of innovating domestically, it is argued that driven by the motivation of seeking strategic assets in foreign countries, Chinese firms tend to apply aggressive entry modes such as CM&A to 'leapfrog' to the technological frontier, so as to better compete with firms both domestically and internationally (Rui and Yip, 2008). Specifically, the SAS emerging firms use CM&A to acquire technology in strategic asset rich places, is with the strategic intent of technology transfer from the foreign subsidiary to the domestic parent company, with the goal of improved innovation performance (Awate et al., 2014; Nair et al., 2015).

2.2. Literature review on CM&A performance

2.2.1. EMNE post CM&A financial (and other) performance studies

In addition to exploring the antecedents of EMNEs (i.e. SAS motivation and CM&A entry mode), researchers are also interested in finding out their post-acquisition performance. To date, however, only a few studies have considered innovation performance. Rather, they look at other measures of performance. Table 2 summarizes research of post-CM&A performance according to three types of measurements, namely financial, innovation and general.

Majority of the early studies that investigate EMNE's home country performance of OFDI are mainly focused on their financial performance, including shareholder value in particular (e.g.Boateng et al., 2008; Kling and Weitzel, 2011Li et al., 2016) or profitability (Buckley et al., 2014). Most of these research use event study methodologies to test the abnormal returns generated from M&A in a short observation period (usually measured by days). Moreover, the factors considered are generally economic factors.

Recent study tends to focus more on studying the innovation performance as this area is under investigation. For those study looks at the Chinese firms' OFDI innovation performance, although majority find supportive evident regarding the positive impact of OFDI on either acquiring/ target firms' innovation performance, they do not have a clear distinction between strategic asset seeking deals and other motivation deals. Most importantly, current research mainly focuses on analysing the role of absorptive

capacity from resource-based view (Li et al., 2016; Amendolagine et al., 2018; Hong et al., 2019; Li, Lee and Park, 2020), or they only analyse solely based on institutional based view such as location choice (Piperopoulos et al., 2018; Fu, Hou and Liu 2018; Deng, Miao and Zhang, 2021), institutional differences (Anderson et al., 2015; Huang and Zhang, 2020) or apply organizational learning perspective-a knowledge based view (Yi et al., 2020) to figure out what factors that may moderating the impact of OFDI on home country firm's innovation performance. However, they lack a clear explanation regarding how those Chinese firms are able to catch up from home country effects' perspective, such as business group affiliation, with a comprehensive view to combine both resource-based view and knowledge-based view together to figure out the unique mechanism behind the catch-up performance of the Chinese firms.

Among the case studies, several papers indicate the impact of SAS by describing the general performance of EMNEs after acquisitions. For example, Rui and Yip (2008) use three Chinese cases to explain EMNEs' internationalization patterns, especially their SAS motivations and CM&A entry mode. At the end of their study, they indicate the Chinese firms are able to improve their post-acquisition performance via such strategic asse seeking acquisition (Rui and Yip, 2008). There is, in general, little detailed indication of the improvement/change of innovation performance that is directly drawn from the SAS intention. Furthermore, although some efforts have been made to find out the impact of SAS on innovation performance (e.g., Awate et al., 2012; Awate et al., 2015; Tan and Mathews, 2016), those studies do not explain how emerging market firms integrate and absorb the technology. Thus, this area remains comparatively under researched.

Table 2: Summary of emerging market post CM&A performance studies

Title	Result (Increase or not?)	Measurement of post M&A performance	Factors considered	Model	observation period of performance	Does the paper mention clearly what the SAS are?
			Empirical Study			
			Financial Measurement			
Li et al. (2016)	Yes!	Acquiring firms' shareholder value-stock price reaction	1. Culture distance 2. Dummy of greater China plus Singapore dummy 3. Absorptive capacity	Event study	Short-term	No
Buckley et al. (2014)	Yes!	1. Target firms' profitability 2. Sales of target firms	1. EMNEs' resources: tangible asset and intangible assets 2. EMNEs foreign direct investments experience	FGLS	After one year	No
Buckley et al. (2015)	Yes!	1. Acquisition number 2. Acquisition value	1. Financial resources 2. Technological intensity 3. Managerial skills 4. Marketing intensity 5. Business group 6. Strategic asset seeking	Negative binomial and POLS	NA	Yes, but not clear enough

Du and Boateng (2015)	Yes!	Acquiring firms' value	1. SOEs 2. Formal institutional distance 3. Informal institutional distance (culture distance)	Event study	Short-term	No
Aybar and Ficici, (2009)	No!	Acquiring firms' value	1.Investment size, level of control in target, the target status, the level of international experience, good corporate governance 2.Industry characteristics, strategic focus of EMNEs; the type of expansion 3.Target country characteristics	Event study	Short-term	No
Ning et al. (2014)	Yes!	Acquiring firms' value	1.Ownership structure 2. Characteristics of contrl 3. Internal control mechanisms	Even study	Short-term (measured by days)	No
Bhagat et al. (2011)	Yes!	Acquiring firms' value	1.Classical factors 2.Governance factors	Event study	Short-term (measured by days)	No
Chen and Young (2010)	No!	Acquiring firms' value	1. State-ownership 2. (Moderate) Environmental complexity	Event study	Short-term (measured by days)	No

Boateng et al. (2008)	Yes!	Acquiring firms' value	No further analysis on factors' impact on post M&A performance	Event study	Short-term (measured by days)	Yes
Gubbi et al. (2010)	Yes!	Acquiring firms' value	1. Developed market acquisition 2. Economic distance 3. Institutional distance	Event study	Short-term (measured by days)	No
Kohli and Mann (2012)	Partial Yes! Cross-border M&A creates wealth gains while domestic ones did not create value	Acquiring firms' value (for domestic and cross-border MA) respectively	1.Foreign 2.Mode of payment 3.Relatedness 4.Competitive acquisition 5.Size of the acquirer 6.Technology intensity of target company	1. Event study 2. Cross sectional regression analysis	Short-term	No
Bertrand and Betschinger (2012)	No! Both cross-border and domestic M&A reduce performance	Acquiring firms' value (for domestic and cross-border MA) respectively	1.Firm level characteristics 2.Industry level characteristics	GMM estimation	1999-2008	No
Kling and Weitzel, (2011)	Yes! Both create value while CM&As create lower	Acquiring firms' value (for domestic and cross-border MA) respectively	1.Deal related variables 2.Firm-specific variables 3.Governance variables	1. Event study 2. Probit model 3. OLS	Short-term	No

	wealth gains than domestic ones					
Innovation Measurement						
Anderson et al. (2015)	Yes!	Post M&A patent counts in both foreign and domestic (Acquirer and target)	SOEs and Private company	Event study	Measured by quarter	Yes
Li et al., (2016)	Yes!	Home country province level innovation performance	Absorptive capacity, inward FDI and local competition intensity	GMM	2003-2011	No
Piperopoulos et al., (2018)	Yes!	Subsidiary (target) innovation performance	Target developed/ developing country	Negative binomial	2001-2012	No
Fu, Hou and Liu (2018)	Yes!	Acquiring firms	Location choice, in-house R&D, international experience	Random Tobit estimation	Firms in Guangdong province in 2010	No
Amendolagine et al., (2018)	No!	Acquiring firms	Absorptive capacity, EMNEs status,	Poisson quasi maximum-likelihood (PQML)	2003-2011	Yes
Hong et al., (2019)	Yes!	Home country province level innovation performance	Technology gap	Model based on	2004-2014	No

				knowledge production function (KPF)			
Yi et al., (2020)	NA	Acquiring firms	Institutional distance, organizational learning	ZINB model	2005-2015	No
Li, Lee and Park (2020)	Yes!	Home country province level innovation performance	Absorptive capacity, R&D intensity, GDP growth	GMM	2003-2017	No
Huang and Zhang (2020)	Yes!	Home country firm level innovation performance	ownership, role of FDI firms, domestic level of firms with different ownership	Spatial dynamic panel regression	2002-2007	No
Dong, Miao and Zhang (2021)	Yes!	Acquiring firms	Target firm location, ownership	PSM+DID	2004-2017	No
Case Study						
General Performance Measurement						
Thite et al. (2016)	Yes!	Becoming global players	Four Indian firms: Aditya Birla Group, Tata Motors, Wipro and Biocon	Case study: interviews	Long-term	Yes
Rui and Yip (2008)	Yes!	Becoming global players	Nanjing Automobile Group, Lenovo Group, Huawei Technologies Huawei	Case study: interviews	Long-term	Yes

Deng (2010)	Yes!	Lenovo successful absorb the strategic assets and perform better while TCL fail in integrating strategic assets	Comparing successful case: Lenovo with failure case: TCL	Comparative case study and interview	Long-term	Yes
Innovation Measurement						
Awate et al. (2012)	Yes!	Headquarters' innovation performance (patent as measurement of innovation)	Comparative study: EMNE: Suzlon DMNE: Vestas	Case study	Covering nearly ten years observation of innovation process	Yes
Awate et al. (2015)	Yes!	Headquarters' innovation performance (patent as measurement of innovation)	Comparative study: EMNE: Suzlon DMNE: Vestas	Case study	Long term observation	Yes
Tan and Mathews (2015)	Yes!	Acquirer's innovation performance (no measurement)	Chinese MNEs: Goldwind, Sinovel and Mingyang	Case study	Long term observation	Yes

Source: see column one

In fact, looking at the short-term financial or general performance cannot explain EMNEs' CM&A with SAS orientation, because the purpose of the SAS acquisitions is specifically technology catch-up. As Mathews (2006a: 329-330) notes: '*Linkage, leverage and learning are strategies of innovation that are available to latecomer firms. They enable the firms to make connections with the wider global economy, and draw from these linkages skills, knowledge and technology resources that would otherwise lie well beyond the reach of the developing firm. These strategies are employed in pursuit of the strategic goal of industrial catch-up.*' Yeung (2000:12) also indicates that the rise of second-wave MNEs from emerging economies '*is less driven by cost factors per se, but more by a search for markets and technological innovations to compete successfully in the global economy*'. Thus, looking at innovation outcomes and performance relates directly to the key body of theory in IB that has developed around models such as LLL and the 'springboard perspective'.

In summary, current empirical studies lack evidence to show the innovation outcome of EMNEs' SAS FDI, while further case study research is needed to examine the post-acquisition innovation performance and, more importantly, the management processes of the acquired technology embedded in firms. As Jindra (2016:214) in his comprehensive study on SAS in EMNEs puts it: 'whether EMNEs .... generate reverse technology transfer and to what extent this in turn increases the rate of their innovation and profitability seems to be a decisive matter to be addressed in future research'.

Figure 4 illustrates an overview of emerging market OFDI studies. It shows that research is required to fill the gap of investigating emerging firms' post CM&A innovation performance.
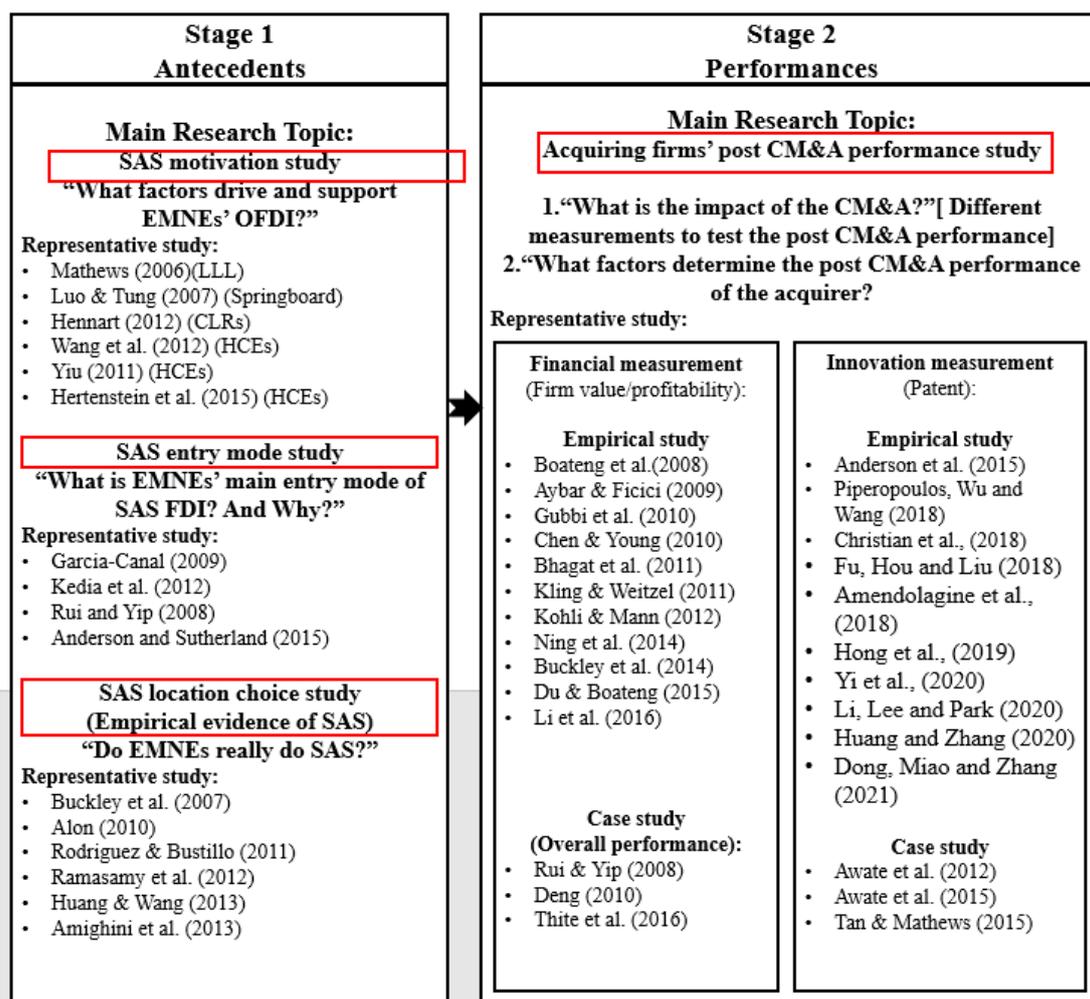
Figure 4: An overview of emerging market OFDI studies

2.2.2. Chinese acquirers' post-SAS CM&A innovation performance

There is quite a large literature on acquisition and innovation in the strategic management discipline. However, it focuses on developed market acquirers and targets (see Table 3). We thus understand little regarding the impact of acquisitions on innovation output for emerging market firms. This being said, the large body of

literature provides an excellent opportunity to draw from advanced methodologies that have been applied to DMNEs.

The empirical literature that examines the impacts of M&As on the innovation outcome in developed market acquirer is not conclusive. For example, Valentini (2012) find a positive effect on acquiring firms' innovation outcome by analyzing 159 M&A deals in the US from 1988 to 1996. Bertrand (2009) suggests a positive effect on target firms' innovation performance because of the synergy of the acquisitions based on a sample of 123 CM&As from 1995-2001 with the target country of France. By examining 72 US firms of 534 acquisitions from global chemicals industry from 1980 to 1991, Ahujia and Katila (2001) further note that if a firm is involved in technological acquisition, its innovation performance will improve due to the M&A deal. Makri et al. (2010) further suggest that the complementary of knowledge will positively affect acquiring firms' innovation performance based on sample of 95 high-technology M&As in 1996 in the US.

By contrast, by analyzing samples from the US, early studies such as Hitt et al. (1991) and recent study of Szucs (2011) show a negative impact or no significant (Hitt et al., 1996) impact on acquiring firms' innovation capacity. This is due to the high costs involved, such as operational cost that arises from post M&A management issues. Additionally, Ahujia and Katila (2001) also indicate that if the difference between the acquiring firm and target firm's knowledge size is too great, the acquisition will have negative affect on acquiring firm's innovation performance.

Table 3: Summary of developed market post M&A innovation performance studies from strategic management discipline

Title	Sample	Dependent variables	Variables	Control variables	Model	Year of observation	Which side's performance?	Overall impact of M&A on innovation performance
Studies Only Focus on Direct Impact of M&A on Innovation Performance								
Hitt et al. (1991)	191 US M&As from 1970-1986	1.R&D intensity 2.Patent intensity (number of patent divided by sales)	Acquisitive growth (acquisitions): dummy variable (annual firm data in the before-acquisition period set equal to zero and data in the after-acquisition period set equal to one)	1. Diversification 2. Leverage, size 3. Liquidity performance	A hierarchical regression model	3 years after M&A	Acquirer	Overall negative impact
Hitt et al. (1996)	250 US M&As from 1985-1991	1.R&D intensity 2.Intensity of new products introduced	1. Acquisition intensity: (1) number of acquisitions completed and (2) percentage of sales acquired. (testing the M&A's overall effect) 2. Other irrelevant variables	1. Product diversification 2. Firm size 3. Average industry R&D intensity 4. Accounting performance 5. Current ratio	Structural equation modeling	1-6 years after M&A	Acquirer	Overall no significant impact
Bertrand (2009)	123 cross-border M&As from 1995-	The difference between MA firms' Change in R&D expenditure	Acquiring firms and non-acquiring firms	Control variables for propensity score matching: Market size, firm size, advertising intensity,	1.Propensity score matching	1-3 years after M&A	Target	Overall positive impact

	2001; target country-- France	before and after M&A and that of non-MA firms		export intensity, R&D intensity, R&D skill, capital intensity, debt, profitability				
Valentini (2012)	159 US M&As from 1988 to 1996 in medical devices and photographic equipment industry	The difference between acquiring firms' change in patent counts, patent citation, patent generality, patent originality before and after M&A and that of non-acquiring firms	Acquiring firms and non-acquiring firms	Control variables for propensity score matching: log of Tobin's q, R&D intensity, free cash flow, firm size, prior patenting, four digit SIC codes, year dummies	1.Matching estimator— propensity score	2 years after M&A	Acquirer	Overall positive impact on patent counts, negative impact on patent citation, patent generality, patent originality
Szucs (2011)	265 acquiring firms and 133 target firms from 1990-2009 in Europe	The difference between acquiring firms' change in R&D intensity before and after M&A and that of non-acquiring firms	Acquiring firms and non-acquiring firms	Control variables for propensity score matching: R&D intensity, R&D growth, total assets, employees, profitability	1.Propensity score 2.DID approach-(difference in difference)	3-5 years after M&A	Both acquirer and target	Overall negative impact on both target and acquirer
Studies Only Focus on Correlates of Innovation after M&A								

Makri, et al. (2010)	95 US high-technology M&As from drug chemical and electronics industries in 1996	Percentage change of patent quantity, quality and novelty	1. Technology relatedness, 2. Science relatedness	1. Acquirer characteristics 2. R&D intensity 3. Industry weighted average pre-merger ROA 4. Relative size of target/acquirer in terms of assets 5. Prior acquisition experience 6. The number of post-M&A acquisitions 7.Acquirer product diversification 8.Degree of product/market	1.OLS estimates 2.2SLS	3-5 years after M&A	Acquirer	1. Positive effect of complementary scientific knowledge and complementary technological knowledge 2. Similarities in knowledge facilitate incremental renewal, while complementarities would make discontinuous strategic transformations more likely
Bresman et al. (2010)	1.Questionnaire survey in 1992 and 1996 of 15 large Swedish MNCs between 1927 and 1990	1. Patents 2. Technology know-how generated by acquired unit	1.Communications 2.Visits and meetings 3.Articulability of knowledge 4.Elapsepd time 5.Size (R&D employees)	NA	1. OLS for technological know-how 2. Negative binomial for patents	Two observation in 1992 and 1996 respectively	Acquirer	1. Transfer of technological know-how is facilitated by communication, visits & meetings, and by time elapsed since acquisition 2. The transfer of patents is associated with the articulability of the knowledge, the size of the acquired unit, and the recency of the acquisition 3. The immediate post-acquisition period is characterized by imposed

								one-way transfers of knowledge from the acquirer to the acquired, but over time this gives way to high-quality
	2.Case studies							
Bauer, Matzler and Wolf (2016)	712 M&As between early 2007 and late 2010; targets from the German-speaking part of central Europe , acquirers from all over the world	Innovation outcome rated by respondents	1. Human integration 2. Task integration 3. Culture differences	1.Industry growth 2.Sales of the combined entity 3.Relative size and 4.Acquisition experience 5.Annual sales and acquisition experience 6.Relative size	OLS	Survey done after 3-6 years of M&A	Acquirer	1. Negative effect of human integration 2. Positive effect of task integration 3. Downward curvilinear slope moderating effect of culture difference
Colombo and Rabbiosi (2014)	31 horizontal M&As happened in Europe	1. Patenting activity 2. Development of new technological competencies	1. Technological similarity 2. Acquired firm's R&D rationalization 3.Acquried firm's RD top manager replaced	1. Non-innovation related motives 2. Relative size of the firm 3. Dummy cross-border M&A 4. Dummy previous link	PLS method using Smart-PLS	Interview done at least 2 years after M&A	Acquirer	1.Negative effect of technological similarity 2. In addition, this effect is not mediated by the reorganization of the acquired R&D operations

	from 1987-2001	3. Speed in developing technological knowledge. (ranking from 1-5)	4. R&D productivity improvement of the combined firm 5. R&D personnel disruption in the combined firm	5. Target dummy for high-tech industry 6. Technological similarity 7. Year				
Ahuja and Katila (2001)	72 US firms with 534 M&As from global chemicals industry from 1980 to 1991	Patent	1. Number of non-technological acquisitions 2.Absolute size of acquired knowledge base 3. Relative size of acquired knowledge base 4.Relatedness of acquired knowledge base 5.Number of technological acquisitions where patents unavailable	1. R&D expenditures 2. Firm size 3. Firm diversification 4. Cultural distance 5. Pre-sample patents 6. Dummy for acquirer nationality and calendar year	A Poisson regression approach and a distributed lag model.	1-4 years after M&A	Acquir er	1.Negative for non-technological acquisition 2.Positive effect of absolute size of acquired knowledge base 3.Negative effect of relative size of acquired knowledge base 4.Nonlinear impact of relatedness of acquired knowledge base
Cloodt et al. (2006)	2429 M&A events (1148 technologi cal M&A, 1281 non-technologi cal M&A) from 1985–1994	Patent	1. Number of non-technological acquisitions 2. Absolute size of acquired knowledge base 3.Relative size of acquired knowledge base 4.Technologically related and technologically unrelated M&As	1. Dummy culture distance 2. Yearly R&D expenditures (R&D) 3. Firm size 4. Sector dummy 5. Pre-sample patents 6. Dummy for acquirer nationality and calendar year	A negative binomial model and a distributed lag model.	1-4 years after M&A	Acquir er	1.Negative for non-technological acquisition 2.The absolute size of the acquired knowledge base only has a positive effect during the first couple of years then a negative effect 3. The relatedness between the acquired and acquiring firms' knowledge bases has a curvilinear

	in US and Europe							impact on the acquiring firm's innovative performance.
Studies Both Focus on Direct Impact of M&A on Innovation Performance + Correlates of Innovation after M&A								
Desyllas and Hughes (2010)	2624 deals (US as acquirer, target all the companies in the whole world (including US)) from 1984-1998 in high tech industries	Percentage change in R&D productivity and intensity	1. M&A dummy 2. Knowledge base size 3. Knowledge base concentration	1. Related acquisitions 2. Public target acquisitions 3. Cross-border acquisitions	Two-stage Model 1.Propensity score 2.Weighted least squares	1-3 years after M&A	Acquir er	1. Overall positive impact for R&D intensity changes, insignificant for R&D productivity changes 2. In related acquisitions, a large knowledge base tends to increase R&D productivity 3. In unrelated acquisitions, however, this relationship becomes increasingly negative as knowledge base concentration increases 4. High leverage levels raise R&D productivity gains, consistent with enhanced monitoring induced efficiency 5. High leverage growth reduces R&D-intensity, consistent with increased financial constraints and short-termism.

| Danzon et al. (2007) | 383 US M&As from 1988-2000 | R&D investment | 1. M&A dummy
2. Excess capacity due to pipeline gaps
3. Economies of scale
4. The market for corporate control
5. Specific asset acquisition
6. Financing/agency issues | 1. Foreign firm indicator
2. Ratio of cash to sales | Two-stage Model
1.Propensity score matching | 3 years after M&A | Acquirer | Overall no significant impact (firms that merged experienced a similar change in enterprise value, sales, employees, and R&D, and had slower growth in operating profit, compared with similar firms that did not merge) |

Source: see column one

Generally speaking, there are two different views towards the likely outcomes of SAS on the acquiring firm's innovation performance for Chinese firms.

In line with Ahuja and Katila (2001)'s argument, the first group suggests that acquiring firms will not benefit from such acquisitions since it is challenging for Chinese MNEs to manage and integrate the strategic assets (Rugman, 2009). This argument applies to the situation that Chinese firms will take over the control of the target firms in the management stage after the acquisition. For example, the managers and key staff in foreign country are appointed by the acquiring Chinese firms. Therefore, only when the acquired organizations are successfully integrated by Chinese management in the target firm's country can the acquiring firms in the domestic market benefit from the SAS acquisition. In this situation, EMNEs are often lack of experience in the absorption and management process after acqustion and they suffer from cultural and institutional distance (i.e. 'liability of foreignness').

Furthermore, Narula (2012) adds that most of EMNEs lack R&D capabilities and absorptive capacity: the 'ability of a firm to recognize the value of new, external information and assimilate it and apply it to commercial ends' (Cohen and Levinthal, 1990:128). To positively exploit acquired foreign technology, the technological gap between EMNEs and the developed market firm is generally too large. They are, 'unlikely to be able to integrate acquired assets successfully' (Narula, 2012:195).

By contrast, another view suggests that SAS CM&A will positively affect acquiring firms' innovation performance because the primary aim of Chinese MNEs to conduct acquisitions in developed market is to repatriate strategic assets such as technology and

know-how to their domestic markets (Rui and Yip, 2008), they are not interested in further developing in the international market, reverse technology transfer that happened after the acquisition can be quickly localized and put into production in home country. Thus, in the post CM&A stage, the acquired firms are often given enough autonomy (Estrin and Meyer, 2011; Liu and Woywode, 2013), CMNEs usually take a 'light-touch' method to deal with acquired foreign company (Liu and Woywode, 2013). As is stated by Awate et al. (2012), EMNEs use 'knowledge accessing' strategies to seek strategic assets in knowledge rich market and imitate them by using lower cost production techniques in domestic market. It seems that 'light touch' method helps acquiring firms to suffer less from 'liability of foreignness', it is easier for the parent firm to learn and absorb the technology under the friendly organizational culture environment when technical staffs are sent from foreign subsidiary.

2.3. Literature review on firm diversification

2.3.1. Antecedents of diversification

2.3.1.1. Diversification and motivation

According to Ansoff (1965:34), a firm's diversification behaviour is defined as 'the action of extending its boundaries by concentrating on technical capacity or market knowledge or both, which leads to definition of three types of firm's diversification behaviour: horizontal, vertical, concentric, or conglomerate diversification'.

Horizontal vs vertical diversification

Laurila and Ropponen (2003) states that for those firms with horizontal diversification, they are less flexible because they run their business under identical economic environment. The main trigger under such diversification is that firms seeking to diversify their technological range, which leads to a synergy impact, eg., economy of scale and the increasement of market power (Helfat and Eisenhardt, 2004). Williamson (1975) notes that transaction cost can be eliminated by vertical diversification. There are several triggers of vertical diversification. For example, firms' desire to enhance their bargaining power of their products (David *et al.*, 2010), and to expand the sales and increase their profit (Tanriverdi and Lee, 2008).

Motivations of diversification

There are several reasons that may trigger a firm's diversification. For example, firms may want to increase support for the industries, improve the original firm's network capability and mitigate risk that is due to the imperfect information system (Bailey *et al.*, 2008). It is because of the motivation of innovation improvement and the pressure from the competition within the current industry that drive majority of concentric diversification, because organizations try to reinforce their capitals, discover unknown capabilities for themselves and their competition (Hoskisson and Hitt, 2006). There are several factors that may affect the decision of concentric (related) diversification. Kor and Leblebici (2005) propose resource endowment is also important. While Miller (2006) propose that the firm's networks are important reason for concentric diversification. Galan and Sanchez-Bueno (2009) further suggests that processes and systems and other external reasons such as timing of entry, characteristics of the business and the effect of governing may influence the decision of concentric

diversification. In terms of conglomerate (unrelated) diversification, the following elements are widely considered as the main triggers. Chan-Olmsted and Chang (2003) believe antitrust legislation is important, while Kogut *et al.*, (2002) suggest globalization is the main cause. Furthermore, economy of scope, parenting, asymmetry of information (Bailey *et al.*, 2008), and management motivations are also discussed in literatures as the reasons for conglomerate diversification.

2.3.1.2. Level of diversification

Different dimensions of relatedness are firstly introduced by Rumelt (1974). Following this study, *related* diversification and *unrelated* diversification were mentioned in several studies (Hill and Hoskisson, 1987; Peng *et al.*, 2005). Firms are benefited by those related diversification, because they could achieve synergy by sharing similar resources and R&D capability in the same value chain, thus achieving 'economies of scope' (Teece, 1982) for similar products of related businesses (Wan, 2005).

Hill and Hoskisson, (1987) argue that developing financial economies is considered as a motivation for unrelated diversification. Based on current literatures, it is believed that the research for the benefits of unrelated diversification is not conclusive (Peng *et al.*, 2005). Lu and Beamish, (2004) state that unrelated diversification strategy is often taken by firms who faces R&D gaps and competition. Additionally, Chandler (1962) believe that firm structure impacts a firm's diversification decision. While Rumelt (1974) states that internal processes and systems is another trigger on firm's unrelated diversification, which help them increasing bargaining power. Another stream of view from believes that unrelated diversification is driven by a firm's purpose to overcome

capital market failures (Teece, 1982). Later, studies have analysed how a country's regulations to support industry structure (Montgomery and Singh, 1984); how a firm's risk appetite leads to their unrelated diversification (Carrieri *et al.*, 2004). Furthermore, Palmer and Barber (2001) examined how information asymmetry, networking connections and management issues impact unrelated diversification of firms.

2.3.1.3. Mode of diversification

Internal diversification vs M&A diversification

Current study has mainly discussed two alternative modes of diversification: development from inner side of the company and development through external M&As (Lamont and Anderson, 1985). Internal development refers to a firm try to establish a new business based on its internal resources which often includes innovation development. While diversification via M&A strategy needs a firm to assess target firm's advantages and disadvantages (Berg and Pitts, 1979).

A firm's choice of diversification mode is depended on structure and current inside resources capability of the firm and the target industry's features (Brouthers and Hennart, 2007; Rawley, 2010). Other factors are also considered as important determination of a firm's choice of mode. For example, prior knowledge of industry and directors' motivations, information asymmetry, macro environment, political risk of a country, concerns of antitrust, accessibility of additional resources, speed of entry and management values (Yin and Shanley, 2008). In terms of internal diversification, an organization is mainly motivated by resource seeking and strategy changing (Kumar,

2009), while Nayyar and Kazanjian (1993) argue that a firm's M&A diversification decision is often made based on the factors such as supporting industry and the firm's internal system and capabilities.

2.3.2. Diversification and performance

Current study investigating how diversification impact a firm's performance has mostly from strategic management discipline. Comprehensive studies have been done for developed market firms' diversification performance from both domestic and international perspectives (see Table 4).

The first stream of research in this area basically argues that a firm which applies a related diversification performs better than a firm that uses unrelated diversification strategy. The logic underlines such argument is that related diversification provides an excellent mechanism to transfer key technology and knowhow, which is different from unrelated diversification (Rumelt 1974). Additionally, related diversification can achieve synergy effects such as economies of scale and scope (Salter and Weinbold, 1979). However, another stream of view believes that bureaucratic and agency costs problems occur during diversification which may deteriorate the performance (Lu and Beamish, 2004).

Table 4. Summary of developed market post acquisition diversification performance studies

(I stands for Domestic and I stands for International Diversification via M&A)

Title	Result (Increase or not?)	Measurement of post M&A performance	Sample	Diversification included? If so, Focus on which perspective?	Key variable?	Diversification measurement	Result regarding diversification
Kumar (2009) I	No	Production	1299 firms over the period 1993–1997	Yes	Yes	**1PD** = (Noncore business sales in 1997 minus Noncore business sales in 1993)/ Total sales in 1993 **1ID** = (Foreign sales in 1997 minus Foreign sales 1993)/Total sales in 1993	Evidence of endogeneity and a negative association between growth along the two dimensions-production and international diversification
Colombo and Rabbiosi (2014) I	NA	1. Patenting activity 2. Development of new technological competencies 3. Speed in developing technological knowledge. (ranking from 1-5)	31 horizontal M&As happened in Europe from 1987-2001	Yes	Yes	Technological similarity	1.Negative effect of technological similarity 2. In addition, this effect is not mediated by the reorganization of the acquired R&D operations

				Yes	Yes		
Ahuja and Katila (2001) I	Negative for non-technological acquisition	Patent	72 US firms with 534 M&As from global	Yes	Yes	1. Relatedness of acquired knowledge base 2. Absolute size of acquired knowledge base 3. Relative size of acquired knowledge base	1.Positive effect of absolute size of acquired knowledge base 2.Negative effect of relative size of acquired knowledge base 3.Nonlinear impact of relatedness of acquired knowledge base
Geringer *et al.* (2000) I	Yes (in some period of time)	ROA, ROS	Japanese multinational firms from 1977 to 1993	Yes	Yes	Foreign Sales Ratio (FSR), calculated as the ratio of foreign subsidiary sales to total firm sales	While diversity strategies vary between keiretsu and nonkeiretsu firms, performance is not much different. Product diversity has weak effects on firm performance only in one time period, while international diversification has negative profitability and positive growth consequences in some periods
Wan and Hoskisson (2017) I	Yes for less munificent home country environment	ROA, EBIT	sample of firms from six Western European countries	Yes	Yes	Imputed weighted diversification measure.	In more munificent home country environments, product diversification is negatively related to firm performance; In less munificent home country environments, product diversification is positively related to firm performance
Makri, et al. (2010) D	NA	Percentage change of patent quantity, quality and novelty	95 US high-technology M&As from drug chemical and electronics industries in 1996	Yes	Yes	1. Technology relatedness, 2. Science relatedness	1. Positive effect of complementary scientific knowledge and complementary technological knowledge 2. Similarities in knowledge facilitate incremental renewal, while complementarities would make discontinuous strategic transformations more likely

Palich *et al.* (2000) D	Yes!	Different types of measurement	Meta-analysis of 55 studies	Yes	Yes	Accounting and marketing performance	Moderate levels of diversification yield higher levels of performance than either limited or extensive diversification. Support for the curvilinear model; that is, performance increases as firms shift from single business to related diversification, but performance decreases as firms change from related to unrelated diversification
Miller (2006) D	Yes	Market Value, Replacement Costs,,Intangible assets and Tobin's Q	531 sample firms (177 diversified) from COMPUSTAT database	Yes	Yes	A index that is a measure of the dispersion of patent applicability across industries, with those patents weighted by adjusted citation counts and depreciated over time.	Large sample of firms shows the positive relationship between diversification based on technological diversity and market-based measures of performance
Chakrabarty *et al.* (2007) I	Depend on different institution environment and economy environment	ROA with one year lag	Study in six Asian countries at different levels of institutional development	Yes	Yes	Entropy measure: $$E = \sum_{i=1}^{N} P_i \ln \frac{1}{P_i}$$	Diversification negatively impacts performance in more developed institutional environments while improving performance only in the least developed environments
Gary (2005) Both D	No	Profit margin	Simulation	Yes	Yes	Seven managerial diversification strategies	Demonstrates, contrary to existing theory, that diversification strategies based on a very high degree of relatedness can lead to lower performance than less related strategies in some circumstances. Counterintuitively, extracting potential synergies may require additional investment in shared resources

Chari *et al.* (2008) D	Yes	Tobin's q	*InformationWeek*'s IW500 data for 117 firms in 1997	Yes	Yes	Entropy measure: related diversification (RD) measures the extent of a firm's operations in different industries within the same two-digit Standard Industry Classification (SIC) code. Unrelated diversification (UD) measures the extent of a firm's operations in different two-digit SIC codes	Performance payoff to IT investments is greater for firms with greater levels of diversification. Performance payoff to IT investments is greater in related diversification than in unrelated diversification
Purkayastha (2013) D	Different in industries	ROA	Firms affiliated to 100 Business groups	Yes	Yes	Related vs unrelated	(ROA) of firms has a negative relationship with unrelated diversification, while it has a positive relationship in the transportation equipment industry. However, with related diversification, ROA of firms in the chemical and allied products industry has a positive relationship, while it has a negative relationship with firms in the transportation equipment industry
Liebeskind (2000) D	Depend on internal capital market	NA	NA	Yes	Yes	No detailed empirical measuring method	The value of diversification will depend, inter alia, on whether internal capital markets are relatively efficient or inefficient
Hitt et al. (1991) D	No	1.R&D intensity 2.Patent intensity (number of patents divided by sales)	191 US M&As from 1970-1986	Yes	No (Control Variables)	Related and unrelated diversification— with each component defined as: $2Pi \ln(l/Pi)$, i = 1, where Pj is the share of segment i in firm sales and $(1/Pi)$ is the weight for each segment (the logarithm of the inverse of its share)	Negative impact of diversification on innovation

Hitt et al. (1996) D	Overall, no significant impact	1.R&D intensity 2. Intensity of new products introduced	250 US M&As from 1985-1991	Yes	No (Control Variables)	The level of pre-acquisition or pre-divestiture product diversification was used as a control because it has been shown to influence R&D expenditures	No significant impact

Source: see column one (D for domestic, I for international)

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Table 5. Summary of Chinese Diversification Studies

Title	Sample	Theories	Diversification included?	Key variables?	Diversification measurement	Result regarding diversification
Du, Lu and Tao, (2015)	2,798 private-owned enterprises and two case studies	Resource-based View	Yes.	Yes	Dummy variable: 1 means the firm has investment in more than one industry, and 0 otherwise	Firms reporting more severe government expropriation are more diversified
Fan, Huang, Oberholzer-Gee, Smith, and Zhao, (2008)	58,752 listed companies from nine countries including Brazil, China, France, Germany, India, Italy, Japan, UK, and the USA	NA	Yes	Yes	Number of business segments	Chinese state-owned enterprises (SOEs) diversify their operations more aggressively than other Chinese firms. China aside, eight other countries' firms have become less diversified over time
Jiang UNCTAD (2008)	895 Chinese listed companies	Economic rationality, Individual rationality and organizational rationality	Yes	Yes	1.N: the number of industries a firm engaged in 2.HHI: the ratio of revenue from an industry to the total revenue of a firm 3.EI: it is the opposite of HHI 4.DIV: the dummy variable for diversification	The choice of diversification mode is largely based on organizational rationality motivation (to reduce company risks) and individual rationality motivation (in the self-serving interests of the top management); company size, ownership structure, age and industry all have significant effects on degree of diversification
Li, He, Lan, and Yiu, (2012)	1,280 Chinese public firms over 2002–2005	Resource-based View	Yes	Yes	1. Entropy measure: the share of sales in segment*the weight for each segment 2. A company's specialization ratio: the fraction of revenues by its largest single four-digit business segment	1. A strong positive relationship between political connections and corporate diversification 2. The relationship is significantly and positively moderated by the level of state ownership in firms and regional institutional development
Lu, Liu, Filatotchev, and Wright, (2014)	1027 Chinese listed firms during 2003–2009 on the Shanghai and Shenzhen Stock Exchanges	Knowledge based view	Yes	Yes	The extent of firms' investment across countries (the share of investment stock in one country to total investment stock)	1. Chinese listed firms' international diversification is positively affected by their domestic industrial and domestic regional diversification 2. Top management team's prior international experience strengths the impact

Sun, Peng, and Tan, (2017)	11,992 firm-year observations on Chinese listed firms between 2001 and 2011	Institutional relatedness	Yes	Yes	Herfindahl index: sales attributed to foreign region	1. State control during institutional transitions promotes CEOs with political ties to engage in more product diversification 2. CEOs with international experience institutionalize the power from economic freedom via more international expansion
Wu, Pangarkar and Wu (2016)	625 Chinese manufacturing multinationals across multiple industries	Experiential learning, resource-based view	Yes	Yes	Entropy measure: sales in regional market as a proportion of total overseas sales*the weight to the target region	1. Regional diversification positively and significantly predicts global diversification 2. Firm-specific technology and marketing knowhow both increase the likelihood of a firm's moving from regional to global operations 189 3. Technology know-how was found to be more influential than marketing know-how.
Zhou and Delios, (2012)	1,186 Chinese listed firms from 1991 to 2002	Network theory, institutional theory	Yes	Yes	Six diversification categories: single business, dominant vertical, dominant unrelated, dominant linked, related linked, conglomerate	Chinese listed firms are more likely to diversify into conglomerates if: 1. They occupy a central position in the network 2. They have higher levels of government shareholding; and 3. The firms with which they have network ties diversify
Chakrabarti, Singh and Mahmood, (2007)	six East Asia countries— Indonesia, Japan, Malaysia, Singapore, South Korea, and Thailand—for the 1988–2003 Period, 19 manufacturing industries	Institutional theory	Yes	Yes	Entropy measure (Jacquemin and Berry, 1979; Palepu, 1985), calculated as follows: $E = \sum_{i=1}^{N} P_i \ln \frac{1}{P_i}$	1.Diversification negatively impacts performance in more developed institutional environments while improving performance only in the least developed environments 2. Even in the least developed institutional environments, diversification offers limited benefits when an economy-wide shock strikes 3. Though successful diversifiers are sometimes affiliated with business groups, diversification is associated with poorer performance for both affiliated firms and independent firms

Sauce: Column one

2.4. Home country effects as the determinants of post-acquisition performance

Following from the above, several researchers have provided further explanation as to why and how EMNEs engage in SAS. These studies note that emerging market home country effects are different from those of the developed market (Cuervo-Cazurra, 2012; Narula, 2012; Ramamurti, 2012), and can affect firms' SAS OFDI behaviour quite significantly. For example, first of all, much effort has been made to analyze the role of home country government support. It has been suggested that EMNEs, especially Chinese EMNEs, have a close relationship with the state, and are facilitated by the governments (Wang et al., 2012). Secondly, Yiu (2011) and Chari (2013) argue that business groups in the home country affect EMNEs' SAS motivations and strategy. Such groups facilitate EMNEs' linkage and leverage with, and learning from, foreign firms. Thirdly, Hertenstein et al. (2015) add another important HCE, namely international experience of linkage in the home country. They argue that existing networks with developed market firms will affect EMNEs' OFDI strategy, including their SAS motivation. While current studies have explored how those home country effects shaping EMNEs' OFDI strategy, few research has been done to find out if they would also continue to influent firm's performance after the acquisition. There is huge research gap in this area. Therefore, the detailed investigation regarding the role of home country effects on firm's post-acquisition performance will be examined in more detail in the two papers of Chapter 4 and 5.

Chapter 3 Methodology review

3.1. The problem of endogeneity in international business research

It is difficult to conduct empirical study in international business (IB) because researchers always encountered *endogeneity* problem when they want to examine if certain IB decision/phenomenon triggers a particular outcome (Reeb, Sakakibara and Mahmood, 2012). Scholars might, for example like this research, be interested in how EMNEs' strategic asset seeking internationalization strategy influence future firm performance. Ideal research setting for such analysis might choosing some firms to be EMNEs randomly (treatment group) and then other firms to be domestic firms that did not conduct OFDI (control group). And then compare those two groups of firms' performances. However, in reality, it is costly to do such experiment. Instead, scholars often estimate the relation between an organization's performance and a measure of firm-level internationalization among a large sample of firms by applying cross-sectional regressions to investigate the result of the *treatment effect* (Angrist and Krueger, 2001). However, such approach leads to an interpretation issue-it is difficult to test causal effects for the question of interest as the sample is non-random (Reeb, Sakakibara and Mahmood, 2012).

3.1.1. Non-random sample and non-random treatment problem

The major problem for applying the cross-sectional regression over the sample is that the samples of treatment group and control group are not chosen at random. The non-random sample problem refers to the fact that the non-random sample always has a certain organizational pattern. For example, the firms that engaged in EMNEs' internationalization strategy always have excellent performance (i.e. high profitability/superior innovation capability). While on contrary, we need to investigate how EMNEs' internationalization would impact their performance, which leads to the problem of reverse causality. This leads to a non-random treatment problem, as such, a firms' internationalization impact on their performance in the regression would be inconsistent, which would mislead the true hypothesis (Woolridge, 2010). Therefore, the final results might be totally inaccurate, and lead to wrong policy implications (Reeb, Sakakibara and Mahmood, 2012). For those papers that did not consider non-random assignment problem, they were rejected by reviewers for high-quality academic journal such as 'Journal of International Studies' (Reeb, Sakakibara and Mahmood, 2012). For research in IB topic, they mainly focus on analysing the causal effects of certain IB phenomenon. Since such research typically includes observational data, IB researchers tend to pay more attention to set up research designs that best assesses a controlled experiment. Therefore, researchers need to improve their capability to make causal inferences (Angrist and Krueger, 2001). Below is a review of the main methods that are commonly used to eliminate the common non-random treatment problem or so called commonly known '*endogeneity*' problem. Because in this

thesis, the first paper applies PSM plus DID and inverse probability of treatment weighting (IPTW) in robustness test and the second paper uses event study and BHAR method, these methods will be followed by a detailed discussion in the following sections.

3.1.2. Fixed effects, Instrumental variable and GMM

There are several methods that have been applied in international business studies to solve the endogeneity problem. The first and mostly used one is the fixed effects (Woolridge, 2010). It is introduced in many econometric textbooks to deal with the endogeneity problem with panel data (e.g., Greene, 2008). This method contains a dummy variable for every sample such as a firm and count on changes of the causal variable within that firm. Fixed effects are simple and straight forward to use, however its capability to solve the non-random treatment issue is determined by the nature of the endogeneity problem. It is believed that if under the situation that the sample firms' features do not change in a quick speed over time, then, the use of fixed- effects is not appropriate to solve the endogeneity problem (Zhou, 2001). Therefore, it will be hard to figure out the real relationship between the treatment factor and the dependent variable.

Secondly, instrumental variable (IV) is another commonly used tools to solve the endogeneity problem in IB studies. However, it is not easy to find the most suitable instrumental variable. In the case of the first paper in Chapter 4, an instrument

would need to be something that is significantly related to the likelihood of being in the treatment group, involved in SAS CMA, but unlikely to be related to innovation performance. It is difficult to find one and sometimes, it seems that the IV is found out to be some other endogenous variables at the end.

Thirdly, GMM is a well-recognised method to eliminate the endogeneity issues. Based on the review of 80 academic papers that try to solve the endogeneity problem in IB studies, Li et al., (2021) suggest that system GMM estimator performs better than fixed effects in terms of dealing with such problem. However, its performance gets weaker if the focal effect is small (Li et al., 2021). If in the GMM model, the main coefficient is insignificant, cautions are needed to interpret the findings because of the low statistical power of the system GMM estimator. In addition, when applying GMM, there are some restrictions. For example, there will be no internal instruments could be used if the time periods that included in the panel data is less than three (Li et al., 2021). In their paper published in Journal of International Business Studies, they also compare GMM with propensity score matching (PSM) method. There results show that PSM is very powerful and effective to deal with endogeneity when it comes from time-varying omitted variables, especially for the causal effect studies. Therefore, considering the advantages and disadvantages of different methods to deal with the endogeneity problem in IB research, propensity score matching (PSM) method is used in this study which will be discussed in detail below.

3.2. Propensity score methods

Propensity score method is the most commonly used model to eliminate the non-random treatment problem (Li, 2012). It is firstly proposed by Rosenbaum and Rubin (1983). It has been broadly used in social science disciplines such as psychological (Wolfe and Michaud, 2004), educational (Powell, Hull and Beaujean, 2018) and economics (Dehejia and Wahba, 1999) —to the management area. Until 2020, the Google scholar shows in total 27,113 publications cited Rosenbaum and Rubin (1983)'s work. Despite the wide application of the propensity score matching method among various disciplines, it is not widely been employed by IB scholars. After reviewing papers in strategic management discipline regarding the impact of M&A on acquiring firms' innovation performance (see Table 6), propensity score matching method (PSM) and inverse probability of treatment weighting (IPTW) are applied in the first paper of this thesis.

Table 6. A review of papers applying propensity score method in strategic management discipline analysing the impact of M&A on firm's innovation performance

Bertrand (2009)	123 cross-border M&As from 1995-2001; target country-- France	The difference between MA firms' Change in R&D expenditure before and after M&A and that of non-MA firms	Acquiring firms and non-acquiring firms	Control variables for propensity score matching: Market size, firm size, advertising intensity, export intensity, R&D intensity, R&D skill, capital intensity, debt profitability	1.Propensity score matching
Valentini (2012)	159 US M&As from 1988 to 1996 in medical devices and photographic equipment industry	The difference between acquiring firms' change in patent counts, patent citation, patent generality, patent originality before and after M&A and that of non-acquiring firms	Acquiring firms and non-acquiring firms	Control variables for propensity score matching: log of Tobin's q, R&D intensity, free cash flow, firm size, prior patenting, four digit SIC codes, year dummies	1.Matching estimator— propensity score
Szucs (2011)	265 acquiring firms and 133 target firms from 1990-2009 in Europe	The difference between acquiring firms' change in R&D intensity before and after M&A and that of non-acquiring firms	Acquiring firms and non-acquiring firms	Control variables for propensity score matching: R&D intensity, R&D growth, total assets, employees, profitability	1.Propensity score 2.DID approach- (difference in difference)
Colombo and Rabbiosi (2014)	31 horizontal M&As happened in Europe from 1987-2001	1. Patenting activity 2. Development of new technological competencies	1. Technological similarity 2. Acquired firm's R&D rationalization	1. Non-innovation related motives 2. Relative size of the firm 3. Dummy cross-border M&A	PLS method using Smart-PLS

		3. Speed in developing technological knowledge. (ranking from 1-5)	3.Acquried firm's RD top manager replaced 4. R&D productivity improvement of the combined firm 5. R&D personnel disruption in the combined firm	4. Dummy previous link 5. Target dummy for high-tech industry 6. Technological similarity 7. Year	
Desyllas and Hughes (2010)	2624 deals (US as acquirer, target all the companies in the whole world (including US)) from 1984-1998 in high tech industries	Percentage change in R&D productivity and intensity	1. M&A dummy 2. Knowledge base size 3. Knowledge base concentration	1. Related acquisitions 2. Public target acquisitions 3. Cross-border acquisitions	Two-stage Model 1.Propensity score 2.Weighted least squares
Danzon et al. (2007)	383 US M&As from 1988-2000	R&D investment	1. M&A dummy 2. Excess capacity due to pipeline gaps 3. Economies of scale 4. The market for corporate control 5. Specific asset acquisition 6. Financing/agency issues	1. Foreign firm indicator 2. Ratio of cash to sales	Two-stage Model 1.Propensity score matching

Based on the statistical literature, there are four methods. The first three methods of propensity score (propensity score matching-PSM, stratification on the propensity score, and covariate adjustment using the propensity score) were

introduced by Rosenbaum and Rubin (1983). And then inverse probability of treatment weighting (IPTW) method was later introduced by Rosenbaum (1987). Table 7 is a comparison of different methods of applying propensity score. By applying empirical examples and Monte Carlo simulations, Walker et al., (2006) find that PSM method and IPTW method eliminate the systematic differences between treated and non-treated groups to a higher degree than stratification or covariate adjustment methods. Thus, in the first paper of this thesis, propensity score matching (PSM) plus difference in difference (DID) is used in estimating the impact of SAS CM&A on Chinese acquiring firms' innovation performance, IPTW is also applied to test the robustness of the results. The following part will focus on explaining how to conduct the above two methods of propensity score.

Table 7. Different ways to use propensity score methods

Matching	Stratification	Covariate Adjustment	Inverse Probability of Treatment Weighting
• Forming matching sets of treated and untreated subjects with similar values of PS • Different approaches for matching exists • The most common approach is the nearest neighbor pair matching (1:1) without replacement within specified calipers • A caliper of 0.2 standard deviations of the logit of the propensity score is preferable • No assumption of linearity between PS and the outcome • Could reduce sample size since for some treated patients matches may not be found	• Sub-classifies subjects based on quintiles of the PS • Compares outcomes between treated and untreated subjects within strata • Common approach is 5 equally sized strata • Assumes that within each stratum, treated and untreated subjects have similar distribution of baseline covariates • No assumption of linearity between PS and the outcome • Approximates matching without the risk of losing unmatched patients	• Most commonly used in the medical literature • Treatment effect is estimated using a regression model that adjusts for the PS • Wrong assumptions about the relationship between PS and outcome (e.g. linearity) could lead to biased estimates. • Should be used with caution	• Generates pseudo-population in which the covariate combination is balanced between groups • The subjects contribution equals 1/PS for treatment group and 1/(1-PS) for control group • Treated patients with low PS and control subjects with high PS obtain high weight, leading to imprecise estimates and wide CI • Allows a population based interpretation of results

Eltonsy, 2015:18

3.2.1. Propensity score matching (PSM) method

In order to estimate a propensity score, the covariates need to be determined first. It is believed that the covariates are important on the estimated results (Heckman, et al., 1997). Simith and Todd (2005) suggest that it is beneficial to know relevant theory and get reference from previous research. Then based on the covariates, propensity scores are calculated by a logit/probit model or other related models for both the treatment and non-treatment groups. Once each firm is allocated by a propensity score, they will be matched based on the scores. However, before matching, the sample need to be tested if it is balanced or not. If so, then, we will move to the next step to pair the firms based on the propensity scores. There are different approaches for propensity score matching, while one-to-one matching is most commonly used, where the firms are paired if their scores are the nearest neighbour within specified callipers. Finally, by calculating the outcomes between the treated and non-treated groups, we will get the impact of the certain 'treatment' that we want to investigate. For continuous and dichotomous outcomes, treatment effect can be calculated as the difference between the mean outcome and the proportions of subjects with the event for treated and non-treated firms respectively. Figure 5 is a detailed instruction of steps to conduct propensity score matching.
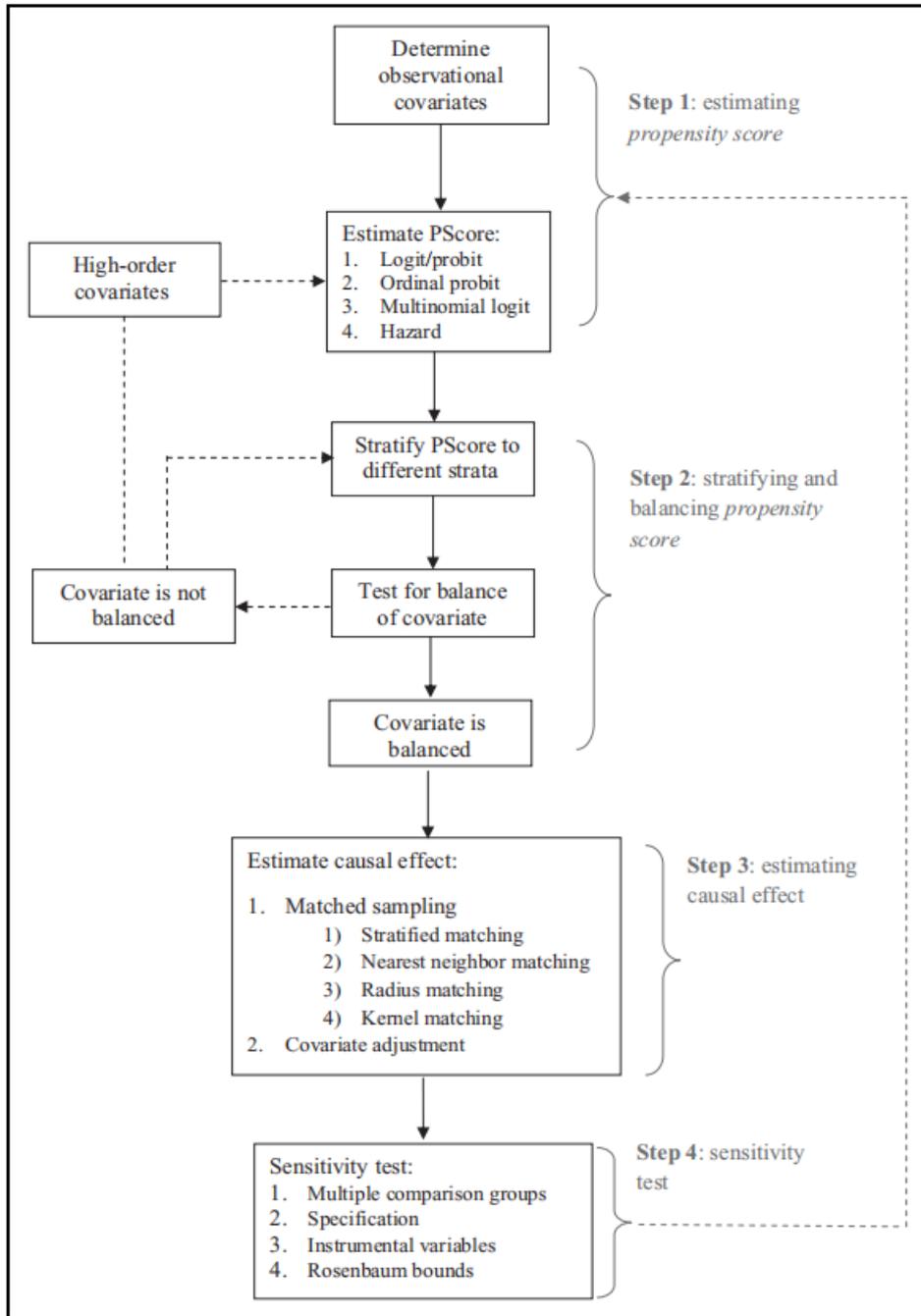
Figure 5. Steps to use PSM (Li, 2012:8)

3.2.2 Inverse probability of treatment weighting (IPTW) method

IPTW method was firstly established by Rosenbaum as a method of model-based

direct standardization. The IPTW is based on creating a pseudo-population based

on propensity score weights in which the distribution of covariates is independent of the treatment assignment. The inverse probability of treatment is mathematically defined as E/PS + (1-E)/(1-PS), where E denotes the dichotomous treatment or exposure status and PS denotes the propensity score. As a result, the individual weight will be equivalent to the inverse of the probability of having the treatment that each sample received in reality.

3.3. Event study

The purpose of applying an event study is to '*evaluate the extent to which investors make excess or abnormal stock returns from an event that brings new informational content, where an abnormal return is the difference between the observed return and the return expected in the absence of the event, predicted by an appropriate benchmark asset pricing model*' (Fama, 1970:124). There is a premise for the application of this methodology: the market should be semi-strong efficiency. Therefore, two assumptions are made as following. First, stock prices are the reflection of all public data. Second, stock prices would change quickly as a reflection of market news whenever it is available (Fama 1970). Consequently, the changes of the stock price capture the value that is added to the acquiring firm, which is caused by the new information included in the announcement.

Although the method was created by researchers in financial discipline, it has been widely used in social sciences, such as management, accounting and economics, and operations systems (Yang et al. 2012). Especially, in recent years, event study has been broadly applied in international business discipline to investigate the effect of OFDI of EMNEs on firm performance (see Table 8 below).

Table 8. Summary of emerging market CM&A studies that apply event study method

Paper	Result (Increase or not?)	Sample	Factors considered	Model	Observation period of performance
Li et al. (2016)	Yes!	China Shenzhen and Shanghai stock market2000-2011	1. Culture distance, 2. Dummy of greater China plus Singapore dummy, 3. Absorptive capacity	Event study	Short-term (measured by days
Ning et al. (2014)	Yes!	Hong Kong Stock Exchange 1991-2010	1. Ownership structure 2. Characteristics of control 3. Internal control mechanisms	Event study	Short-term (measured by days)
Bhagat et al. (2011)	Yes!	Acquirer's firm value	1. Classical factors 2. Governance factors	Event study	Short-term (measured by days)
Kling and Weitzel, (2011)	Yes!	China: Shanghai, Shenzhen Hong Kong 2001-2008	1.Deal related variables, 2.Firm-specific variables, 3.Governance Variables	Event study	Short-term (measured by days)
Gubbi et al. (2010)	Yes!	Indian 2000-2007	1. Developed market acquisition 2. Economic distance 3. Institutional distance	Event study	Short-term (measured by days)
Boateng et al. (2008)	Yes!	China: Shanghai and Shenzhen 2000-2004	No further analysis on factors' impact on post M&A performance	Event study	Short-term (measured by days)
Chen and Young (2010)	No!	China: Shanghai, Shenzhen Hong Kong 2000-2008	Government support	Event study	Short-term (measured by days)

| Aybar and Ficici, (2009) | No! | 58 EMNEs 1991-2004 | 1. Investment size, level of control in target, the target status, the level of international experience, good corporate governance, 2. Industry characteristics, strategic focus of EMMs; the type of expansion 3. Target country characteristics | Event study | Short-term (measured by days |

It is quite often to see a study applying long-term event window to test the impact on share prices that come from an event. In their event study review article, Kothari and Warner (2008) indicate that almost half of the total event studies published in top journals of finance discipline, have applied at least one-year and even longer event window to check the effect of a certain event on firm's share prices. However, by contrast, in management area such as marketing and especially international business researchers (see Table 8 above) only apply short-term event window, because they view the market as fully efficient and make the assumption that the impact of the event will be captured quickly by the market, thus reflecting on the share price of the firms quickly. However, event studies in international business barely apply long-term event windows. Thus, this paper applies long-term event window, which will be discussed in detail in Chapter 5. Besides, instrumental variable approach is another useful method to eliminate endogeneity problems. While this research mainly focusses on PSM, event study and BHAR method, instrumental variable approach is not discussed in detail here.

Chapter 4: How do Chinese MNEs combine knowledge and resources to exploit International strategic asset seeking M&As to improve domestic innovation performance?

Abstract: It is argued MNEs from emerging markets acquire strategic assets via cross-border M&As with a view to strengthening their domestic innovation capacity. This presents a paradox, however, as EMNEs are often considered to lack both the knowledge, resources and absorptive capacity to integrate and exploit such acquisitions and engage in reverse knowledge transfer. This paper applies the resource and knowledge-based views to consider, in particular, how business group affiliation, international experience and ownership structure affect these domestic innovation outcomes. Empirically, using propensity score matching (PSM) and difference-in-difference (DID) methods, this paper finds evidence of positive impacts of SAS CM&A on patent counts and citations in both cases. This paper also finds firms with international experience and affiliated with business group perform better, and privately-owned firms outperform state-owned firms in terms of quality of innovation outputs (i.e. patent citations). Application of resource and knowledge-based perspectives helps shed further light on the types of MNEs from emerging markets that may successfully undertake strategic asset seeking acquisitions that may lead to firm-level catch-up.

Key words: China post-acquisition innovation performance, RBV, KBV, international experience linkage, business group, ownership

4.1. Introduction

Emerging market (E)MNEs have been active in conducting outward foreign direct investment (FDI) with the aim of acquiring knowledge and resources, particularly for the purposes of achieving technological upgrading and firm-level catch-up. In the light of China's selective industrial policies embodied in its Manufacturing 2025 policy, MNEs from China have received considerable attention. Indeed, the supposedly aggressive strategic asset seeking strategies of Chinese MNEs makes headline news regularly, with accusations of an uneven playing field between Chinese and foreign counterparts standing out prominently in current geopolitical debate. The Chinese business group Midea's acquisition of Kuka, a German national champion in high-tech robotics, is a high-profile case in point. The deal led to an outcry in Germany, leading Angela Merkel to seek changes to domestic and EU scrutiny processes of sensitive cross-border M&As.

Outside the policy arena, scholars of International Business have also been disgruntled with traditional theory and have attempted to explain the rise of EMNEs by proposing new theoretical perspectives. According to the springboard perspective (Luo and Tung, 2007) and the link, leverage and learn (LLL) model (Mathews, 2006b), for example, EMNEs seek strategic assets (including technologies and intangible assets, like those acquired by Midea Group) to facilitate firm-level catch-up. The newly proposed theory, it is argued, generally stands in contrast to predictions from mainstream international business theory like the OLI model. The traditional approach mainly predicts that organizations conduct OFDI based on their firm specific assets. EMNEs, however, are supposedly different, because they internationalize to 'augment', rather than to 'exploit'

such advantages (Luo and Tung, 2007 and Matthews, 2006).   As Mathews (2006a), used as an illustrative example, puts it:

'*Linkage, leverage and learning are strategies of innovation that are available to latecomer firms. They enable the firms to make connections with the wider global economy, and draw from these linkages skills, knowledge and technology resources that would otherwise lie well beyond the reach of the developing firm. These strategies are employed in pursuit of the strategic goal of industrial catch-up.*'

Mathews (2006a: 329-330) (emphasis added)

Indeed, by acquiring such strategic assets EMNEs seek to obtain resources that are valuable, rare, inimitable and non-substitutable (VRIN) (Barney, 1991), including both tangible and intangible elements – with a view to enhancing their competitiveness. A specific focus the ability of EMNEs to upgrade their innovation capabilities and engage in firm-level catch-up at the technological frontiers (as opposed to simply imitating existing technologies and using lower cost labour) has been emphasized in these approaches (Luo and Tung, 2007, 2018; Matthews, 2006)

A foreign acquisition strategy along these lines, however, also implies EMNEs must be able to successfully absorb and exploit internationally acquired strategic assets and engage in forms of reverse knowledge transfer. They, must, in other words, possess specific types of knowledge, management capabilities and resources related to the exploitation of such acquisitions. As Jindra (2016:214) puts it, whether EMNEs

'*generate reverse technology transfer and to what extent this in turn increases the rate of their innovation and profitability seems to be a decisive matter to be addressed in future research'* (emphasis added). The purpose of this paper is to further explore the question of impacts on innovation outputs of acquiring emerging market firms. While an embryonic body of research has already explored this question (Anderson et al. 2015; Amendolagine et al., 2018; Yi et al., 2020; Dong, Miao and Zhang, 2021), this paper looks to contribute further to it by drawing from resource and knowledge based views (hereafter RBV and KBV) to analyze SAS acquiring firms' long-term innovation performance and the role of home country effects to flesh out in greater detail the types of Chinese firms that can benefit from technology seeking foreign M&As. Such deals, of course, pose numerous challenges. They often involve psychically distant developed market target, involving significant liabilities of foreignness, as well as a notoriously challenging entry mode (i.e. acquisitions), which may involve integrating two very foreign firm-level cultures. RBV and KBV approaches, however, have identified emerging market diversified business groups as microeconomic units of growth, possessing key knowledge and resources that may enable EMNEs to catch-up in emerging market contexts (Guillen, 2000; Cuervo-Cazurra, 2012). This paper considers in particular how business group affiliation influences innovation outcomes. In addition, this paper considers the impacts of prior international experience and learning as additional key resource EMNEs may draw from to successfully engage in reverse knowledge transfer. Finally, in China ownership class (private versus state-ownership) significantly impacts access to key resources (i.e. selective industrial policies, like China Manufacturing 2025) and may influence firm-level catch-up strategies. This paper considers impacts of different ownership types on reverse knowledge transfer and subsequent enhanced innovation performance at home.

The contributions of this study are four-fold. Firstly, unlike other studies that automatically assume all firms conduct OFDI in developed counties are seeking strategic assets, this study differentiates the strategic asset seeking motivation deals from deals with other motivations, thus highlighting the '*innovation*' outcome that is directly derive from SAS deals. Secondly, unlike most previous studies that only focus on short-term performance, this study specifically focuses on the *long-term innovation* outcome of SAS Chinese acquirers, which are the 'real' strategic asset seeking innovation outcome. The results enrich the international business and strategic management literature by empirically showing that strategic asset seeking related deals may well be motivated by the hypothesised strategic intent to catch-up, thus contribute to new EMNE theories such as spring-board perspective (Luo and Tung, 2007) and LLL model (Matthew, 2006b). Thirdly, while there are some mainstream studies look at the impacts of technology seeking on domestic innovation performance in Chinese MNEs, questions regarding 'which firms are more able to benefit from such improvement' and 'why they can be benefited' are still unclear. Although some study have tried to look into the mechanism behind the performance by analysing knowledge base/R&D intensity (Li et al., 2016; Amendolagine, 2018; Li, Lee and Park, 2020), location choice (Piperopoulos et al., 2018; Fu, Hou and Liu, 2018; Dong, Miao and Zhang, 2021) or organization learning environment of acquirers (Yi et al., 2020), acquiring firms' home country effects are overlooked, while it has emphasized by many researchers as home country effects are the most significant different of emerging market when comparing with developed market (Cuervi-Cazurra, 2012). This study moves the subject forward to identify the important role of domestic business group affiliation and prior experience, as well as ownership classes, which shed further light on the performance outcomes of Chinese international technology seeking acquisitions.

In addition, when applying framework to analyse the above factors, current research mainly focuses on analysing the role of absorptive capacity from resource-based view (Li et al., 2016; Amendolagine et al., 2018; Hong et al., 2019; Li, Lee and Park, 2020), or they only analyse solely based on institutional based view such as location choice (Piperopoulos et al., 2018; Fu, Hou and Liu 2018; Deng, Miao and Zhang, 2021), institutional differences (Anderson et al., 2015; Huang and Zhang, 2020) or apply a knowledge based view (organizational learning) (Yi et al., 2020) to figure out what factors that may moderate the impact of OFDI on home country firm's innovation performance. However, only focusing on one aspect could not fully explain the complex mechanism behind the phenomenon, current research needs a combination view by applying both RBV and KBV, while this paper fills in such gap. Finally, this paper adopted an established method (PSM+DID) from other discipline to account for endogeneity, adding methodological richness to the approach. Empirically testing how international technology related M&As influence innovation performance is challenging owing to biases introduced via endogeneity when employing standard econometric analysis. Propensity score matching (PSM) and difference-in-difference (DID) methodologies, however, provide ways of circumventing these problems. Finally, from a policy perspective, moreover, this considers implications of the adoption of China's Manufacturing 2025 selective industrial policies for developed market MNEs.

This paper uses a longitudinal sample of 99 SAS CM&A technology seeking deals and a control sample of 1,686 non-acquiring Chinese firms. The paper firstly outlines the hypotheses, drawing from RBV and KBV perspectives. Second, followed by an explanation of the sample and methods employed. And finally, results and discussion are illustrated.

4.2. Literature review and hypothesis development

4.2.1. Chinese acquirers' post-SAS CM&A innovation performance

Generally speaking, there are two divergent views regarding the likely outcomes of SAS on the acquiring firm's innovation performance for Chinese MNEs: one positive the other negative. First, on the negative front, somewhat in line with early findings like those of Ahuja and Katila (2001)'s, some have suggested it is difficult for Chinese MNEs to (i) run the strategic asset rich (often) developed market businesses that are acquired (Rugman and Li, 2007; Rugman, 2009) (ii) absorb and integrate the strategic assets to engage in reverse knowledge flows. Only when acquired firms are successfully integrated by the Chinese management in the foreign country can the acquiring firms in the domestic market benefit from the SAS acquisition. However, CMNEs are often lack of management experience after acquisition and they suffer from cultural and institutional distances (i.e. 'liability of foreignness'). Furthermore, Narula (2012) adds that many EMNEs lack R&D capabilities and absorptive capacity. To positively exploit acquired foreign technology, the technological gap between EMNEs and the developed market firm may generally be too large. As a result, it is difficult and they have less possibility to manage the strategic assets successfully (Narula, 2012). As such, Chinese MNE acquiring firms will not benefit from such acquisitions, contrary to ideas popularized in the LLL and springboard perspectives (Luo and Tung, 2018; Mathews, 2006).

On a more positive note, however, many within the international business literature, such as Luo and Tung's (2007; 2018) 'springboard' perspective and the 'link leverage

and learn' argument of Mathews (2006), have been more upbeat about the possibilities of Chinese MNEs learning from foreign acquired technology rich firms to engage in firm-level catch-up. This view suggests that SAS CM&A will positively affect acquiring firms' innovation performance because the primary aim of Chinese MNEs when acquiring business in developed countries is to repatriate intangible strategic assets to their home market, which they can leverage to reap abnormally high profits if domestic market protection is afforded to them by their domestic government (Rui and Yip, 2008). Somewhat akin to an infant industry argument, Chinese MNEs can use their imperfect domestic capital markets (i.e. controlled by state banks) and tariff protection to make supernormal profits owing to pent-up domestic demand for cutting edge products (i.e. Kuka's industrial robots). Acquired foreign targets are thus provided with ample autonomy in the post M&A stage so they can maintain their operations in similar way to that in the pre-acquisition period (Liu and Woywode, 2013). Chinese MNEs may therefore generally take a 'light-touch' method to deal with the acquired foreign company (Liu and Woywode, 2013). As stated by Awate et al. (2012), EMNEs use 'knowledge accessing' strategies to seek strategic assets in knowledge rich market and imitate them by using lower cost production techniques in domestic market. It seems that 'light touch' method may help the acquiring firms to deal with 'liability of foreignness', while at the same time making it is easier for the parent firm to learn and absorb the technology under a friendly and stable organizational culture.

Interestingly, an increasing number of empirical studies supports this positive interpretation. It shows, for example, that CMNEs have successfully perform better due to the reverse knowledge transfer related to SAS OFDI. For instance, Anderson et al. (2015) have found a positive outcome of Chinese CM&As on parent firm patent counts.

Later, several studies focus on CMNEs have also show positive results, but their samples are mainly province level. For example, Li et al., (2016) has investigated the effect of OFDI on Chinese enterprises' innovation performance in province level (yet firm level performance is still lack of investigating). Similarly, Li, Lee and Park (2020) provide supportive evidence of both IFDI and OFDI on China's reginal innovation performance based on a sample of 30 provinces in China between 2003-2017. In addition, Huang and Zhang (2020) also investigate the impact of both IFDI and OFDI in Shandong province from 2002-2007. Fu, Hou and Liu (2018) prove that Chinese firms in Guangdong province benefit from OFDI in terms of their innovation performance by investigating the sample of 341 firms. The data they use is also province level data of 31 provinces between 2004-2014. Their results also give supportive evidence of OFDI on firm's home country innovation performance.

Recent studies have paid much attention to the relationship between the subsidiary and the parent firm. Their results prove the CMNEs are capable of transfer managing the reverse technology transfer from subsidiary to home country, thus improving the home country innovation performance. For example, Piperopoulos et al., (2018) investigates the impact of OFDI on Chinese MNEs' subsidiary (target)'s innovation performance. Their results prove that Chinese MNEs' subsidiaries do benefit from such acquisition, and such advantages are more significant in developed countries. Hong et al., (2019) conduct research also on the impact of reverse technology spill over on domestic R&D expenditure of OFDI firms. Their findings indicate that there is a positive impact of

OFDI when the host countries are located in developed market. By conducting research on a sample of Chinese OFDI firms between 2005 and 2015, Yi et al., (2020) highlight the important role of institutional distance and organizational learning on those firms' innovation performance in both subsidiary and parent firms. Dong, Miao and Zhang (2021) use PSM and DID method to analyse the reserve technology spill over of OFDI on Chinese firm's innovation performance in home country. Their results give supportive evidence and they mainly focused on the factors such as location choice and institutional factors such as acquiring firm's ownership structure.

In general, while negative and positive viewpoints co-exist on post M&A innovation consequences, empirical research to date tends to support the hypothesis that Chinese MNE can enhance their innovation outputs domestically when they engage in foreign technology seeking FDI. In light of extant empirical evidence and theoretical predictions, including the LLL and Springboard perspectives, this paper hypothesizes that the SAS acquisition will have positive domestic impacts on innovation outputs.

Hypothesis 1: Technology related strategic asset seeking M&A deals will positively affect the domestic innovation performance of Chinese acquiring firms.

4.2.2. Which Chinese firms possess the resources and knowledge to better exploit foreign technology rich acquisitions?

As noted above, a body of literature shows that Chinese MNEs do indeed benefit from SAS related M&As. But which particular Chinese MNEs are best positioned to benefit most? Which firms possess the resource strength to maximize the potential of such deals? Extant IB (International Business) literature on SAS related FDI suggests there may be important additional factors that may influence the ability of EMNEs to benefit from strategic asset related international acquisitions (i.e. the LLL model and the 'springboard' perspective (Luo and Tung, 2007).

4.2.2.1. Experience of international linkages and networks

A successful M&A is determined by a firm's ability to manage the ex-ante and ex-post acquisition challenges (Malhotra and Gaur, 2013). Scholars have discussed prior international experience as the critical resources for EMNEs' internationalization. International experience, ranging from import and export, OEM (original equipment manufacture), ODM (original design manufacturing) or OBM (original brand manufacturing) to cooperative alliances and equity joint ventures supported by government, and participation in global supply chains, may potentially facilitate EMNEs in improving their 'ability to identify and understand' (Deng, 2010) targets' technology and to build a solid foundation to absorb and explore the acquired technology in the post-acquisition process. Prior international experience, moreover, offers experience of OFDI strategies such as when and how to enter the market, how to manage and develop subsidiary capability, and how to manage international alliances

(Peng, 2009). Thus, prior international experience may provide EMNEs with significant knowledge and capabilities prior to the acquisition and may lead to better innovation performance outcomes when compared to those have little or no prior international experience.

The KBV approach suggests that international experience of an organization shows an organization's particular intangible (tacit) knowledge that is hard to replicate (Barney, et al., 2001). As experience offers path dependent managerial competencies, organizations with more international experience are in a better position to conduct outward FDI (Geringer, Tallman & Olsen, 2000). Mathew's (2006a) LLL model, for example, typifies this reasoning. It argues inward internationalization, via iterations of linking and learning, will lead to better innovation outcomes for firms attempting to catch-up. By repeating the steps of linking, leveraging and learning, firms can improve their competencies and finally 'become advanced players themselves' (Mathews, 2006a: 314). The close cooperation with foreign firms within their networks potentially offers an useful mechanism to conduct technology transfer to local partners and may help them to achieve internationally competitive standards (Simonin, 2004; Child and Rodrigues, 2005), thus allowing them to internationalize and reducing their 'liability of foreignness' (Meyer and Thaijongrak, 2013).

Foreign minority equity participation in Chinese firms has a positive impact on firms' innovation performance (Choi, Lee and Williams, 2011). Foreign shareholders may also provide several types of support to Chinese firms, including technical collaboration, sharing of management resources, and the selection of foreign board managers (Choi, Lee and Williams, 2011: 444). In the post-acquisition process, those firms with foreign

shareholders can receive help from foreign partners to develop their 'ability to assimilate and integrate' acquired firms (Deng, 2010). We therefore hypothesise that acquiring firms with significant international linkages, either via foreign equity participation, trading or subcontracting as part of a global supply china, will realise better domestic innovation performance via reverse knowledge transfer from their foreign acquisitions.

> *Hypothesis 2a. Chinese acquirers with accumulated experience of foreign linkages in their domestic market will be better able to reap higher innovation returns in their domestic market via reverse knowledge transfer from the acquired strategic assets relative to acquirers that have no such experience.*

4.2.2.2. Business group affiliation and post-acquisition innovation performance

Tangible and intangible resources of BGA

RBV divides resources into two main categories: tangible and intangible assets (Central to Penrose's, 1959), further work illustrates both types of assets in detail (Hall, 1993 and Ferna´ndez et al., 2000), while KBV highlights the role of intangible assets (Kogut and Zander, 1992), it further emphasises how knowledge is managed is more important to firm performance, especially innovation performance (Zack, 2003, Jenney, 2005). Emerging market business groups are in a better position to access both tangible and intangible assets and have superior internal talent management systems, which are more likely to leverage and learn from the acquired assets than standalone firms. Indeed, many work have indicated the importance of business groups in China and proved the

positive impact of business groups on both financial performance (e.g., Yiu et al., 2005) and innovation performance (e.g.,Choi et al., 2014; Wang et al., 2015) of affiliated firms. This provides acquiring firms sufficient funds (e.g. profit), prior innovative capability (e.g. patents), group wide talent and intangible reputational capital (e.g. brands, customer relationship and the distribution channel) (Belenzon and Berkovitz, 2010) to leverage the acquired SAS. Furthermore, building on the RBV, the extended RBV (Cao and Zhang, 2011) argues that an enterprise's capability to achieve resources, assets and strategic assets via external alliance and network ties are important factors that determine firm performance (Lavie, 2007; Yamakawa, et al., 2011). As a result, business group affiliations' social capital helps them to achieve more resources and overcome difficulties in pre- and post-acquisition process thus leading to better post-acquisition performance (Popli et al., 2017), while non-affiliated firms lack such social connections due to the absence of intermediary agencies in emerging markets (Khanna and Palepu, 1999). In emerging markets, the financial, labour, technology and others are imperfect, the rise of business groups are with the aim of filling those gaps (Guillen, 2000; Khanna and Rivkin, 2001). For example, mechanisms of intermediary financial institutions are weak, so firms often lack sufficient funds to pursue development opportunities. However, the core firm of the business group is able to act as a loan guarantor to third party lenders, or to make and receive loans, and offers trade credit to affiliated firms, thus creating a 'quasi-internal capital market' (Carney, 2008). Finally, Granovetter (1995) notes that the strategies and behaviours of emerging market business groups are affected by market institutions and by the state's economic policy goals, whereby they are supported by government to conduct OFDI. For example, Carney (2008) and Yiu (2011) suggest that it is unnormal that Chinese business groups act in response to the state's OFDI promotion policy; in return, they receive support

such as financial and R&D resources from government, which improve their ability to integrate the strategic assets.

Knowledge management capability of BGA

Nelson and Winter (1982) suggest that KBV considers knowledge management as a management mechanism to coordinate and facilitate resources, thus converting into capabilities. The successful performance of an organization requires coordinating mechanisms to make sure staff know their own jobs and are also able to understand and react to information diffusing into the firm (Nelson and Winter, 1982). As Penrose (1959) states, an employee's knowledge is based on his or her abilities and experiences to integrate new information and skills. As a result, although knowledge resource is quite vital for a firm, how to use and manage the knowledge impact the value of services that can be leveraged from knowledge resources held by the enterprise (Dess et al., 1995; Zack, 2003). Kogut and Zander (1992)'s argument based on KBV claims that the purpose of an organization's existence is to develop, diffuse and transform knowledge into competitive advantage. However, it is quite common that companies are hard to transfer knowledge throughout the whole organization due to the existence of stickiness in the organization. As stated by Szulanski (2003), stickiness also obstructs the generation of benefits from current knowledge resources. However, the unique organization form of business groups provides affiliated enterprises with superior knowledge management capabilities and organizational learning environment which would encounter the stickiness problem (Yiu, 2011).

Firstly, business groups are often rich in prior international experience. Prior linkages with foreign technology make them better able to identify and understand the acquired technology, which helps them to perfect their post-acquisition management process through experiential learning. In the 'late industrializing' context of the emerging market, for companies to be successful it is important that they acquire and adapt foreign technology (Amsden and Hikino, 1994; Guillen, 2000). Once markets have opened up to liberalization, operating business within business groups, which have better reputation and close ties with local governments, gives the affiliated firms an advantage over non-affiliated organizations to establish 'inward linkages' with foreign firms from developed markets (Yiu, 2011). By the forms of licensing and setting up joint venture, business groups are able to learn and imitate the foreign technology and then expand quickly (Guillen, 2000), so that business groups become a 'catch-up' mechanism (Carney, 2008). Furthermore, Hoskisson et al. (2002) suggests that a firm's ownership concentration benefits its innovation performance. This is because large shareholders (top managers) tend to have a greater focus on long-term strategy such as innovation projects than do lower-level managers, whose main interest is short-term bonus. As a result, the unified control of business groups will contribute more effort and focus on the post-acquisition stage to integrate the strategic assets. Finally, business groups have distinctive management structures, usually, they have one or a small number of powerful individuals acting as managers at the top level, who are very familiar with the distribution of resources and able to allocate staffs to other affiliated firms or business within the whole group. As a result, they can foster the internal labour markets by deliberate group-level training and coordination. All in all, such management structure provides business groups with a platform for coordinating company strategy and staff behaviour and to share their resources, thus facilitates the

diffusion of the technology received from abroad (Tan and Meyer, 2010) and develops firms' ability to innovate (Kafouros et al., 2012) in the post-acquisition stage.

Thus, having a pool of tangible, intangible and management experience in the form of a group management team, business groups can overcome issues that rise from post-acquisition process. Such capabilities of business groups help them achieve exceptional sustainable performances because they are specific to each business group, valuable to customers, non-substitutable and difficult to imitate (Rugman and Verbeke, 2002). The acquiring firm integrates both internal and external knowledge, merges them with acquired strategic assets, expand its knowledge base by applying and diffusing the knowledge within the organization (Szulanski, 2003)), which leads to further innovation. Therefore, hypothesis 2b is proposed as following:

> *Hypothesis 2b. Chinese acquirers that are affiliated to a business group will have better post acquisition innovation performance than non-affiliated acquiring firms.*

4.2.2.3. Institutions and state/private ownership

State owned enterprises (SOEs) can potentially enjoy better post-acquisition innovation performance when compared to private firms owing to preferential government supports (i.e. linked to selective industrial policy) (Luo, Xue and Han, 2010; Cui and Jiang, 2012; Yiu, 2011 and Bent, 2014). From an RBV perspective, SOEs are able to access greater resources than private firms. Accordingly, several studies have found supportive evidence for Chinese SOEs having a higher likelihood to search for

intangible assets in international markets (Ramasamy et al., 2012; Huang and Wang, 2013; Jindra et al., 2016). SOEs, for example, may be supported in these attempts via preferential access long-term capital at below market clearing rates (Buckley, 2014), as well as cheap materials, production facilities and raw materials (Buckley et al., 2007; Goldstein, 2007). SOEs may more easily access state-funded R&D funds and research centres (Wang et al., 2012).

By contrast, however, another school of thought suggests that SOEs are likely to have worse post-acquisition innovation performance than private firms, because they are unable to absorb the acquired strategic assets due to serious agency problems. This argument is supported by KBV and the knowledge management view that competitive advantage is the consequence of the manner the organization utilizes what it has got (Roos et al., 2001). In other words, simply possessing the assets does not lead to firm competitiveness, rather it is the firm's capacity to integrate and apply knowledge that leads to better performance (Matusik and Hill, 1998). SOEs in particular may lack efficient incentive monitoring systems (Yoshikawa and Rasheed, 2010). Cui et al. (2014) further suggest that managers of SOEs, aiming at maximising their career success and mitigating their own risk, are more likely to be 'risk averse' and to choose short-term risk averse plans when developing firm strategies (Wiseman and Gomez-Mejia, 1998). This situation is even more severe in China (Cui et al., 2014), where managers' promotion is highly dependent on their performance during their tenure period. As a result, leaders of SOEs tend not to be interested in long-term performance, or issues such as innovation capability development, which take a long time to achieve

successful results (Lin, 2011). Thus, in the post CM&A process, managers of SOEs may not put in sufficient effort to develop their companies' R&D capability. In addition, state owned MNEs' internationalization may be motivated mainly by political objectives (Morck, Yeung and Zhao, 2008). Several empirical studies have shown that Chinese state ownership has a damaging effect on acquirers' post-acquisition performance. Chen and Young (2010) analyse CM&As of Chinese firms from 2000 to 2008 and discover that if an acquiring firm has greater state ownership, it will have lower CM&A returns because of the additional regulatory requirements. Ning et al. (2014)'s research also shows that the increasement of short-term stock price of Chinese acquirers that conduct CM&As be lower if their largest shareholder is state.

Consistent with the above argument, a growing number of studies have suggested that private firms would have better post-acquisition innovation performance, due to their pressing and strong intent to seek strategic assets utilising their superior managerial resources. According to Brown and Chan (2016), private enterprises continue to lead Chinese CM&As overseas; in 2015 the number of CM&A transactions for private firms was nearly three times that for SOEs. Cui et al. (2014) suggest that private enterprises are more likely to seek strategic assets abroad via CM&A because, compared with SOEs, private-owned enterprise are more likely to face more challenges in the domestic market, since they receive less preference and protection from government and have relatively weaker ability to face market volatility and compete with foreign MNEs. Ren, He, Yan and Zeng, H., (2021) also find that the positive impact of Environmental Labelling Certification on corporate

environmental innovation is found to be stronger for non-state-owned enterprises (non-SOEs) than for state-owned enterprises (SOEs).

In summary, there is still no conclusive evidence as to what kind of ownership structure would benefit an acquiring firm's innovation performance. On one hand, state-ownership would benefit from potentially significant governmental resources. On the other hand, however, the lack of knowledge management capability, agency problems, and distortionary impacts of political motivations may offset such benefits. Private firms likely have better knowledge management skills and streamlined management. Considering KBV argue the importance of knowledge management rather than the possession of resources and knowledge, hypothesis 2c is proposed as follows:

Hypothesis 2c: The innovation performance of State-owned Chinese acquirers is inferior to acquirers that are privately-owned.

Figure 6: Research model
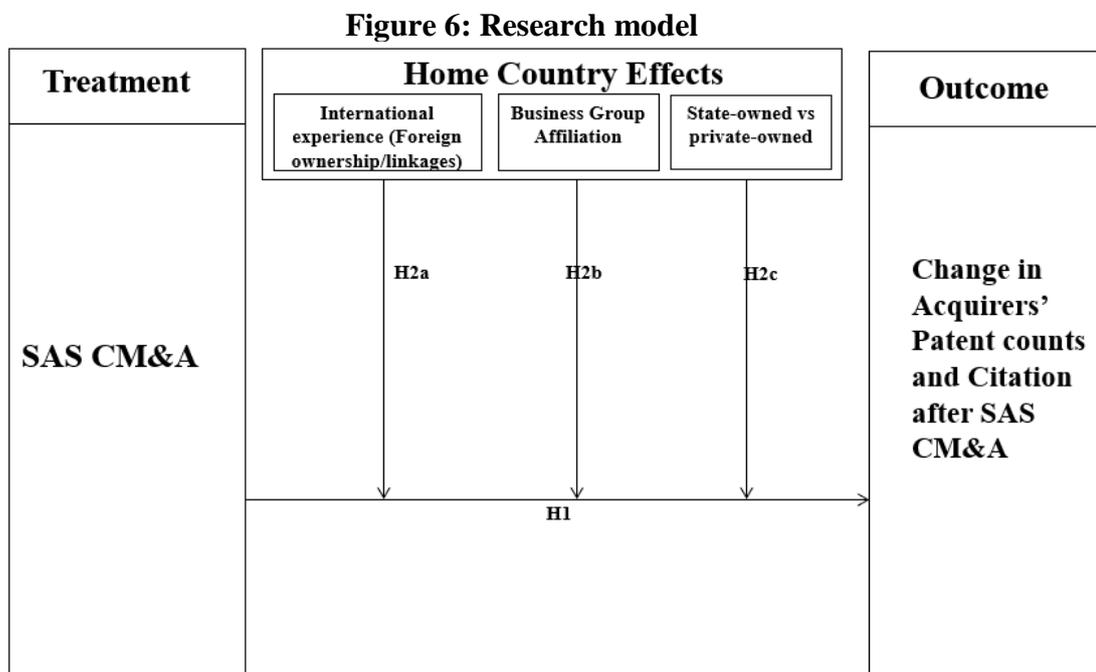
Figure 6 illustrates our hypotheses and mode

4.3. Methodology

4.3.1. Model specification

This paper applies propensity score matching and difference in difference (DID) methods to a sample of Chinese MNEs extracted from the CM&A database of Thomson ONE which we subsequently match with firm level financial data from the ORBIS (Bureau Van Dijk) database. These methods have become commonly used in testing the impacts of cross-border M&As on firm performance (Danzon et al 2007; Arnold and Javorcik, 2009; Bertrand, 2009). This is because they can address important concerns regarding potential endogeneity and self-selection biases (Desyllas and Hughes, 2010).

The impact of SAS CM&A on a Chinese acquiring firm is defined as the difference between the innovation outcome of the acquirer that has engaged in such acquisitions and the innovation outcome that this acquirer firm would have achieved if it had not done a deal (i.e. business as usual). Following Rosenbaum and Rubin (1983), we denote Y_{it}^1 as the outcome variable in time t for an acquiring firm i, Y_{it}^0 as the outcome of same firm i if it was not involved in an acquisition. The impact of the SAS CM&A for firm i can be measured as:

$$\Delta_i = Y_{it}^1 - Y_{it}^0 \qquad (1)$$

In reality, only the acquisition outcome can be observed, so the counterfactual outcome is missing. Therefore, a group of non-acquisition related firms need to be selected as a

control group. The difference of innovation performance between those two samples is known as the average treatment effect (ATE), measured as:

$$ATE = E\ (Y_{it}^1 - Y_{it}^0) = E\ (Y_{it}^1) - E\ (Y_{it}^0) \qquad (2)$$

If engagement in SAS CM&A is endogenous to a variety of company's attributes and these are related with the acquirers' innovation performance after acquisition, the non-acquiring firms are not able to be used as the counterfactual performance of acquiring firms. SAS CM&A acquiring firms, for example, tend to be more profitable and have larger patent stocks than non-acquiring firms. In other words, the decision of making a SAS CM&A is not randomly determined, and such a study is described by Cochran (1965) as an 'observational study'[3]. In these cases, following Rosenbaum and Rubin (1983), a PSM can be applied to select a group of identical firms from non-acquiring firms as the counterfactual group to resolve the endogeneity/self-selection issue. Specifically, we might assume that the decision for a firm to make a SAS CM&A is determined by several firm attributes before acquisition. The probability that is predicted here is called the 'propensity score'. The acquisition's propensity score is estimated by running a logit regression and the probability value can be estimated as following:

$$P_r(ACQ_{it} = 1) = F(Z_{it-1}) \qquad (3)$$

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[3] An observational study is an empirical investigation whose objective is to elucidate causal relationships (i.e., cause and effect) when it is infeasible to use controlled experimentation and to assign participants at random to different procedures Cochran (1965:57).

where ACQ is a dummy variable giving the value 1 for firms that takes part in the SAS CM&A and 0 for non-acquiring firms. The vector Z accounts for a set of firm pre-acquisition (t−1) characteristics. If an acquiring firm has a similar propensity score to a non-acquiring firm, they can, to all intents and purposes, be treated as being identical. Based on propensity scores to match acquiring firms with non-acquiring firms makes it possible to construct a control group of non-acquiring samples with similar attributes to the firms that have conducted the acquisitions, hence eliminating the self-selection problem. We use the one-to-one nearest neighbour matching approach here, based on the propensity score. In addition, matching is also forced within the same industry and year.

Following Blundell & Costa Dias (2000), Arnold and Javorcik (2009), Bertrand (2009) and Szucs (2011), the propensity score matching method is further combined with the DID method. According to Guo and Fraser (2015), compared with propensity score matching method, '*DID assumes that unobserved heterogeneity in participation is present and constant overtime, with data on project and control observations before and after the program intervention, therefore, this fixed component can be differenced out'*. Thus, equation (2) is further revised as following:

$$\text{ATE} = E\ (Y_{i,t=1}^{1} - Y_{i,t=1}^{0}) - E\ (Y_{i,t=0}^{1} - Y_{i,t=0}^{0}) \qquad (4)$$

The term t = 0 is the year before acquisition and t = 1 is the time after acquisition As a result, combining PSM with DID approach successfully reduces bias in two folds: PSM controls for the selection bias by selecting pairs of acquiring and non-acquiring firms with similar observed pre-acquisition firm characteristics; while DID controls for

unobservable constant or strongly persistent differences between acquiring and non-acquiring firms.

4.3.2. Sample

As noted, our sample is extracted from the M&A database of Thomson ONE which we subsequently match with firm-level financial data from the ORBIS (Bureau Van Dijk) database. China is an excellent empirical setting to test the hypothesis of this research. China is one of the major sources of outward investment in the world and is the largest among emerging markets (UNCTAD, 2020). Additionally, there is a significant number of empirical tests prove that CMNEs do seek strategic assets overseas (Williamson and Yin, 2012). Finally, use of M&A as an aggressive entry mode to acquire technology abroad is common in Chinese MNEs (Rui and Yip, 2008). Thus, China offers an ideal environment to investigate the relationship between SAS CM&A and domestic innovation performance.

Our Chinese CM&A sample which contains 665 deals from 2011 to 2016 (this left us with a minimum of three years to investigate innovation performance up until 201). Then following Ahuja and Katila's (2001) method to justify technological M&A, if either of the following conditions is met, then the M&A is coded as SAS CM&A:

i. The acquisition is reported as a technology orientation CM&A by either media or financial reports (available on Thomson ONE and other internet sources);
ii. The target firm has at least one patent or trademark one year before the time of the CM&A;

iii. Since it is common that an acquirer is an investment holding company set up just for the purpose of acquisition, each deal's acquirer is checked manually; where this is an investment holding company, it will be substituted by the real acquirer, identified by searching relevant CM&A deal news from the internet or from firms' annual reports.

The final sample contains 99 SAS CM&A deals and 1,686 non-acquiring firms that had identical characteristics (the same industry, firm size, growth, profitability and knowledge base) with the acquiring firms (as identified in the ORBIS database). All firms were active during the observation period. Finally, our sample included 1,785 firms (99 acquisition firms and 1,686 non-acquisition firms). Within the 99 SAS CM&A deals, 62 acquirers are SOEs 61 acquirers involved in business groups and 30 acquirers had prior foreign experience.

The initial patent data was collected from the ORBIS database, as used by many researchers (Cui and Jiang, 2012; Buckley et al., 2014; Jindra et al., 2016). It contains detailed firm-level patent information such as the number of patents, year of registration, and patent citation information. However, as ORBIS contains aggregated patent data, the target side's patents are consolidated within the acquiring company after an acquisition. Thus, in order to isolate the 'catch up' innovation performance for the Chinese acquirer, the acquiring firms' foreign subsidiaries' patent data was excluded by double checking with the China's State Intellectual Property Office (SIPO) data and WIPO data.

4.3.3. Measures

Outcome variables

Following Makri, et al. (2010), patent count and citation were selected as the measurement of innovation performance to show innovation quantity and quality, respectively. While some researchers have pointed out certain disadvantages of patents as an innovation measurement (Trajtenberg, 1990) they are treated as one of the most straight forward measurement of innovative performance (Pakes and Grilicbes, 1980) and are frequently used. China has revised its patent law three times since 1992 to meet international patent law standards. In 2000, in order to access to the World Trade Organization (WTO) and fulfil member country obligations under Trade-Related Aspects of Intellectual Property Rights (TRIPS), China overhauled the patent law (Hu and Jefferson, 2009). Besides, forward patent citations are suggested as a better way to capture innovation quality (Fleming and Sorenson, 2001) and an appropriate way to illustrate the value of an invention (Piperopoulos, Wu and Wang, 2018). Therefore, patent is used in this study as the dependent variable of innovation performance.

Change in patent counts

In order to obtain the change of innovation performance post-acquisition, we follow Desyllas and Hughes' (2010), applying a long-term window of three years to allow for enough time to capture the impact of the acquisition on innovation. Specifically, change

in patent counts is calculated from t-1 to t+1, t+2 and t+3 respectively, and from t-1 to the average patent counts over the period from t+1 to t+3[4].

Change in patent forward citations

Change in patent forward citations is calculated from t-1 to t+1, t+2 and t+3 respectively, as well as from t-1 to the average patent citation over the period from t+1 to t+3.

Treatment variables

SAS CM&A

A dummy variable is given as 1 where a firm takes at least one SAS CM&A and zero otherwise.

Subgroup variables

State-owned firms vs private-owned firms

Following definition of state-owned, a dummy variable is applied for the acquiring firm where the government holds a full, majority, or significant minority ownership in year t.

Business group affiliation

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[4] Note that the patent counts and citation are aggregated to parent level.

A dummy equals to 1 if the acquiring firm is in a business group as per the definition of the State Administration for Industry and Commerce of China (SAIC): '*a group consists of legally independent entities that are partly or wholly owned by a parent firm and registered as affiliated firms of that parent firm; its core company should have the register capital of over 50 million yuan (around US $6.8 million), at least 5 affiliated companies, and the total registered capital of the core and other affiliated companies should be over 100 million yuan (around US $13.6 million)'*. The firms are also finally checked to see if they listed in the 'Chinese large business group yearbook'.

International experience of linkages

This uses a dummy variable where the acquiring firm has at least 10% foreign ownership and less than 50% in year t. we checked the shareholders of the firms from ORBIS database, if the company has at least 10% of foreign shareholders, then it is marked as 1. In addition, if the acquiring firm was involved in any of the following prior foreign activities including import and export, OEM, ODM or OBM that was reported by media or recorded by its official website before the acquisition year, then it is also marked as 1.

Propensity Score Matching Covariates

The following variables are applied for calculating propensity score since they are most frequently discussed in M&A innovation topic literatures and considered to have vital impact on whether an acquiring firm makes a strategic assets/innovation purpose M&A.

According to Szucs (2011), firms conducting technological M&As tend to be bigger, more profitable and have better innovation performance.

Firm size

1. Total assets in year t-1, 2. Turnover in year t-1, 3. Number of employees in year t-1. All expressed in logarithm.

Profitability:

1.Return on assets (Total/total assets) in year t-1, 2. Profit margin (net profit/revenue) in year t-1.

Debt

Solvency ratio (total assets/long term debt) in year t-1.

R&D intensity

Patent counts in year t-1

R&D expenditures are not accessible for most organizations (Guan and Liu, 2016). In order to test the robustness of the result, this paper follows the common practice of including patent stocks of the focal organization in the past four years as its proxy (Guan and Liu, 2016; Gonzalez-Brambila et al., 2013; Schilling and Phelps, 2007) because T

there existed a tight relationship between patent and annual R&D expenditures (Schilling and Phelps, 2007; Guan and Liu, 2016). With the purpose of reducing the large variability that arise from count data, patent stock is transformed by using its square root. Table 9 illustrates model variables, descriptions and data sources.

Table 9: Model variables, descriptions and data sources

Variable	Description	Data Source
Outcome Variables		
Change in patent counts	Change of patent counts is calculated from t−1 to t+1, t+2 and t+3 respectively, as well as from t−1 to the average patent counts over the period from t+1 to t+3	ORBIS, ThomsonONE WIPO, SIPO
Change in patent citation	Change of patent citation is calculated from t−1 to t+1, t+2 and t+3 respectively, as well as from t−1 to the average patent citation over the period from t+1 to t+3	ORBIS, ThomsonONE WIPO, SIPO
Treatment Variable		
SAS CM&A	Dummy variable where a firm makes at least one SAS CM&A and equals zero otherwise	ORBIS, ThomsonONE WIPO,
Subgroup Variables		
State-owned firms/private-owned firms	Dummy variable for the acquiring firm where the state has significant control through full, majority, or significant minority ownership in year t	ORBIS
Business group affiliation	Dummy variable where the acquiring firm is belonged to a business group	ORBIS, China Business group year book
Foreign ownership	Dummy variable where the acquiring firm has at least 10% （<50%） foreign ownership in year t. Dummy variable where the acquirer has any of the following prior foreign activities including import and export, OEM, ODM and OBM	ORBIS, Firm website, media report
Propensity Score Matching Covariates		
Employees	Take log of number of employees in year t-1	ORBIS
Total assets	Take log of total assets in year t-1	ORBIS
Turnover	Take log of turnover in year t-1	ORBIS
R&D intensity	Substituted by patent stocks of a focal organization in the past four years (squared root of patent counts in year t-1)	ORBIS

Return on assets	Ratio of total profits to total assets in year t-1	ORBIS
Profit margin	Net profit/revenue) in year t-1	ORBIS
Debt	Solvency ratio (total assets /long term debt) in year t-1	ORBIS

4.4. Econometric estimation

4.4.1. The propensity score matching

We first identify and select an appropriate control group which has similar characteristics to the SAS CM&A group firms. Specifically, a Probit regression based on Eq. (3) is run. The dependent variable is 1 for a firm that makes a SAS SCM&A in year t and 0 for non-acquisition firms. The independent variable includes a vector of pre-acquisition (t-1) firm characteristics (firm size, profitability, debt and R&D expenditures/patent stock). These variables are identified as having a large impact on a firm's decision of making a technological oriented acquisition (Valentini, 2012; Bertrand, 2009; Makri, et al., 2010; Ahuja and Katila, 2001)

Table 10 shows the results of estimated propensity scores. It suggests that most of the variables are significant and the acquirers are therefore not selected randomly. Instead, they are significantly different in terms of these characteristics. Particularly, SAS acquiring firms tend to be more profitable, have larger assets, bigger patent stock and higher ability to meet its debt and other obligations than non-acquiring firms. In addition, AUC (the area under the ROC (receiver operating characteristic curve)) is calculated to evaluate the quality of a binary classifier. Following Hosmer and Villalonga (2004), Lemeshow (2000) and Lian et al. (2011), pseudo-$R2$ which is widely used in Logit/Probit analysis and AUC, are applied to diagnose the accuracy of the Probit model. As indicated in Table 10, the pseudo-$R2$ is 0.202 which is higher than the goodness-of-fit that is suggested by Villalonga (2004). Furthermore, according to Stürmer et al. (2006), if the value of AUC is higher than 0.8, then it can be treated as a

nice sign that the model is well designed. Thus, a score of 0.837 indicates that this model is well specified.

Table 10: Probit results. Predicting SAS CM&A

	SAS CM&A
SAS CM&A	
PATENT STOCK(t-1)	0.0446***
	(0.00421)
ROA(t-1)	0.000212
	(0.00116)
TURNOVER(t-1)	-0.0727*
	(0.0398)
TA(t-1)	0.205***
	(0.0434)
PM(t-1)	0.0106***
	(0.00307)
NOE(t-1)	-0.0899***
	(0.0324)
SR(t-1)	0.00606***
	(0.00216)
_CONS	-4.021***
	(0.389)
R2_P	0.202
AUC	0.837
N	10203

Note: 1. Standard errors in parentheses

* p<0.1, ** p<0.05, *** p<0.01

2. The AUC denotes the area under the ROC

(Receiver Operating Characteristic) curve

Secondly, each acquiring firm is matched with a non-acquiring firm based on one-to-one nearest neighbour matching with an additional requirement that each pair of matched firms should be within the same industry and year. In addition, in order to meet the common support requirement, acquiring firms whose propensity score is higher than the maximum or less than the minimum of the score of non-acquiring firms are removed from the final sample. After matching, a balance check is done to ascertain whether the acquiring firm group and non-acquiring firm group are not significantly different from each other. Table 11 illustrates t-tests for equality of means in two groups which shows the efficiency of the matching procedure. It can be seen that before matching, the characteristics of acquiring firm group are significantly different from the non-acquiring group, while after matching, there are no significant difference between those two groups (see the p-value). Figure 7 also shows that after matching, two groups of firms become even identical.

Table 11: Balancing test

	Unmatched	Mean		t test	
Variable	Matched	Treated	Control	t	p>t
Patent Stock(t-1)	U	12.993	1.898	23.91	0.000
	M	**11.171**	**9.216**	**0.92**	**0.358**
ROA (t-1)	U	18.277	11.945	1.22	0.224
	M	**18.161**	**23.289**	**-0.94**	**0.348**
Turnover(t-1)	U	13.615	12.743	4.86	0.000
	M	**13.489**	**13.634**	**-0.45**	**0.655**
Total Assets(t-1)	U	14.427	13.035	7.84	0.000
	M	**14.324**	**14.490**	**-0.58**	**0.562**
Profit Margin(t-1)	U	16.695	6.3776	6.91	0.000
	M	**16.875**	**19.229**	**-0.88**	**0.382**
Number of Employees (t-1)	U	8.349	8.037	2.15	0.032
	M	**8.254**	**8.375**	**-0.43**	**0.664**
Solvency Ratio(t-1)	U	47.6	37.502	4.56	0.000
	M	**47.654**	**48.745**	**-0.30**	**0.764**
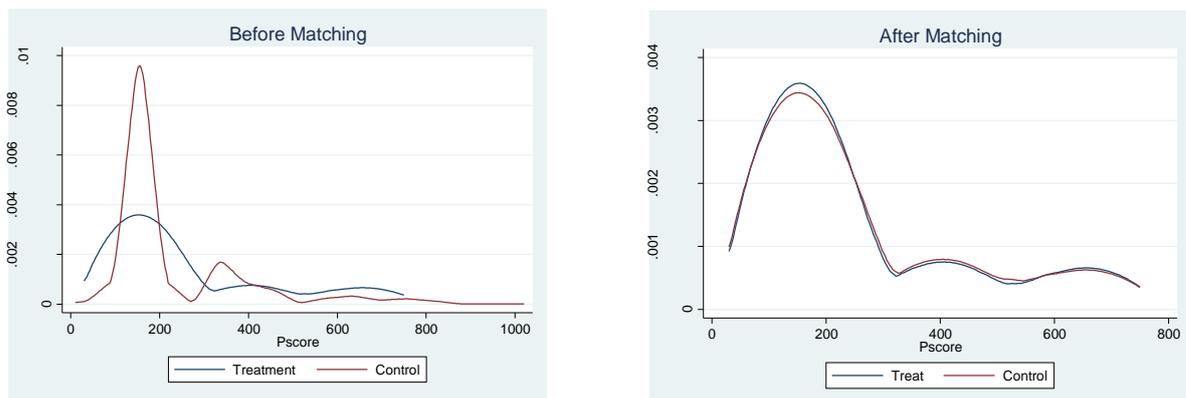
Figure 7: Comparison of difference between acquiring firm group (Treatment) and non-acquiring firm (Control) before and after

4.4.2. Results

Impact of SAS CM&A on innovation outputs

Table 12 and 13 report results for calculating the causal SAS M&A effect on the Chinese acquiring firms' innovation performance in terms of patent counts and patent citation respectively. The results are estimated based on two different samples. Panel A includes all deals. In other words, firms which have made more than 1 acquisition are considered. However, considering multiple acquisitions taken by a given firm in a given year/separate years would lead to a confounding effect (Bertrand, 2009; Desyllasa and Hughesb 2010). Thus Panel B sample only includes firms with a single deal and is also calculated to test the robustness of the results.

In order to estimate the effect of SAS CM&A, the average difference in outcome between acquiring firms and non-acquiring (counterfactual) firms which have similar characteristics in the pre-acquisition year is calculated based on the matched sample. As this study uses difference-in difference (DID) method, the outcome is measured as the net increase of patent counts/citation from pre-acquisition year t-1 to post-acquisition year t+1, t+2, t+3 and average of 3 years respectively. In terms of the overall impact of SAS CM&A, results are shown in column A in Table 12 and Table 13. Comparing with non-acquiring firms that have similar possibilities to conduct SAS CM&A, the acquiring firm group (treatment group) witnesses a significant and positive improvement in terms of the increase of patent counts and citations from year t-1 to t+1, t+2, t+3 and average of 3 years. After acquisition, the increase of both patent counts and citation are positive and significant at 5% level, with an increasing trend during the 3-year post-acquisition period for both Panel A and Panel B. Specifically, the

increase of patent counts[5] in year t+1 is 4.38 while this number reaches 7.22 in year t+3. The average increase of patent counts in the 3-year post acquisition period is 5.98. Referring to the patent citation, this number is even bigger, reaching to 7.55. This finding suggests that at an overall level, SAS CM&A benefit Chinese acquiring firms' innovation performance in terms of both patent quantity and quality and this impact is even stronger in patent quality. Therefore, *hypothesis 1 is supported*. Looking at a longer period in year 2 and year 3 after the acquisition, this improvement remains significant and positive and the average improvement in both patent counts and citation are significant and positive.

In terms of patent citations, the result is in line with Piperopoulos, Wu and Wang (2018). Although their study only focused on the subsidiary side of all Chinese OFDI, their results imply that Chinese acquiring firms are able to enhance their subsidiary innovation performance via outwards FDI and this improvement can potentially improve their innovating performance in their home country by reverse technology transfer. By looking at the citation companies, it is quite common that patents are cited by its subsidiaries or firms within the same business group. Some of them are self-citations. Therefore, on one hand, the significant increasing number of patent citation shows that Chinese firms are good at learning from the acquired technology. Moreover, they actively diffuse the acquired technology within business group or with their subsidiaries. And based on local situation, more patents are invented. However, on the other hand, it is also worthy to consider the 'real' quality of the patent. If the patents are not widely recognized in other developed country, they are only considered as valuable within their business group or within China, Chinese firms may still need more effort to catch up in international level.

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[5] Note that the outcome variable is measured as the square root of the total number of patent counts and citation.

Column B1 to Column D2 in Table 12 and Table 13 illustrate how foreign linkages, business group affiliation and ownership moderate the impact of SAS CM&A for the acquirers. Additionally, in order to compare the level of difference between two subgroups, the following approach is proposed by Clogg, Petkova and Haritou (1995) to calculate the Z value to test the level of differential impacts on the acquiring firms' innovation performance between the two subgroups.

$$Z = \frac{\beta 1 - \beta 2}{\sqrt{(SE\beta 1)^2 + (SE\beta 2)^2}}$$

Where $SE\beta$ is the standard error of β. Standard error is calculated by using bootstrapping techniques (in excess of 500 times). The results are shown under the significant of subgroup difference column.

In terms of results for the role of international experience of linkages that links to the innovation quantity (patent counts), the full sample (Panel A) and single deal sample (Panel B) show different results, considering the confounding effects from multiple acquisitions, this study takes the result of the single deal sample firms (Bertrand, 2009). Results show that firms with prior international experience increase their performance when comparing with their counterfactual non-acquiring firms (see column B1 for Panel B, with ATT of 19.57, 24.72, 30.93 and 25.68 and significant at 5% level in year one, two, three and also for the average of 3 years after acquisitions). While the non-experienced firms do not see any significant increase in patent counts (B2). Furthermore, when comparing the two groups, results show experienced firm perform significantly better than firms with no prior international experience (Panel B, B3). This paper further tests the impact of the prior-international experience on firms' innovation quality (patent citation). Results are shown in Table 13. It can be seen that for all

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deals and single deals, experienced acquirers achieve significant better innovation performance in year one, two, three and also average three years (Column B3 in Table 13 for both Panel A and B). Thus, Hypothesis 2a is supported.

Column C1 for both Panel A and B samples in Table 13 show that SAS impact business group affiliated firm' post-innovation performance significant and positively in all post-acquisition periods. However, non-business group affiliated firms (Column C2) show no significant improvement in their innovation performance in terms of both patent counts and citation. This indicates that SAS CM&A does not have a positive and significant impact on non-business group affiliated firms when comparing with their counterfactual non-business group. While the difference between affiliated firms and non-affiliated firms are significant and positive at 1% level for year t+1, t+2, t+3 and average 3 years in Panel A and B, showing that Chinese acquirers affiliated with business groups are better able to absorb strategic assets than standalone firms, leading to better post-acquisition innovation performance. Hypothesis 2b is supported.

With regards to the role of ownership structures, in Table 12, panel A column D1 shows that for state-owned firms, SAS CM&A does not have any significant impact on patent counts. But Column D2 shows that SAS CM&A can improve private firms' innovation performance significantly (at the 5% level, where ATTs are higher than that of state-owned firms). However, when comparing the significance of subgroup differences between state-owned and private firms, there is no evidence to suggest this difference is significant (Z values are insignificant). For the single deal sample of Panel B, due to the decrease in sample size, the impact of ownership changes. In this situation, SAS CM&As have significant and positive impacts on state-owned firms and higher ATTs than private firms, while this impact is not significant for

private firms. Z values also indicate that the difference between two subgroups is not significant. However, in terms of innovation quality in Table 13 of Panel A, the results see SOEs and private-owned firms all witness an increase of patent citations in post-acquisition period, and SOEs perform significantly better than private-owned firms. While in panel B for single deals, only private-owned firms benefit from SAS CM&A in patent citation (D2 in panel B), SOEs have no improvement in innovation performance. When comparing those two groups, in the first year after acquisition, private-owned firms perform better than SOEs as it is positive and significant at 10%. Thus, hypothesis 2c is partially supported as the innovation quality improved in private-owned firms.

Table 12: Results for patent counts

Panel A: All deals	A. Impact of SAS CM&A of all deals (H1)		B1. Foreign ownership Sample		B2. Non-foreign ownership Sample		B3. Significant of subgroup difference (H2a)	C1.BGA Sample		C2. Non-BGA Sample		C3. Significant of subgroup difference (H2b)	D1. State-owned Sample		D2. Private-owned Sample		D3. Significant of subgroup difference (H2c)
Innovation Variable	ATT	t-value	ATT	t-value	ATT	t-value	Z-value	ATT	t-value	ATT	t-value	Z-value	ATT	t-value	ATT	t-value	Z-value
Year t+1	4.38	2.28**	8.46	2.16**	3.36	1.90**	1.40	7.91	2.84***	-0.77	-0.91	3.76***	2.76	0.99	6.62	2.61**	-1.21
Year t+2	5.77	2.31**	10.65	2.14**	4.71	1.96**	1.13	10.79	2.98***	-0.86	-0.88	3.71***	3.48	0.99	8.51	2.56**	-1.20
Year t+3	7.22	2.42**	13.98	2.27**	5.51	1.94**	1.29	13.78	3.23***	-0.75	-0.67	3.78***	4.33	1.06	10.21	2.47**	-1.14
Average of 3 years	5.98	2.40**	11.34	2.24**	4.64	1.96**	1.20	11.24	3.14***	-0.78	-0.79	3.64***	3.66	1.05	8.58	2.54**	-1.21
Panel B：Single deals only	A. H1. Impact of SAS CM&A of all deals (H1)		B1. Foreign ownership Sample		B2. Non-foreign ownership Sample		B3. H2a. Significant of subgroup difference (H2a)	C1. BGA Sample		C2. Non-BGA Sample		C3. Significant of subgroup difference (H2b)	D1. State-owned Sample		D2. Private-owned Sample		D3. Significant of subgroup difference (H2c)
Innovation Variable	ATT	t-value	ATT	t-value	ATT	t-value	Z-value	ATT	t-value	ATT	t-value	Z-value	ATT	t-value	ATT	t-value	Z-value
Year t+1	5.56	2.11**	19.57	2.56**	1.59	0.80	2.47**	13.08	3.11***	-1.65	-1.37	3.52***	9.18	1.85*	2.96	1.10	1.18
Year t+2	7.25	2.11**	24.72	2.34**	2.09	0.84	2.18**	16.69	2.98***	-1.64	-0.13	3.21***	12.17	1.83*	3.26	0.96	1.30
Year t+3	9.26	2.21**	30.93	2.31**	2.60	0.89	2.06**	20.77	3.00***	-1.41	-0.87	3.22***	15.09	1.88*	4.14	0.97	1.27
Average of 3 years	7.55	2.18**	25.68	2.40**	2.13	0.86	2.15**	17.22	3.04***	-0.53	-1.06	3.11***	12.37	1.86*	3.50	1.00	1.32

Standard errors in parentheses * p<0.1, ** p<0.05, *** p<0.01

Table 13: Results for patent citations

Panel A: All deals	A. Impact of SAS CM&A of all deals (H1)		B1. Foreign ownership Sample		B2. Non-foreign ownership Sample		B3. Significant of subgroup difference (H2a)	C1.BGA Sample		C2. Non-BGA Sample		C3. Significant of subgroup difference (H2b)	D1. State-owned Sample		D2. Private-owned Sample		D3. Significant of subgroup difference (H2c)
Innovation Variable	ATT	t-value	ATT	t-value	ATT	t-value	Z-value	ATT	t-value	ATT	t-value	Z-value	ATT	t-value	ATT	t-value	Z-value
Year t+1	14.09	5.05***	32.40	4.83***	7.45	3.67***	3.51***	23.26	5.88***	0.75	0.88	5.90***	6.64	2.06**	19.25	4.82***	-2.57**
Year t+2	19.83	5.21***	44.73	5.00***	10.72	3.74***	3.80***	32.87	6.16***	1.37	1.14	6.13***	10.14	2.24**	26.42	4.91***	-2.47**
Year t+3	25.56	5.47***	56.73	5.23***	13.86	3.83***	3.98***	42.40	6.54***	1.95	1.30	6.56***	13.02	2.36**	33.17	4.69***	-2.55**
Average of 3 years	20.37	5.32***	45.71	5.09***	10.99	3.79***	4.00***	33.78	6.32***	1.42	1.17	6.11***	10.24	2.27**	26.86	4.94***	-2.38**
Panel B: Single deals only	A. H1. Impact of SAS CM&A of all deals (H1)		B1. Foreign ownership Sample		B2. Non-foreign ownership Sample		B3. H2a. Significant of subgroup difference (H2a)	C1. BGA Sample		C2. Non-BGA Sample		C3. Significant of subgroup difference (H2b)	D1. State-owned Sample		D2. Private-owned Sample		D3. Significant of subgroup difference (H2c)
Innovation Variable	ATT	t-value	ATT	t-value	ATT	t-value	Z-value	ATT	t-value	ATT	t-value	Z-value	ATT	t-value	ATT	t-value	Z-value
Year t+1	12.11	3.01***	45.20	3.46***	5.62	2.13*	3.34***	27.10	4.03***	-0.61	-0.46	4.47***	7.23	1.50	19.46	3.43***	-1.81*
Year t+2	16.50	3.07***	58.13	3.43***	7.96	2.12*	3.45***	36.04	4.02***	-0.22	-0.12	4.63***	11.14	1.59	25.55	3.46***	-1.63
Year t+3	21.65	3.29***	70.91	3.64***	10.86	2.28*	3.35***	46.11	4.22***	0.28	0.12	4.84***	15.17	1.69	31.30	3.48***	-1.44
Average of 3 years	17.19	3.17***	59.70	3.54***	8.44	2.21*	3.28***	37.22	4.13***	-0.12	-0.06	4.39***	11.64	1.63	25.84	3.46***	-1.53

Standard errors in parentheses * p<0.1, **

4.5. Robustness test

In this study, two robust tests are applied to test the robustness of the results. First of all, in order to ascertain whether acquirers with multiple SAS CM&As lead to a biased result, a smaller sample which only includes single deal acquisition is also tested (see results for Panel B of Table 14 and Table 15). Secondly, following the methodology employed by Desyllas and Hughes (2010) and Danzon et al. (2007), another propensity score method-inverse propensity score weighting (IPW) is also used to check the robustness of results based on the same sample data.

In terms of IPW method, unlike PSM, IPW does not require to match the acquiring firms with non-acquiring firms after the propensity scores are calculated. Instead, this method uses propensity score as a weighting index. Specifically, following Hirano et al. (2003), the inverse of an estimate of the propensity score was given as the weight for each sample. This method has proved to be another useful method of estimating the average 'treatment' effect, which in this case is the acquisition impact on acquirers' innovation outcome. Thus, after weighting, a passion model is applied to regress the change in patent counts and citations on a dummy variable that is equal to one if the organization conducts an SAS CM&A in year t, and on industry and year dummies. For the samples that has conducted at least one SAS CM&A in year t, they were allocated with a weight of $1/p$, and for the samples without a SAS CM&A are given a weight of $1/(1-p)$. Therefore, if an acquirer has a lower propensity score, it is allocated more weight (i.e., it is similar to non-acquirers), while if a non-acquirer has a high propensity score, it is given more weight (i.e., it is similar to acquirers). The impact of the SAS CM&A on the acquiring firm's innovation performance is measured by the coefficient of the acquisition indicator. The determinants' effect on acquisition can be measured by the

coefficient of the interaction with acquisition. Such method resolves the bias that caused by observable characteristics. Finally, the dependent variables are measured by changes. This allows for time-invariant unobservable differences among the companies, and the unobserved heterogeneity is accounted for (Danzon et al., 2007). This paper finally runs a WLS regression with control variables such as industry, time and deal specific variables. Result can be proved in request. By using different method of IPW, results are mostly in accordance with the results that are calculated by PSM (see Table 14, 15 below).

Table 14: Poisson regression result for patent count

	t+1				t+2				t+3				Average from t+1 to t+3			
	All deals		Single deal		All deals		Single deal		All deals		Single deal		All deals		Single deal	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
SAS CM&A	0.834***	0.870**	1.163**	1.185***	0.811***	0.858**	1.054**	1.107***	0.813***	0.819**	0.992*	1.087***	0.817***	0.842**	1.046*	1.113***
	(0.303)	(0.375)	(0.457)	(0.404)	(0.313)	(0.371)	(0.494)	(0.411)	(0.305)	(0.357)	(0.517)	(0.414)	(0.306)	(0.362)	(0.495)	(0.410)
INTERACTION																
STATE*TREATMENT		-0.764		0.315		-0.768		0.448		-0.661		0.573		-0.716		0.480
		(0.594)		(0.544)		(0.702)		(0.539)		(0.636)		(0.540)		(0.645)		(0.538)
BGA*TREATMENT		2.815***		1.957*		3.073***		2.024**		3.062***		2.196**		3.016***		2.093**
		(0.729)		(0.869)		(0.831)		(0.893)		(0.731)		(0.890)		(0.755)		(0.884)
FOREOW*TREATMENT		0.0979		1.005*		-0.0513		0.966*		0.0785		1.046*		0.0390		1.012*
		(0.520)		(0.549)		(0.595)		(0.571)		(0.530)		(0.569)		(0.542)		(0.562)
STATE		0.172		0.175		0.0863		0.0941		0.00921		0.0148		0.0651		0.0713
		(0.204)		(0.200)		(0.205)		(0.196)		(0.201)		(0.195)		(0.201)		(0.194)
BGA		1.257***		1.252***		1.240***		1.236***		1.251***		1.246***		1.248***		1.244***
		(0.145)		(0.145)		(0.159)		(0.159)		(0.160)		(0.160)		(0.153)		(0.153)
FOREOW		1.322***		1.341***		1.264***		1.296***		1.234***		1.250		1.261***		1.282***
		(0.140)		(0.157)		(0.141)		(0.161)		(0.142)		(0.163)		(0.140)		(0.160)
YEAR	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
INDUSTRY	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
_CONS	3.878***	2.548***	2.731***	2.331***	4.413***	3.119***	3.364***	2.911***	4.937***	3.566***	3.604***	3.122***	4.502***	3.162***	3.297***	2.842**
	(0.525)	(0.515)	(0.507)	(0.813)	(0.481)	(0.462)	(0.484)	(0.783)	(0.472)	(0.485)	(0.503)	(0.794)	(0.438)	(0.456)	(0.494)	(0.791)
N	10203	10203	9811	9811	10203	10203	9811	9811	10203	10203	9811	9811	10203	10203	9811	9811

Standard errors in parentheses

* $p<0.1$, ** $p<0.05$, *** $p<0.01$

Table 15: Poisson regression result for patent citation

| | t+1 | | | | t+2 | | | | t+3 | | | | Average from t+1 to t+3 | | | |
| | All deals | | Single deal | | All deals | | Single deal | | All deals | | Single deal | | All deals | | Single deal | |
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
SAS CM&A	2.716***	2.424***	3.361***	2.876***	2.871***	2.667***	3.413***	3.106***	3.309***	3.024***	3.760***	3.471***	3.0479***	2.823**	3.589***	3.251***
	(0.389)	(0.335)	(0.508)	(0.297)	(0.382)	(0.357)	(0.516)	(0.358)	(0.406)	(0.342)	(0.532)	(0.391)	(0.395)	(0.346)	(0.521)	(0.356)
INTERACTION																
STATE*TREATMENT		-0.745		-0.439		-0.602		-0.308		-0.431		-0.139		-0.517		-0.246
		(0.464)		(0.690)		(0.482)		(0.707)		(0.457)		(0.658)		(0.464)		(0.680)
BGA*TREATMENT		2.083**		1.254		1.575*		0.542		1.269***		0.132**		1.480*		0.412
		(0.826)		(1.001)		(0.886)		(0.929)		(0.915)		(0.839)		(0.898)		(0.909)
FOREOW*TREATMENT		0.797**		1.353***		0.719*		1.415***		0.702*		1.592***		0.714*		1.482***
		(0.382)		(0.478)		(0.380)		(0.465)		(0.392)		(0.474)		(0.380)		(0.467)
STATE		-0.191		-0.236		-0.346		-0.571		-0.577*		-0.903*		-0.444		-0.692
		(0.302)		(0.363)		(0.323)		(0.454)		(0.325)		(0.484)		(0.320)		(0.472)
BGA		1.397***		1.382***		1.411***		1.375***		1.422***		1.382***		1.411***		1.374***
		(0.196)		(0.200)		(0.189)		(0.199)		(0.187)		(0.203)		(0.185)		(0.196)
FOREOW		1.210***		1.219***		1.195***		1.197***		1.161***		1.146***		1.184***		1.181***
		(0.190)		(0.205)		(0.187)		(0.206)		(0.191)		(0.211)		(0.186)		(0.206)
YEAR	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
INDUSTRY	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
_CONS	4.830***	3.766***	2.605***	3.820***	5.918***	4.991***	4.105***	5.487***	6.479***	5.738***	4.740***	6.454***	5.961***	5.110***	4.130***	5.682***
	(0.478)	(0.515)	(0.721)	(1.335)	(0.428)	(0.560)	(0.749)	(1.300)	(0.419)	(0.594)	(0.827)	(1.146)	(0.426)	(0.567)	(0.791)	(1.277)
N	10203	10203	9811	9811	10203	10203	9811	9811	10203	10203	9811	9811	10203	10203	9811	9811

Standard errors in parentheses

* p<0.1, ** p<0.05, *** p<0.01

4.6. Discussion and conclusion

RBV and 'springboard' and LLL perspectives

Mainstream International Business theorizing, including Matthew's (2006) LLL model and Luo and Tung's (2007) 'springboard perspective', now upgraded to a 'theory' (Luo and Tung, 2018), have become highly influential within International Business theorizing on EMNEs. They suggest that Chinese MNEs are able to absorb, and transfer acquired foreign technology and know-how, which leads to improvements in domestic innovation. Our results somewhat support these lines of argument and are in line with some other recent empirical studies, somewhat similar to ours, albeit few studies have used our methodological approach looking at longer term domestic innovation outcomes.

To recap, Fisch, Block & Sandner (2018), found that Chinese firms that conducted technology related CM&As had significant and positive impacts on patent counts. Similarly, Anderson et al. (2015) finds positive impact of CM&A on acquiring firms patent counts in CMNEs. Based on survey data that was conducted in Guangdong province in 2010, Fu et al. (2018)'s study also shows that Chinese CM&A in developed economies bring positive impact on domestic innovation performance. As noted, they too concluded that EMNEs conduct FDI as an efficient way to conquer domestic issues and achieve technological catch up (Fu, Hou and Liu, 2018,).

Li et al., (2016) has studied the impact of OFDI on Chinese firm's innovation performance at the province level, yet firm level performance is still lack of investigating. Amendolagine et al., (2018) in addition looked at a sample of Chinese firms that take CM&As in medium and high-tech industries in Europe and the US from 2003 to 2011. They also found the increasement

of innovation performance for domestic firms, especially for those Chinese acquirers that processed sufficient absorptive capacity (Amendolagine et al., 2018). Finally, Piperopoulos et al., (2018) investigates the impact of OFDI on Chinese MNEs' subsidiary (target)'s innovation performance. Their results prove that Chinese MNEs' subsidiaries do benefit from such acquisition, and such advantages are more significant in developed countries. Based on such results, this study further investigates if the reverse technology transfer happens between the subsidiary and home country parent firms and the results shows positive answer to the question.

Current studies therefore prove CMNEs can take advantage from technology seeking FDI for domestic development, in line with the LLL and springboard perspectives. The findings, however, further the understanding of SAS and firm-level catch-up processes by showing how certain domestic boundary conditions at home play an important role in facilitating exploitation of acquired foreign strategic assets.

The positive impact of international linkages on domestic innovation performance

The positive and significant impacts of prior international experience is in line with RBV, namely that experience as a precious knowledge can help EMNEs to better identify the target firms even before the SAS CM&A. While the results also prove the KBV that international experience is embedded with the employees of the organizations, their knowledge management capabilities and capacities can help Chinese MNEs absorb and integrate the acquired strategic assets and bring them back as a form of reverse technology transfer to led to better innovation performance for firms in domestic market. Prior research has suggested the link between inward FDI and outward FDI, indicating that firms with prior internal network linkage (Luo

and Tung, 2007, 2018; Mathews, 2006a, 2006b; Cui et al., 2014; Hertenstein et al., 2015; Stucchi, Pedersen & Kumar, 2015) may help CMNEs to reduce their 'liability of foreignness' (Meyer and Thaijongrak, 2013) and 'liability of emergingness' (Madhok and Keyhani, 2012). Our results are consistent with Luo and Tung (2018)'s view of their updated 'springboard perspective'. In their 'upward spiral model', inward internationalization is at the first stage, building a solid foundation for EMNEs to springboard abroad and finally achieve their goal of upgrading. In addition, our results echo Mathew's (2017) updated LLL model, which more readily recognizes the important role of prior inward internationalization for EMNEs in the LLL prior. Chinese firms with experience of working with foreign firms in the domestic Chinese market are more able to exploit SAS related CM&As, as they are already more familiar with working in foreign environments and have the prerequisite know how to deal with the acquired technology.

The role of diversified group affiliation in providing resources and knowledge

Guillen's (2000) early work applying the RBV perspective to business groups showed how such groups, when combined with domestic investment and trade restrictions (i.e. creating an uneven playing field), were able to develop group wide resources that could be deployed to enable entry to new sectors. This internal capability, akin to Amsden and Hikino's notion of 'project execution capability', enabled business groups to develop the necessary resources for the creation of new businesses in different sectors. Similar to their line of reasoning, it is argued that business groups afford member firms increased absorptive capacity (via access to internal R&D centers, for example), afford them better capital and labor market access (via internal

markets) as well as access to improved market opportunities via access to complementary local resources (Hennart, 2012).

Previous International Business studies have discussed how business group affiliation may positively influence strategic asset seeking orientation (Yiu 2011; Chari 2013). Yiu (2011) and Chari (2013), business group are more likely to be involved in OFDI due to their advantages of internal linkages with foreign firms (Amsden and Hikino, 1994; Guillen, 2000), access to internal financial (Carney, 2008) and labour markets (Leff, 1978) and extensive government supports (Yiu, 2011), giving them the ability to focus on long-term innovation development (Hoskisson et al. 2002). The results show that business group affiliated firms are also equipped with the requisite absorptive capacity to exploit acquired strategic assets and improve future innovation performance. This is in accordance with Guillen's (2000) notion of an RBV and KBV approach to understanding the role of business groups in emerging markets. Specifically, groups provide access to both tangible and intangible resources that them achieve better domestic innovation performance (Carney, 2008, You, 2011). Most importantly, business groups provide excellent organizational learning environment and knowledge management mechanisms enabling firms to achieve competitiveness in the market (Guillen, 2000). The effective knowledge management would lead to a consequence of better innovation performance (Antonelli, 1999; Carneiro, 2000).

Ownership and post-acquisition innovation performance

To date, little research has been done to investigate how ownership structure impacts post SAS CM&A innovation outcomes. The results chime with the knowledge management view, namely that simply owning certain resources or knowledge is insufficient to provide further

market competitiveness. It does not matter what kind of and how many resources and knowledge an organization has, it is how they use them that matters most (Zack, 2003).

The logic of how ownership may potentially impact firms' post-acquisition performance lies in the fact that firms with state-ownership/private-ownership are more able to access home country resource and get support from local authorities, which helps them to be entitled with high absorptive capacity. As noted by Bent (2014), SAS SOEs are 'insiders' who are in a good position to access to long-term capital and capital at lower than market rates (Buckley, 2014), cheap materials, production facilities and raw resources (Buckley et al., 2007; Goldstein, 2007), and state-funded R&D knowledge (Wang et al., 2012) and patents. These advantages potentially may help SOEs to integrate acquired technology and develop further innovation. However, on the other hand, SOEs may suffered from excessive governmental control and interference and agency problem and the lack of a genuine SAS motivation may hinder post acquisition innovation performance. Thus, the ambiguous results regarding differences between state and private acquirers may not, after all, be so surprising.

Furthermore, the analysis for the impacts of HCE (ownership, business group affiliation, foreign experience) sheds further light regarding the important role of the characteristics of the EMNEs' parent firms. By applying RBV and KBV approaches, this paper finds that not all Chinese firms, therefore, may be able to 'springboard' as successfully as others because they have different level of access to privilege domestic resources such as CLRs and they have different knowledge based and organization learning/knowledge management capability.

Limitations and further research

This study is not without its limitations. Firstly, this study only focuses on the acquiring side, while we have no idea if the target side's innovation performance is improved or not. This rises an important question that if Chinese acquiring firms do 'light-touch' and they do not care about the innovation performance in the target country or do they continue to improve their innovation performance by taking advantage of the location in a technological advanced county. Luo and Tung (2018) subsidiary role. Do they really leave the subsidiary to operate independently for some period of time? During this period, how do subsidiary's innovation performance change? Do they learn from local or give autonomy? Secondly, due to the time constrain, longer time firm performance cannot be able to be observed. Therefore, whether EMNEs are able to become global leaders is still a question. As indicated by many researchers, EMNEs' primary aim of SAS is not to develop in foreign countries, they are more interested in using the acquired technology in domestic market and only develop domestically. Thus, with longer period of observable data, further research could focus on the final step of the spiral model---global catapulting with stronger capabilities to see if EMNEs can achieve this final goal. Thirdly, as this study only focus on one country sample and the innovation measurement is based on patent data, further research should be done based on more EMNEs countries and other more available innovation data such as intangible assets to see if the theory also applies to them.

Chapter 5: Exploring the impact of international product diversification strategies on acquiring firm performance in Chinese cross-border M&As: the role of diversified business group affiliation and strategic asset seeking orientation

Abstract: This chapter uses event-study and buy-and-hold abnormal returns (BHARs) methodologies to compare how international acquisitions affect firm performance, in terms of short-term and long run share price valuation, in Chinese (C) MNE parent firms undertaking unrelated and related (from a product perspective) international M&A deals. Specifically, this paper hypotheses that unrelated firms perform better than related firms in the long run; diversified business group affiliation leads to longer term market share price outperformance in cases of unrelated international deals when compared with non-affiliated acquisitions. In addition, this paper hypothesises this positive performance for diversified business groups is amplified in cases where the group acquires 'strategic assets' (i.e. patented technologies.), as these assets hold particular value to the acquiring group as they can be readily exploited in the acquirer's domestic market. The results largely support the hypotheses, shedding further light on why EMNEs may acquire seemingly unrelated businesses. Interestingly, the implications of these findings juxtapose somewhat with popular theories like the 'springboard' theory, which highlight 'firm-level catch-up' as a major driver of EMNE' FDI. This is because it is unclear how acquiring unrelated businesses may lead to long-run international competitiveness (via specialisation), as those theories argue. The findings are consistent, however, with theories like

Hennart (2012)'s bundling model and complementary local resources argument, which argues imperfect locational advantages drive strategic asset seeking. These theories argue that EMNEs often acquire unrelated strategic assets as they are able to exploit them back in their domestic markets and that diversified busines groups, as specialists in these types of market environments, are best placed to exploit the value latent in unrelated international deals.

5.1. Introduction

Product market diversification is found to be quite a common activity in emerging market firms, as witnessed by the rapid growth of large, diversified business groups as central microeconomic units of growth in these economies (Du, Lu and Tao, 2015). Anecdotally, it also seems that product market diversification may also apply to EMNEs' international FDI strategies as well. According to a report from JP Morgan (2018), technological changes continue to drive cross-industry mergers and acquisitions, it is worth noting that Chinese cross-industry mergers and acquisitions continued to be active up until 2017, with transaction volume reaching USD 961 billion, 21% higher than the past 10-year average. Noticeably, some Chinese MNEs have acquired unrelated firms in foreign countries (JP Morgan, 2018). For example, Fosun Group acquired *Club Meditterranee´* and Thomas Cook, famous European tour companies, as well as numerous luxury European fashion brands, a circus troupe (Cirque du Soleil, Canada) and a football club (Wolves, UK). Another example is that JANGHO Group, which acquired Vison Eye Group (an Australian well-known ophthalmology institution). Indeed, Shi et al. (2021), considering the question of unrelated deal making, have found that Chinese acquirers that are affiliated with business groups and have strategic asset seeking motivation have higher tendency to acquire an unrelated business in foreign country. However, their research has focused on the choices of Chinese MNEs, but to date, no research has been done to show if the unrelated acquisition brings better firm performance, a gap which this research seeks to fill by looking at long-run investor reaction to such international deal-making.

From resource-based view, scholars would argue such strategy would damage firm performance due to (1) unrelatedness in the product market, (2) liability of foreignness in the geographic market, (3) acquisition as entry mode, and (4) the country of origin being an

emerging market. Explanation would be the superior performance only emerge when the product category (Salter and Weinbold, 1979) and institutional environment (Peng et al., 2005) are related which can achieve synergy effects such as economies of scale. However, the institutional-based view argues that product diversification benefits firm performance especially for emerging market firms because the product, the capital and the labour market are imperfect, the deficient laws and regulation under the institutional environment would make unrelated product diversification an efficient way of organization operation, especially for business groups (Khanna and Palepu, 1997).

Therefore, the debate on the relationship between the EMNEs' international product diversification strategy and firm performance may be determined by the above two factors together. Highlighting only the resource-based view would mislead the result to emphasize the damaging role of unrelated product diversification, because there are problems and issues that the emerging market firms need to cope with in their domestic market. Ignoring the role of institutional factors is not correct because EMNEs' internationalization strategy aims to bring the acquired technology and know-how and develop them in their domestic market (Rui and Yip, 2008) where institutional factors are most influential. Similarly, highlighting the institutional view and emphasize the beneficial role of unrelated product diversification would also be misleading because there are many other factors that emerging firms need to consider under the international environment such as liability of foreignness, because the liability of foreignness would lead to management problems and increase cost while different firm ownership leads to different management style of top managers in post-acquisition process. Thus, it is important to analyse their relationship in a dynamic view and compare the costs and benefits at different stages of the post-acquisition period. While this paper aims for the long-term performance with the buy-and-hold abnormal returns (BHAR) methodology, which

contributes to current literatures as most of which are only focused on short-term shareholder price changes (e.g. Aybar and Ficici, 2009), although companies take CM&As with their long-term objectives (Poplia, Ladkania and Gaur, 2017).

This study aims to examine the relationship between EMNEs' international product diversification and firm performance by a combination of both resource and institutional-based view. This paper argues that the performance decreases in short-term as the cost to deal with liability of foreignness and unrelatedness outweighs the benefits from diversification; while in the long-term, when the new product is localized, with the spread of the new products in domestic market, rich domestic natural and financial resources and sophisticated knowledge to deal with domestic market, the benefits become more significant while the liability of foreignness seems to be not a problem at this stage. Furthermore, this paper explains the role of diversified business group affiliation holds the key for tackling the problems and contributing to the improvement of long-term performance and most importantly strategic asset seeking motivation plays an important role in amplifying the positive role of diversified business group affiliation in unrelated deals' performance.

In exploring these issues here, this paper makes three contributions. Firstly, this study draws attention to EMNEs' internationalization activities from a new 'diversification' perspective which is missing in current literatures. Although extensive literatures have discussed EMNEs' geographic international diversification strategy regarding motivation (Alon, 2010; Ramasamy et al., 2012; Amighini et al., 2013; Huang and Wang, 2013; Jindra et al., 2016) and performance (e.g., Li et al., 2016; Ning et al., 2014 and Bertrand and Betschinger, 2012), only one paper (Li et al., 2016) investigates the role of product diversification of the EMNEs under the international geographic diversification content, while the rest paper only include product

diversification factor as a control variable or even does not consider it in their studies. Thus, if it is predicted by theory that international geographic diversification is an effective strategy to add values for EMNEs, it is vital to know whether such benefits come from unrelated product diversification strategy? Adding the discussion of diversification based on the international business literature background would help researchers to better understand the unique role of EMNEs in international market as well as the mechanism and reasons under such phenomenon.

Secondly, this study contributes to the conceptual literature on EMNEs by further clarifying how diversified business group affiliation (using a more specific measurement of diversified business group such as *the role of financial and R&D capability*), which moderates the impact of diversification on firms' post-acquisition performance. As these factors are widely discussed as forces to form emerging market domestic firm diversification (Zhao, 2010) and underly EMNEs' strategic asset seeking (SAS) OFDI activities (Luo and Tung, 2007; Hennart, 2012), they may equally help EMNEs absorb acquired unrelated strategic assets.

Thirdly, this paper contributes to the hot discussions on EMNEs' internationalization theory (Hernandez and Guillén, 2018). Is the phenomenon of acquiring a wide portfolio of unrelated companies in foreign market consistent with classical theories of internationalization or newer theories of 'springboard perspective' or 'link, leverage and learning' (i.e. LLL) (Luo and Tung, 2007, 2018; Mathews, 2006, 2017)? This work contributes to the debate on whether unrelated international diversification strategy can be reconciled with the view that EMNEs are strongly motivated by strategic asset seeking purposes, thus leading to better domestic firm performance. By adding the important factor of SAS to diversified business group affiliation and unrelated deals, the three-way interaction term further explains that diversified business group affiliation with strategic asset seeking holds the key to the successful performance of unrelated

diversification CM&A deals. Finally, the final result of state-ownership (control variable) has

made the first attempt to study the role of ownership on international product diversification

performance, which provide a good direction for future study.

5.2. Literature review

Scholars regarding the topic of diversification mainly covers the following three topics: domestic product market diversification (related vs unrelated), international (geographic) diversification and a combination of the above two: product international diversification.

Product market diversification (related vs unrelated)

Within developed market economies, the discussion of firm strategy with regards expansion into new product areas, has garnered great attention over the years. Studies regarding product market diversification (Sakhartov and Folta, 2015), as a result, have covered many perspectives. Firstly, literatures divided product market diversification into two different dimensions: *related* diversification and *unrelated* diversification (Peng *et al.*, 2005). This study particularly interests in the unrelated product market diversification. Such motivations are also explained by Khanna and Palepu (2000) as the form of business groups as firms' diversification strategy, they, however, consider the emerging market context. Specifically, as emerging markets suffer from institutional voids and imperfect markets, busines groups may develop internal structures to cope with higher transactions costs.

Furthermore, having analysed the antecedent of an enterprise's product market diversification strategy, scholars aimed to explain how diversification would impact its performance. In early stage, most of the studies are focused on analysing the domestic product market diversification firms in developed market. Early studies hold a relative consistent view that firms are benefited by related diversification, because of synergy that comes from the 'economies of scope' (Teece, 1980). Such arguments are developed on the basis of resource-based view (RBV) and

transaction cost theory. It argues that the related firms would perform better because they are able to share the similar resources and the innovation system in the company for similar products (Wan, 2005) of related businesses. Related diversification facilitates the share of core technology and knowhow, which is different from unrelated diversification (Rumelt 1974, 1982). Additionally, related diversification can achieve synergy effects such as economies of scale and scope (Salter and Weinbold, 1979). On the other side, one of the main arguments believes that bureaucratic and agency costs problems occur during diversification for the unrelated firms, which may deteriorate the performance (Lu and Beamish, 2004) in developed market.

However, views are different for unrelated diversification firm's performance in emerging market. Rising from the institutional-based view, a growing literature of view suggests that unrelated diversification would perform better because firms that conduct such strategy are often business group affiliations, while such firms are better able to cope with the disadvantages of the imperfect domestic institutional environment because they have better capital market and labour market. In addition, they know more about the norms such as 'Guanxi' in such emerging market environment laws and regulation and contract enforcement are imperfect under the institutional environment (Khanna and Palepu, 1997).

International/geographic diversification of EMNEs

International diversification has been defined as a firm's strategy to expand its business in foreign countries (Hitt, Ireland and Hoskisson, 2007). Mode of international geographic diversification can be divided into three categories: greenfield, acquisition and strategic alliances (Villalonga and McGahan, 2005). EMNEs' internationalization via M&A can be seen

as a firm's international geographic diversification strategy via acquisitions. Many studies have analysed EMNEs' international geographic diversification strategy via acquisition. Luo and Tung (2007) argue that such EMNEs apply international diversification strategy often via acquisition to acquire strategic assets in order to catch up. Although the empirical results do not really come up with any conclusive results, quite a large literature argues and finds that SAS is common and important for emerging market firms (Buckley et al., 2007, Hurst, 2011, Rodriguez and Bustillo, 2011, Wang and Yu, 2014, Ramasamy et al., 2012, Alon, 2010, Amighini, Rabellotti, and Sanfilippo, 2013, Huang and Wang, 2013, Jindra et al., 2016).

Product market international diversification of EMNEs

Having review the literature regarding the product diversification in domestic market (both in developed and emerging market) and international diversification. It is time to bring two topics together for EMNEs that conduct product diversification strategy in international market. There are intense discuss regarding such topic for MNEs, but to the best of my knowledge, research is rare in EMNEs' content. However, we can still analyse the MNEs' literatures to help us to analyse the phenomenon for emerging countries such as China.

MNEs from developed market, with the development of internalization, an increasing number of firms started to internationalize in foreign market by starting a business in an unrelated industry. Such strategy raises intense discussion in both international business and strategic management disciplines as firms conduct such strategy often face more challenges due to different market, culture, uncertainty, higher additional cost and risks and product differences beyond those related to geographic diversification. For example, by investigating a sample of 156 FDI announcements from 1980 to 1992 for US firms, Doukas and Lang (2003)'s study

suggests that for related geographic diversification, firm performance improves in long-term, while unrelated geographic diversification is found to have negative impact both on short-term and long-term performance.

However, although there is a huge volume of research on the international geographic diversification (FDI) activities of EMNEs, very little of this has considered the strategic asset seeking orientation of EMNEs in terms of product market diversification. This is surprising, as it is well-known that a unique feature of emerging market business groups is their propensity to engage in unrelated diversification. It is also increasingly recognised that EMNEs do indeed engage in unrelated international diversification. Table 5 in Chapter 2 (P:55) summarizes Chinese firms' diversification studies. These studies only focus on investigating Chinese firm's internal development via diversification strategy, little study has been done to figure out how the product diversification strategy could impact these Chinese firms when they apply international diversification strategy. For further studies that analyse those EMNEs' post CM&A performance (see Table 16), only one study (Li et al., 2016) includes 'product diversification' as the key variable to investigate how the relatedness of the acquire and target firm impact acquiring firm's performance. The rest of the literature either only include the relatedness of diversification as a control variable or does not even mention the 'diversification factor' in their papers, which lead to a huge blank in such research area.

Table 16. Summary of emerging market post CM&A performance studies

(International Diversification via M&A)

Title	Result (Increase or not?)	Measurement of post M&A performance	Factors considered	Model	Observation period of performance	Diversification included?	Key variables?	Diversification measurement	Result regarding diversification
Li et al. (2016)	Yes!	Acquiring firms' shareholder value-stock price reaction	1. Culture distance 2. Dummy of greater China plus Singapore dummy 3.Absorptive capacity	Event study	Short-term	**Yes.** **'Same industry' variable**	**Yes**	Industry dummy, but detail measurement not mentioned	The negative effect of culture distance on value creation will be weaker if both firms are in the same industry
Buckley et al. (2014)	Yes!	1. Target firms' profitability 2. Sales of target firms	1. EMNEs' resources: tangible asset and intangible assets 2. EMNEs foreign direct investments experience	FGLS	After one year	**Yes** **'Vertical investment', 'horizontal investment' and 'conglomerate investment'**	**No** **(Control variable)**	1.Investments as horizontal if the acquiring and target firms have at least one two-digit SIC code in common. 2.Defining an acquisition as vertical when the industry of the acquiring firm sells more than 5 per cent of its output to the industry of the target firm or when the industry of the acquiring firm receives more than 5 per cent of its input from the industry of the target firm3.The rest is conglomerate investment	Conglomerate investments perform slightly worse
Buckley et al. (2015)	Yes!	1. Acquisition number 2.	1. Financial resources 2.Technological intensity	Negative binom	NA	**No**	**NA**	NA	NA

		Acquisition value	3.Managerial skills 4.Marketing intensity 5.Business group 6.Strategic asset seeking	ial and POLS					
Du and Boateng (2015)	Yes!	Acquiring firms' value	1. SOEs 2.Formal institutional distance 3.Informal institutional distance (culture distance)	Event study	Short-term	**No**	**NA**	NA	NA
Aybar and Ficici, (2009)	No!	Acquiring firms' value	1.Investment size, level of control in target, the target status, the level of international experience, good corporate governance 2.Industry characteristics, strategic focus of EMNEs; the type of expansion 3.Target country characteristics	Event study	Short-term	**No**	**NA**	NA	NA
Ning et al. (2014)	Yes!	Acquiring firms' value	1.Ownership structure 2.Characteristics of control 3.Internal control mechanisms	Even study	Short-term (measured by days)	**No**	**NA**	NA	NA
Bhagat et al. (2011)	Yes!	Acquiring firms' value	1.Classical factors 2.Governance factors	Event study	Short-term (measured by days)	**Yes** **'Industry relatedness'**	**No**	Within 2-digit SIC code of the acquirer (1 is yes, 0 is no)	No significant impact

Chen and Young (2010)	No!	Acquiring firms' value	1.State-ownership 2.(Moderate) Environmental complexity	Event study	Short-term (measured by days)	**No**	**NA**	NA	NA
Boateng et al. (2008)	Yes!	Acquiring firms' value	No further analysis on factors' impact on post M&A performance	Event study	Short-term (measured by days)	**No**	**NA**	NA	NA
Gubbi et al. (2010)	Yes!	Acquiring firms' value	1.Developed market acquisition 2.Economic distance 3.Institutional distance	Event study	Short-term (measured by days)	**No**	**NA**	NA	NA
Kohli and Mann (2012)	Partial Yes! Cross-border M&A creates wealth gains while domestic ones did not create value	Acquiring firms' value (for domestic and cross-border MA) respectively	1.Foreign 2.Mode of payment 3.Relatedness 4.Competitive acquisition 5.Size of the acquirer 6.Technology intensity of target company	1. Event study 2. Cross sectional regression analysis	Short-term	**Yes** **'Relatedness'**	No	If the acquirer and target have similar product lines (1 is yes, 0 is no)	No significant impact
Bertrand and Betschinger (2012)	No! Both cross-border and domestic M&A reduce	Acquiring firms' value (for domestic and cross-border MA) respectively	1.Firm level characteristics 2.Industry level characteristics	GMM estimation	1999-2008	**No**	**NA**	NA	NA

	performance								
Kling and Weitzel, (2011)	Yes! Both create value while cross-border M&As create lower wealth gains than domestic ones	Acquiring firms' value (for domestic and cross-border MA) respectively	1.Deal related variables 2.Firm-specific variables 3.Governance variables	1. Event study 2. Probit model 3. OLS	Short-term	**Yes** **(Horizontal acquisition and vertical acquisition)**	**No**	based on two-digit SIC codes of acquirers and targets.	No significant impact
Anderson et al. (2015)	Yes!	Post M&A patent counts in both foreign and domestic	SOEs and Private company	Event study	Measured by quarter	**No**	**NA**	NA	NA

Source: see column one

5.3. Hypothesis Development

5.3.1. Chinese firms' international product diversification and value creation

A central question in corporate diversification studies is *how product diversification impact firm performance*. There has been a large amount of academic evidence for developed market firm product diversification literatures that unrelated product diversification destroys firm value as the diversification strategy move away a firm's core competence (Varadarajan, 1986; Bae, Kwon and Lee, 2011). However, research shows that results are different in emerging market scenario (Ramaswamy et al., 2002). From institutional point of view, Kock and Guillen (2001) suggest that in developing countries, local protectionism, unmatured institutional environment and other obstructions distort the value of resources, which makes it more practical to apply diversification strategy than in advanced countries. They note that except for the technology and capability, resources such as government contacts connections (so called 'guanxi'), privileged access to specific political resource is vital to determine the motivation and consequences of diversification in undeveloped economy. They suggest that unrelated diversification would outperform related diversification as the government contact is generic in nature and can be used among different firms and segments. Line in the same logic, Backman (1999), Kock and Guillen (2001) and Wan (2003) also prove that unrelated diversification brings more advantages in less developed institutional markets. In such circumstances, the benefits of unrelated diversification outweigh the transaction costs that may raise from the diversification strategy, firms are able to achieve economic benefit by exploiting interrelationships within divisions such as marketing skills, innovation, production and purchasing

capability (Porter, 1985). Like Williamson's (1975) findings in his study that if unrelated enterprises' company structure is right, they are better at allocating funds more efficiently than the external capital market. However, more and more recent studies find out that for a specific country, the impact of unrelated diversification changes over time. For example, many studies have found that there is an inverted U-shape relationship between firm diversification and performance (Pierce and Aguinis, 2013; Rumelt, 1974) in different period as the cost (transaction cost) and benefits are considered to change in different stages. In a word, such relationship is not robust across different countries due to different institutional environment, and it is not robust across time periods even within the same country (Palichm Cardinal and Millerm 2000).

Although above arguments are mainly for domestic product diversification strategy, the logic can also be applied to discuss the unrelated diversification strategy in international market. In such context, in order to investigate how such strategy impact a firm's performance, a core questions would rise: What are the main disadvantages and advantages to diversify product in a foreign country? When considering the disadvantages, it is understandable that when EMNEs apply international product diversification strategy, they would face more challenges that rise from the liability of foreignness such as different institutional and culture environment. Moreover, as EMNEs 'augment' rather than 'exploit' their ownership advantage, the newness of the technology and know-how makes it even more difficult for EMENs at the early stage of the post-acquisition period. Therefore, it is important to consider the benefits and cost of diversification from a comprehensive view to combine the rent-yielding benefits and also the transaction costs together. Most importantly, they are dynamic and change overtime. Therefore, EMNEs' performance should be observed over time with the

consideration of both benefit and costs. At the early stage, the EMNEs that conduct unrelated acquisitions face more difficulties as they do not possess ownership advantage, in opposite, they seek for the technology and know-how with unfamiliar nature. The transaction cost is much higher than the actual benefit that such unrelated acquisition can bring at this stage, because they need to deal with liability of foreignness and many management problems. What's more, the tacit nature of the acquired knowledge makes it difficult to be transferred into production/ profit in short-term because the tacit nature of intangible resources often tends to be 'sticky' (Nelson and Winter, 1982) and hard to transfer throughout the markets. Therefore, it takes a large amount of time and efforts to replicate the resources (Teece, 1977).

In terms of advantages, as described by many researchers, EMNEs conduct CM&As to obtain intangible assets in order to catch up (Luo and Tung, 2007). The logic under such argument lines in the facts that EMNEs especially China are different from DMNEs because of the influence of their home markets, the so-called 'home country effects' (Cuervo-Cazurra, 2012). Specifically, the primary aim of EMNEs to conduct acquisitions in developed markets is to repatriate SAS to their home countries (Luo and Tung, 2007). In fact, for most EMNEs, the domestic market offers the mainstay of their profits and they have very low transnationality indexes (Anderson, Sutherland and Severe, 2015; Rugman and Li, 2007), they are not interested in further developing in the international market, reverse technology transfer that happened after the acquisition could be quickly put into production in home country. Therefore, after the initial difficulty time, when the acquired unrelated technology is brough back to domestic market, by using 'complementary local resources' (CLRs) (Hennart, 2012) such as distribution channels, knowledge of the consumer, after-sales services or

complementary technology, which are only available for local firms (Hennart, 2015), which provides EMNEs significant domestic market advantages[6] (Hennart, 2012). This explains why EMNEs undertake unrelated acquisitions. EMNEs acquirer target firms that are equipped with non-location bounded skills that can be bundled with EMNE country specific advantages and become profitable. The resources and assets in domestic market encourages Chinese firms to take unrelated acquisitions abroad. As a result, in the long-term, the cost for liability of foreignness will decrease when the new product is applied in domestic market; while the economic scale will continue to be achieved when acquiring firms are able to take advantage of CLRs. Diversified firms are able to generate synergies from merging complementary technologies (Clarke, 1985), suffering less from the risk of bankruptcy which increases their debt capacity (Higgins and Schall, 1975 and Lcwellen, 1971), becoming more profitable as they can arrange assets more efficiently (Teece, 1982; Williamson,1975). Thus, hypothesis 1 is proposed as following:

H1. Chinese MNEs that conduct unrelated cross-border international M&A acquisitions will perform better, in terms of long-term share price performance, than Chinese MNEs that undertake related deals.

5.3.2. Contextual factors that may moderate the impacts of unrelated international diversification on acquirer performance

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[6] 'Complementary local resources can be achieved via, for example, participation in domestic business groups and strong state-business relationships, those that may be deemed rent-appropriable also include 'the knowledge of how to incorporate these intangibles into products that meet the needs and tastes of local consumers, the logistics necessary to put products within their reach, and all the other inputs necessary for local production' (Hennart, 2012:46).

5.3.2.1. Diversified business group affiliation and unrelated international diversification

Many studies have discussed how business group as a vital factor that impact EMNEs' internationalization strategy (Chari 2013; Sutherland, 2009; Yiu, 2011; Holmes et al., 2018). These literatures have discussed different perspectives of business groups. For example, Tan and Meyer (2010) investigate how business group facilitated the share of managerial resources which promote the firms' internationalization strategy; Chari (2013) analyses the impact of business group affiliation on firms' OFDI (outward foreign direct investment); Gaur et al., (2014) discuss how business affiliated firms tend to progress more from exporting to FDI; Purkayastha et al., (2015) investigate how R&D intensity impact business group affiliated firms' degree of internationalization; Borda et al., (2017) study how group affiliation influences FDI performance. Therefore, one further question raises: does business group affiliation (most of them are diversified) facilitate the acquiring firm's performance even when the CM&A deals are unrelated? Based on current literatures, a positive impact might be predicted.

According to Hoskisson et al., (2005), firms in emerging market try to overcome the disadvantages of resource market and institutional environment by banding together into diversified business groups. In other words, most of the business groups in emerging market are diversified. Compared companies in developed market, firms in developing countries are more likely to become more diversified with the form of business group affiliation (Khanna and Palepu, 2000a). As a result, for those business groups which conduct unrelated international diversification strategy, they already own

the experience of dealing with unrelated business in their home country before the acquisition.

Several theorical perspectives are applied to explain why emerging market firms are more likely to form business groups, become diversified and perform better. From transaction cost perspective, many research has suggested that in emerging market, the benefit of diversification is higher than the cost because diversified business groups are able to submit and imitate marketing settings in their home settings to illuminate the disadvantages of transaction cost issues, which generates positive impact on their performance (Karabag and Berggren, 2014; Kedia et al., 2006). From institutional perspective, Khanna and Palepu (1997) proposed that the intermediary institutions in emerging markets are not effective. For example, the communication facilities, labour market and capital market are weak which lead to an imperfect market. These circumstances are together with irregular laws and regulations and inconsistent contract enforcement. In order to confront such weak market condition, firms would find it helpful to engage in higher levels of product diversification to generate substitutes for factors and institutions, business groups are developed to build their internal institutions. As a result, by coordinating business unites to deal with one another regularly, the transaction cost is reduced by the diversified business groups (Khanna and Palepu, 1997), what they produce or specialize in is largely irrelevant (Khanna and Yafeh, 2007). Specifically, business group's internal financial market is able to allocate its capital within the groups more effectively which may compensate the disadvantage of inadequate external capital markets (Hill and Hoskisson, 1987). Moreover, business groups are often diversified, banks and other financial institutions find them more attractive as a borrower because they prefer to lend funds to large and diversified firms

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to reduce risk due to worse situation of information asymmetry and more costly default resolution procedures in the emerging countries (Khanna and Palepu, 1997). A diversified group is in a better position to attract talents. Moreover, business groups' internal labour market makes it earlier to allocate the right person in the right position. (Khanna & Palepu, 1997). Additionally, diversified business groups, due to their scope and economic capacity, are able to provide common facilities, such as transportation networks, to spread the high costs within organization.

The institutional and 'transaction cost' view illustrates how business group affiliations are better able to compete with other non-affiliated firms in the domestic market. Therefore, these advantages would help them to absorb the acquired unrelated assets when they are involved in international unrelated diversification. Later, the resource-based view illustrates the fact that business groups are more capable of exploiting different economic terrain within their home market because they are more likely to foster close ties with government, letting them to benefit from particular state favors (Whitley, Henderson, Czaban and Lengyel, 1996). As a result, business groups affiliations are in a better position to compete with both foreign and domestic rivals because they are equipped with the ability as large groups to negotiate with domestic policymakers and regulatory authorities (Khanna and Yafeh, 2007). As noted by Hennart (2012), they are in superior positions to exploit any non-location-bounded acquired foreign asses back in their domestic market than smaller, less organizationally developed, domestic rivals.

Additionally, Amsden and Hikino (1994) note that business groups offer a vital platform for technology sharing, learning and catch up because the capability to import

the foreign strategic assets is often internalised and strengthened and shared widely within the business group. Besides, due to the better reputation and close ties with local governments affiliated firms are given a favourable advantage over non-affiliated firms in creating 'inward linkages' with foreign firms from developed markets (Yiu, 2011), prior linkage with foreign technology makes them better able to identify and understand the acquired technology, which helps them to perfect their post-acquisition management process through experiential learning. Thus, with the view of applying the acquired strategic assets domestically, the favourable domestic market positions, together with the support of state and the internationalization experience, Chinese EMNEs are motivated to utilising foreign targets' a wide variety of unrelated foreign know-how and technology. Most importantly, this general capability is internalized within the business group to facilitate business group affiliated firms' absorptive capacity. Borda et al., (2017) support this view by providing finding that business group affiliations benefit firm's capability to achieve better performance from the internationalization. Since this paper hypothesize unrelated firms will perform better than unrelated firms after CM&As, diversified business group affiliation may positively moderate such performance. Thus, hypothesis 2 is proposed as following：

H2. In Chinese MNEs that are affiliated with diversified business groups, the impact of unrelated M&As on long term share price performance is positive.

In order to understand how R&D and financial resources contribute to business group affiliation thus testing the heterogeneity of diversified business group affiliation, H2a and H2b are proposed as following:

H2a. In Chinese MNEs that are affiliated with diversified business groups with R&D centre, the impact of unrelated M&As on long-term share price performance is positive.

H2b. In Chinese MNEs that are affiliated with diversified business groups with financial centre, the impact of unrelated M&As on long-term share price performance is positive.

5.3.2.2. Strategic asset seeking, diversified business group affiliation and unrelated international diversification

International business literature has suggested many forces of EMNEs' international strategy, of which strategic asset seeking is one of the most salient motivation (Luo and Tung, 2007). It is recognized that emerging market firms have experienced significant growth in their domestic market. It is the domestic market that generates the majority of their revenues and EMNEs have, comparatively speaking (i.e. to DMNEs), low transnationality indexes (Anderson, Sutherland and Severe, 2015). Thus, the main reason for EMNEs to undertake OFDI is to strengthen their home market power while they may also face foreign competition (Luo and Tung, 2007). As noted by Luo and Tung (2007), EMNEs acquire the 'critical resources needed to compete more effectively against their global rivals at home and abroad…. [*i.e. outward FDI activities are strongly integrated with activities back home*] … *Springboard links a firm's international expansion with its home base… Viewed in this manner, the global success of such EMNEs is still highly dependent on their performance at home*' (Luo and Tung, 2007: 484-485, quoted in Petersen and Seifert (2014: 377); emphasis added). Hennart

(2012) further explained how strategic assets can be combined with domestic 'complementary local resource-CLR' to help acquiring firms to deploy strategic assets domestically. In Hennart (2012)'s bundling model, he argues that imperfect 'locational' advantages (the 'L' represents location for 'OLI' model) may exist in emerging markets. So, while DMNEs may struggle to enter emerging markets, EMNEs can enter developed markets. The non-location bound assets (Rugman, Verbeke, Verbeke, & Rugman, 2003) of developed market firms cannot be successfully 'bundled' with country specific assets (CSAs) in emerging markets without the help of local firms (Hennart, 2015). EMNEs have preferential access to these CLRs (complementary local resources) such as distribution channels, knowledge and understanding of the consumers, customer services or superior technology know-how, which facilitates the efficient integration of strategic assets (i.e. FSAs) in a given market. This provides EMNEs crucial home market advantages and may persuade DMNEs to allow EMNE competitors to purchase their non-location bound FSAs (Hennart, 2012).

Therefore, the motivation of strategic asset seeking brings products that can be deployed domestically. However, before they are brought to their home market, it is important for EMNEs to manage the strategic assets in foreign market. When the market is in foreign market, the acquiring firms face liability of foreignness (LOF). With the aim of strategic asset seeking and bring technology to home market, EMNEs often use a 'light touch' approach to manage the acquired firms (Rui and Yip, 2008). Thus, it seems that 'light touch' method helps acquiring firms to suffer less from LOF, it is easier for the parent firm to learn and absorb the technology under the friendly organizational culture environment when technical staffs are sent from foreign subsidiary. Thus, as long as the acquisitions have non-location bounded properties that

can be bundled locally with EMNE country specific advantages, regardless of what particular sector or industry they are in, they may become profitable EMNE targets. The gravitational pull and influence of the domestic market and the 'light-touch' method to manage LOF thus motivates unrelated acquisitions and contribute to provide the resources that are needed for post-acquisition management. Therefore, it is reasonable to deduce that with the strong motivation of bringing and absorbing the unrelated strategic assets back in the home country, Chinese firms would perform better. Thus, hypothesis 2 is proposed:

H3. A strategic asset seeking motivation further amplifies the positive impact of diversified business group affiliation on the acquiring firms share price performance when undertaking unrelated international M&A deals

Figure 8 illustrate the research model.
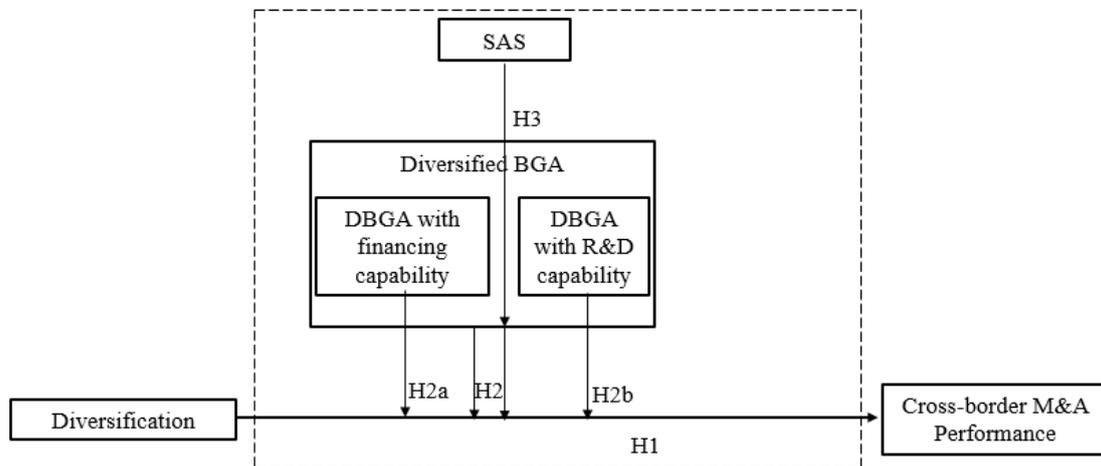
Figure 8. Diversification and cross-border M&A performance research model

5.4. Method

5.4.1. Model

This paper will focus on analysing the long-term performance of the firms. However, short-term performance is also provided here to show more information. This paper applies event study and BHAR approaches to test the hypothesizes. Event studies are used to calculate the short-term cumulated abnormal returns (CARs) to reflect stock price reaction to CM&As, while buy and hold abnormal return (BHARs) are computed to measure the long-tern performance. As such we can evaluate the markets' reaction to different international deals and make comparisons between different groups (i.e. groups and non-group affiliated firms).

CARs---short term measurement: standard event study

According to Krishnakumar and Sethi (2012), event studies are commonly used as a prevailing method to test the acquiring firms' post-acquisition performance, while such method is able to eliminate the problem of endogeneity. For instance, in terms of earlier top journal articles in finance and management disciplines, which study the performance of developed market acquirers from 1970 to 2006, 57% of them used event study as their method to test M&A's influence on acquirer's value. Furthermore, recent studies (2006-2015) which examine emerging market firms, have also used event study approaches to test their post-CM&A performance (see Table 4).

There are three steps to conduct an event study: Firstly, following prior studies (e.g., Ning et al., 2014), an estimation window of (-120, -30) days was selected[8]. Then, each firm's normal return (R_{it}) and market return (R_{mt}) were collected from DataStream database during the estimation window. After that, based on Equation 1 (the market model), parameters α_i and β_i were computed by using OLS (α_i and β_i were used to calculate a firm's abnormal return in next step).

$$R_{it} = \alpha_i + \beta_i R_{mt} + \varepsilon_{it} \tag{1}$$

Where:
R_{it} is the expected stock return for the acquiring firm i at time t
R_{mt} is the return on the market portfolio at time t
α_i is the intercept term
β_i is the sensitivity of the acquiring firm i to market returns
ε_{it} is the error term

Second, the data of R_{it} and R_{mt} were gathered from DataStream under three event windows[9] of (-1, +1), (-4, +4), (-5, +5) respectively. Then, based on Equation (2), the daily abnormal return (AR_{it}) for each firm was computed.

$$AR_{it} = R_{it} - (\hat{\alpha}_i + \hat{\beta}_i R_{mt}) \tag{2}$$

Where:
AR_{it} is the abnormal return on the acquiring firm i at time t
R_{it} is the expected return on the acquiring firm i at time t
R_{mt} is the return on the market portfolio at time t
$\hat{\alpha}_i$ and $\hat{\beta}_i$ are the OLS parameters computed through the regression of R_{it} on R_{mt} in Equation (1) over the (-120, -30) estimation window

Third, based on the daily abnormal return of each firm (AR_{it}), cumulative abnormal returns (CARs) were computed as the aggregated value of AR_{it} during the event window. Then, the mean of acquiring firms' CARs was calculated and a t-test was applied to check if the mean of CARs was statistically different from 0.

BHARs---long term measurement

However, as argued by researchers, short-time event window does not correctly show the stock market price reaction to the event, because investors usually underreact or overreact to firm actions (Fama, 1998) during short-time period. Thus, as the long-term measurement of abnormal share prices, BHAR can capture impacts that are derived from M & A deals. Following Ritter (1991), similar to CARs, BHAR is applied to measure the long-term stock price change of the CM&A events and to compensate the disadvantage that short-term share prices which may not be able to reflect the real impact of the CM&As. BHAR is calculated based on the following formula:

$$BHAR_i = \prod_{t=0}^{T}(1 + R_{it}) - \prod_{t=0}^{T}[1 + E(R_{it})] \tag{3}$$

Where Rit represents the return for stock i in the t th trading day, E(Rit) is the return on the market portfolio at time t. Then, to apply T test to the mean of the BHAR.

For Hypothesis 1,2,3, a cross-sectional regression is run to explore how the levels of unrelated product market diversification (and other relevant control variables) impact acquiring firms' CARs and BHARs and how business group affiliation and strategic asset seeking motivation moderate the effect of unrelated diversification strategies. The

analysis involves exploring variables associated with the pre-acquisition characteristics of the firms and their subsequent short- and long-term post acquisition market performance (of China's listed firms). Thus, while the regression analysis is cross-sectional the dependent variable incorporates a longitudinal dimension (i.e. three years post acquisition performance). A crucial question to which this paper now turn is how to measure unrelated diversification in international deal-making.

5.4.2. Sample and data

5.4.2.1. Sample

The data includes Chinese CM&A deals ranging from 2011-2019. The criteria for identifying the deals are as following: the global ultimate owner of the acquirer should be in China, while the target firms are non-Chinese. Besides, with the aim of attaining enough data to calculate CARs and BHARs, all acquirers must have at least 120 trading days' data before the announcement of the CM&A event and the acquiring firms should be listed firms in Shenzhen and Shanghai stock exchange market. The initial 417 CM&A deals were collected from Thomson ONE database. In order to obtain stock price data, DataStream codes were used to match the original deal information with the DataStream data. In order to achieve firm level data (which is only available in Orbis), then Orbis firm-level data is added for each firm by matching the acquirer and target firms. Due to the missing data from Orbis, 357 deals were left in the final sample.

5.4.2.2. Independent and moderating variables

Independent variable

The purpose of this paper, as noted, is to better understand how the product relatedness of the target influences share price performance. To this end, the way in which the deal leads to more or less diversification in the acquiring group is measured by two different methods. The first method is to use a dummy variable approach based on 4-digit SIC code similarity Doukas and Lang (2003). Specifically, if the acquirer's 4-digit SIC code is equal to target 4-dig SIC code, it is marked as 1, otherwise 0. This approach, however, is somewhat simplistic and alternative approaches can capture in more depth the industrial similarity of a deal. Thus, the 4-digit method will mainly be shown as a robustness test for the results.

The second measurement, which is mainly used to test the hypothesises, is to use Herfindahl index change to assess diversification. Specifically, following Doukas and Lang (2003), the Herfindahl index change from year -1 to year 0 is used to capture the influence of the change in the industrial structure of the firm (diversification) resulting from its foreign investment decision. This paper applies a sale-based Herfindahl index instead of the assets-based index that Foukas and Lang (2003) used, but the logic is the same.

The estimation of the Herfindahl index for the event year is calculated as 1 minus the sum of the squared sales per business segment prior to the M&A year plus the square of the new investment relative to the squared sales of all segments prior to the M&A year plus the new investment. Where Si is the exposure of category i (e.g., category sales, category assets), and TS is the total exposure (e.g., total sales, total assets). HHI ranges between zero and one, the bigger HHI, the higher degree of diversification.

$$\text{HHI} = 1 - \sum_i \left(\frac{S_i}{TS} \right)^2, \quad i = 1, 2, \ldots, n,$$

In addition, Fan and Goyal (2006)'s method of using commodity flow input/output tables is applied to identify vertical and horizontal acquisition. The advantage of employing Fan and Goyal (2006)'s method is to eliminate the situation that vertical deals may be identified as 'unrelated' while in fact they are 'related'. Therefore, when identifying diversification dummies, all deals were checked manually and then identified as 'related' if they are in fact vertical deals.

The challenge here is identifying backward and forward vertically related deals, which while appearing to be 'unrelated', are in fact related. All deals are checked manually by focusing to look at the industry segments that acquiring firms and their parent companies were involved in prior to the foreign M&A year. Additionally, all acquiring firms' group affiliated subsidiaries' and target firms' industry codes are manually checked and the four-digit SIC codes most closely aligned to those of the target firms are selected for further check. For instance, if a target firm's SIC code is 3530, when checking the acquiring firm' business group affiliations' SIC codes, they are illustrated as both 3573 and 3754, then the closest SIC code 3573 will be selected as a represent of the whole business group's SIC code.

Moderating variables

Diversified business group affiliation: A dummy variable is given the sample where the acquiror company is affiliated to a diversified business group. This paper uses a definition that has been used widely elsewhere (Shi et al. 2021). This is that the core firm in the group must have at least 50-million-yuan (around US $6.8 million) registration fund, own at least 5 affiliation firms, spanning at least 3 two-digit SIC codes, and the total registration fund of the main and affiliation firms must be over 100 million yuan (around US $13.6 million). Additionally, two more dummy variables of diversified business group affiliation are used to capture how different characteristics of business group affiliation would have different impacts on firm performance. Specifically, a dummy variable is given where the acquirer is belonged to a diversified business group and has R&D centre/technology centre; and dummy variable is given where the acquiring company is belonged to a diversified business group that has a financial centre.

A strategic asset seeking (SAS) dummy variable: The sample is given a dummy variable of 1 if the target firm has one or more patent/trademark a year before the acquisition.: As mentioned by Luo and Tung (2007,2017) and Mathews (2006), one of the key purposes for Chinese acquires to conduct OFDI is to obtain intangible assets such as technology and know-how in developed markets in order to catch up. They would like to bring the acquired technologies---even those types which are unrelated (i.e. Kuka and Midea) to the domestic market, combined with complementary local resources (CLRs) and then to localize them quickly. Therefore, as discussed, the SAS motivation is vital for Chinese MNEs. We conclude the SAS dummy to control for such

impact. Following Ahuja and Katila's (2001) method to justify technological M&A, if either of the following conditions is met, then the M&A is coded as SAS CM&A: 1. The acquisition is reported as technology orientation CM&A by media or reports (information can be achieved from Thomson ONE or internet sources); 2. Target firm owns one or more patent/trademark/intangible assets one years before the time of CM&A.

5.4.3. Control variables

Deal specifica factors

Value of transaction (VOT): Current research show different views regarding the impact of value of transaction on firm value. For example, Aybar and Ficici (2009)'s study shows VOT has a significant and positive impact on acquiring firm's value because the great power, reputation and more resources are often come with larger size of transaction. On the other hand, empirical result from Du and Boateng (2015) shows that because larger size of deals often leads to managerial issues, which affects acquirer's value negatively. VOT is calculated as the log of VOT in this study (Chinese yuan).

Percentage owned after transaction (POAT): This information refers to how much acquiring firms take control of the target firm. It is believed that if an acquirer's percentage owned after transaction is high, it will have more control over the acquired firms, and more power to manage the target firm (Kiymaz, 2004). The measurement of POAT is the percentage owned by the acquiring firms after the acquisition.

Firm specific factors

Degree of diversification: According to Lu, Liu, Filatotchev and Wright (2014), listed Chinese firms' domestic diversification have significant and positive impact on their international diversification. Thus, the degree of diversification in an acquiror's domestic country also needs to be concluded when considering its international unrelated diversification performance. It is measured as acquiring firms' degree of diversification 12 months prior to acquisition. This paper uses the Herfindahl index as it is generally considered to be among the most refined of measures (Doukas and Lang, 2003).

The Herfindahl index for the event year is measured as one minus the sum of the squared assets per business segment prior to the investment announcement plus the square of the new investment relative to the squared assets of all segments prior to the announcement plus the new investment.

Degree of innovation capability: absorptive ability has been measured using the firm's innovation capability (Du, Lu and Tao, 2015). This is controlled by measuring acquiring firms' intangible assets and number of patents prior to the time of acquisition.

State-ownership: Dummy variable is given to the acquiring firm whose largest shareholder is State Asset Management Bureaus or other SOEs controlled by the government. Orbis illustrates information regarding who is the biggest shareholder and ownership type of the parent firm.

Central government controlled SOE: A dummy variable that equals 1 if a firm is SOE and controlled by the central government, and 0 otherwise. *Local government controlled SOE:* A dummy variable that equals 1 if a firm is SOE and controlled by the local government, and 0 otherwise.

Finally, basic firm-level data was added as control variables. *Acquirer total assets*: An acquirer's firm size is often considered in connection with its capability to obtain returns via economic of scales and scope (Moeller, Schlingemann and Stulz, 2004). *Total assets*: total asset is estimated by taking the log of acquirers' total assets (Chinese Yuan) one year before the acquisition. *Acquirer total number of employees*: Take log of total number of employees one year before the acquisition. *Acquirer firm age*: In addition, firm age is also included as the control variable because firm age may reflect the experience that an enterprise may increase over time to eliminate the negative effect of 'liability of foreignness' that may occur after the unrelated acquisition (Sun, Peng, and Tan, 2017). Each value has also been taken the log value. *Acquirer ROA*: Prior research indicates that a firm's profitability would determine its decision of OFDI, which will lead to better post-acquisition performance (Du and Boateng, 2015). ROA is estimated as a ratio of net income to average total assets at book value and it is measured as the return on assets of last 12 months prior to CM&A. *Tobin's Q*: Doukas and Lang, (2003) note that Tobin's Q represents a firm's capability, resources and growth opportunities, which will impact acquirer's absorptive capacity. It is estimated as market value over book value of assets (Chinese yuan) one year before the CM&A

Regional domicile factors

Cultural distance is mentioned frequently as one of the most important factors that impact acquiring firm's post-acquisition performance (Weber, 1996; Weber and Tarba, 2012). Following Ahammad et al., (2016), this paper includes culture distance as control variable. It is measured as following:

$$CD= \sqrt{\sum_{i=1}^{9}(I_{ij} - I_{iu})^2}$$

Prior studies find that regional domestic factors can also impact the performance of the acquirers (Aybar and Ficci, 2009). According to Luo and Tung (2007), EMNEs tend to technologies in developed countries with the purpose of catching up. Thus, acquiring firms will perform better when the target firms are in developed regions. Thus, a dummy variable of 1 is given to the sample when its target country is located in OECD countries, and 0 otherwise.

Industry specific factors

Previous literatures suggest that firms' structure is important to influence its expansion strategy and the value implication of expansions (Brouthers and Brouthers, 2000). Thus, following Sun et al.'s (2017), *High-tech industry* dummy variables were given to where acquiring and target firms include in NACE codes: 2087, 229, 261, 267, 281-287, 289, 299, 30, 335, 336, 348, 349, 351, 353-359, 361-367, 369, 371-376, 379, 381, 382, 384, 3851, 386, 3999, 48, 5045, 737, 7389, 871, 873, 874, 899, 12, 131, 132, 138, 201, 211, 2911, 3264, 3873, 49, 781, 8700=1 and 0 otherwise.

Table 17 below lists variables, descriptions and data sources.

Table 17. Model variables, descriptions and data sources

Variables	Description	Data source
Dependent variables		
Cumulative abnormal return (-1, +1)	Cumulative abnormal return of acquiring firms calculated based on the market model during the 3 days around the acquisition announcement	Thomson one and DataStream
BHAR	Buy and Hold Abnormal Return of acquiring firms calculated based on the market model during the 3 years after the acquisition announcement	Thomson one and DataStream
Independent variables		
Diversification	1. 4-digit dummy: if acquirer 4 digit SIC =target 4 dig SIC code is marked as 0 otherwise 1 (And then vertical deals are checked manually). 2. Herfindahl index change: The Herfindahl index change from year -1 to year 0 is used to capture the influence of the change in the industrial structure of the firm (diversification) resulting from its foreign investment decision.	Thomson one, DataStream, Orbis
Moderating factors		
Diversified business group affiliation	A dummy variable is given the sample where the acquiror company is affiliated to a diversified business group. See detailed definition in the context.	Business group year book and company year book
Business group with R&D capability	A dummy variable that equals 1 if a firm is affiliated to a diversified business group and the group has R&D centre, and 0 otherwise.	Orbis and firm website
Business group with financing capability	A dummy variable that equals 1 if a firm is affiliated to a diversified business group and the group has company in finance industry, and 0 otherwise.	Orbis and firm website
Strategic asset seeking (SAS)	A dummy variable that equals 1 if the target firm has at least one patent/trade market one year before the acquisition.	Thomson ONE
Control variables		
Deal specific factors		
Value of transaction	Take log of the total value of the transaction (Chinese yuan)	Thomson ONE
Percentage owned after transaction	Percentage owned after transaction	Thomson ONE
Firm specific factors		
SOEs	Dummy variable is given to the acquiring firm whose largest shareholder is State Asset Management Bureaus or other SOEs controlled by the government.	Orbis and firm website
Central government controlled SOE	A dummy variable that equals 1 if a firm is owned by the State Asset Management Bureaus or other SOEs controlled by the central government, and 0 otherwise.	Orbis and firm website
Local government controlled SOE	A dummy variable that equals 1 if a firm is owned by the local State Asset Management Bureaus or other SOEs controlled by the local government, and 0 otherwise.	Orbis and firm website
Acquiring firms' degree of diversification before acquisition	HHI	Orbis
Acquiring firms' degree of innovation capability before acquisition	Take log of total number of patents 12 months prior to acquisition; Intangible assets 12 months prior to acquisition	Orbis
Acquirer total assets	Take log of total assets 12 months prior to acquisition (Chinese yuan)	DataStream
Acquirer total number of employees	Take log of total number of employees 12 months prior to acquisition	Thomson ONE
Acquirer firm age	Take log of year of incorporation to year of acquisition	DataStream

Acquirer ROA	Return on assets of last 12 months prior to acquisition	DataStream
Tobin's Q	Market value of assets over book value of assets 12 months prior to acquisition (Chinese yuan)	DataStream
Regional domicile factors		
Culture distance	$$CD= \sqrt{\sum_{i=1}^{9}(I_{ij} - I_{iu})^2}$$	Orbis
Target dummy	Dummy variable where the target firm is belonged to a developed country. The list of the developed countries (OECD) is as followed: OECD 2 digit ISO code: AU, AT, BE, CA, CH, TR, GB, USCL CZ, DK,EE,FI,FR,DE,GRHU,IS,IE,IL,IT,JP,KR,LU,MX,NL,NZ,NO,PL, PT,SK,SI,ES,SE	Thomson one
Industry specific factors		
Acquirers and target High-tech industry	Dummy variable where acquirers and targets include in NACE codes: 2087, 229, 261, 267, 281-287, 289, 299, 30, 335, 336, 348, 349, 351, 353-359, 361-367, 369, 371-376, 379, 381, 382, 384, 3851, 386, 3999, 48, 5045, 737, 7389, 871, 873, 874, 899, 12, 131, 132, 138, 201, 211, 2911, 3264, 3873, 49, 781, 8700 = 1 and 0 otherwise	Thomson one and sic code industry allocation information

5.4.4. Descriptive statistics

Table 18 lists the frequency distribution of CM&A announcements by year. It can be seen that the total number of cases witnessed a big rise since 2015 and stayed at a relative high level until 2019. According to Table 19, it can be seen that most of the cases are in Industrial, High technology, Material and Healthcare industries. 189 acquirers are from high tech industry which accounts for 53% of the total cases. And almost more than half of the CM&A deals (184 deals) are strategic asset seeking motivated. Table 20 illustrates that majority (70.59%) of Chinese acquirers are seeking unrelated diversification strategy (when measured by the 4-digit code dummy), which illustrate a significant newly observed trend of Chinese MNES' internationalization strategy. Private listed firms are leading the CM&As (81.79% of the total number of acquiring firms). In addition, the number of diversified business group and non-diversified business group affiliated firms are almost equal.

Table 18. Frequency distribution of the CM&A announcements by year

	Freq.
2011	15
2012	24
2013	22
2014	13
2015	61
2016	61
2017	66
2018	50
2019	45
Total	357

Table 19. Frequency distribution of the CM&A announcements by industry

Acquiror Macro Industry	Freq.	High Tech	Strategic Asset Seeking Deals
Consumer Products and Services	19	10	11
Consumer Staples	23	13	12
Energy and Power	27	14	11
Financials	9	5	4
Healthcare	42	24	21
High Technology	69	33	39
Industrials	90	48	43
Materials	55	30	31
Media and Entertainment	8	4	3
Real Estate	2	2	1
Retail	3	1	3
Telecommunications	10	5	5
Total	357	189	184

Table 20. Frequency distribution of the CM&A announcements by diversification (4-digit SIC dummy), diversified business group affiliation (DBGA) and ownership structure

	Freq.	Percent%		Freq.	Percent%		Freq.	Percent%
Diversified Deals	252	70.59	**DBGA**	178	49.86	**SOE**	65	18.21
Focused Deals	105	29.41	**Non-DBGA**	179	50.14	**POE**	292	81.79
Total	357	100.00	Total	357	100.00	Total	357	100.00

Table 21 below illustrates the correlation matrix. The results show no multicollinearity issue as the correlations are mostly smaller than 0.4. In addition, variance inflation factors (VIFs) are also calculated in the test to make sure the robustness of the results (most of the results are less than 10). Thus, the results show no multicollinearity problem.

Table 21. Correlation Matrix

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)
(1) CAR	1.00																				
(2) BHAR	0.13	1.00																			
(3) DIV	-0.13	0.11	1.00																		
(4) DHHI	-0.05	0.43	0.13	1.00																	
(5) SOE	0.19	-0.10	-0.08	-0.15	1.00																
(6) DBGA	0.05	0.16	-0.03	0.10	0.07	1.00															
(7) POAT	0.11	0.05	0.06	0.02	0.02	0.04	1.00														
(8) VOT	-0.02	-0.15	-0.01	-0.03	-0.01	0.06	0.10	1.00													
(9) INTAN	0.02	-0.13	0.15	-0.02	-0.04	-0.02	-0.02	0.00	1.00												
(10) TA	-0.04	-0.07	0.00	-0.06	0.17	0.17	-0.13	0.09	0.20	1.00											
(11) EMPY	-0.02	0.03	0.02	-0.03	0.15	0.27	-0.08	0.01	0.32	0.68	1.00										
(12) FA	-0.05	-0.12	0.02	-0.04	0.11	0.20	-0.07	0.04	0.04	0.29	0.30	1.00									
(13) NO.PAT	-0.03	0.05	0.07	-0.05	0.09	0.01	-0.01	-0.06	0.37	0.34	0.46	0.01	1.00								
(14) CD	-0.06	-0.08	0.09	-0.08	-0.08	0.01	-0.07	0.05	0.01	0.00	0.00	-0.02	0.10	1.00							
(15) SAS	-0.06	-0.02	0.06	-0.06	-0.04	0.06	-0.04	0.02	0.02	0.06	0.11	-0.01	0.16	0.57	1.00						
(16) AHT	-0.04	-0.05	-0.02	-0.03	-0.10	-0.05	0.05	-0.04	0.05	-0.10	-0.05	-0.17	0.17	0.13	0.11	1.00					
(17) THT	-0.09	-0.06	-0.02	-0.05	-0.07	-0.09	-0.08	0.08	0.11	-0.03	-0.03	-0.02	0.01	0.08	-0.01	0.07	1.00				
(18) PM	-0.02	0.07	0.06	0.06	-0.06	-0.11	-0.08	-0.00	-0.06	0.04	-0.10	-0.03	-0.01	0.07	0.02	0.03	-0.01	1.00			
(19) Tobin Q	-0.01	-0.02	0.08	0.06	-0.05	-0.10	0.05	-0.05	-0.09	-0.26	-0.20	-0.01	-0.17	0.01	-0.01	0.07	0.01	0.05	1.00		
(20) ROA	0.01	0.08	-0.01	0.01	-0.08	-0.01	-0.08	0.02	0.02	0.03	0.00	-0.11	0.13	0.06	0.06	0.07	0.04	0.60	-0.4	1.00	
(21) AHT	-0.01	0.06	0.12	0.09	0.09	0.09	0.07	-0.54	0.22	0.15	0.21	-0.05	0.35	-0.1	0.04	0.07	-0.07	-0.1	-0.1	-0.1	1.00

5.5. Results

The test results for CARs and BHARs are included in Appendix. The main results are in Table 22 and Table 23 with employing cross-sectional regression module below. Specifically, 3-day CARs and 3-year BHARs are chosen as the main dependent variables to capture the short-term and long-term performance. Table 22 includes business group affiliation as a whole for the regression, while Table 23 is designed to test the heterogeneity of business group affiliation. When including all variables in the regression, results of Model 7 in Table 22 and Model 8 in Table 23 show negative and significant impact of diversification in short-term (coefficient are -0.652 and -8.753 respectively), while positive and significant impact (28.85 and significant at 1% level) in long-term. Thus, the results prove that in short-term, diversified group performs worse than focused group, while in long-term the results are the opposite. Hypothesis 1 is supported.

Then, moving to the role of diversified business group affiliation in acquiring firm's long-term performance to test Hypothesis 2. The interaction term of diversified business group affiliation and diversification in Model 14 in Table 22 shows a positive and significant impact (7.105 and significant at 10% level). Thus, supporting Hypothesis 2. Table 23 shows the results of testing the heterogeneity of diversified business group affiliation. This paper finds positive and significant impact of diversified business group affiliation with R&D capability (H2a is supported) on long-term acquiring firm performance, while no significant impact of financing capability. However, it is worth noticing that the financing capability has positive and significant

impact on firm performance in short-term as the figure of coefficient is 5.082 and significant at 5% level for Module 8 in Table 23.

Furthermore, in Table 22 by adding the motivation of strategic asset seeking to diversified business group affiliation, the three-way interaction term increases from 7.105, significant at 10% to 9.850 significant at 1% level. This suggests that diversified business group affiliation with strategic asset seeking motivation maximizes a firm's capability in solving problems that raised due to the negative impact of unrelated diversification while taking the advantages of unrelated deals. Thus, supporting Hypothesis 3.

By looking at the impact of SOEs in Table 22, results show negative and significant impact in unrelated firms' long-term performance. While Table 23, Model 16 further indicates central-owned SOEs negatively moderate the positive impact in the long-term.

Table 22. The effect of diversification (*Change of HHI*) on firm performance conditional on BGA, SOE and SAS

	Short-term Share Price Performance							Long-term Share Price Performance						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
BGA	0.485	0.551	0.0441	0.387	0.581	-0.0844	0.288	22.48***	15.11**	8.626	14.05**	15.73***	8.667	6.881**
	(0.71)	(0.80)	(0.06)	(0.56)	(0.87)	(-0.11)	(0.86)	(3.07)	(2.54)	(1.54)	(2.41)	(2.75)	(1.63)	(2.45)
SOE	3.059***	2.917***	3.011***	3.289***	3.003***	3.459***	3.079***	-25.34***	-9.481	-8.282	-7.063	-7.717	-4.350	-9.241
	(2.75)	(2.69)	(2.76)	(2.78)	(2.76)	(2.92)	(2.77)	(-3.01)	(-1.13)	(-0.99)	(-0.85)	(-0.94)	(-0.52)	(-1.07)
AHT	-0.881	-0.819	-0.698	-0.912	-0.839	-0.809	-0.707	2.403	-4.437	-2.879	-5.037	-4.846	-3.959	-1.855
	(-1.18)	(-1.10)	(-0.94)	(-1.25)	(-1.14)	(-1.12)	(-0.96)	(0.28)	(-0.57)	(-0.38)	(-0.63)	(-0.61)	(-0.50)	(-0.24)
PREHHI	0.681	0.564	0.00472	0.379	0.00724	-0.683	-0.491	19.39	32.47**	25.32	31.27*	21.04	13.67	16.11
	(0.42)	(0.35)	(0.00)	(0.24)	(0.00)	(-0.41)	(-0.29)	(1.25)	(2.06)	(1.64)	(1.96)	(1.58)	(1.02)	(1.25)
ROA	0.0318	0.0362	0.0336	0.0345	0.0324	0.0283	0.0295	1.182**	0.692*	0.658	0.681	0.613	0.574	0.521
	(0.61)	(0.70)	(0.64)	(0.65)	(0.64)	(0.53)	(0.58)	(2.18)	(1.72)	(1.53)	(1.60)	(1.52)	(1.27)	(1.31)
TOBINQ	0.0297	0.0370	0.0469	0.0286	0.0552	0.0551	0.0589	1.240*	0.425	0.551	0.370	0.799*	0.849*	0.426
	(0.53)	(0.65)	(0.83)	(0.48)	(0.98)	(0.94)	(1.02)	(1.92)	(0.88)	(1.16)	(0.75)	(1.69)	(1.77)	(0.87)
TOECD	-0.639	-0.648	-0.624	-0.773	-0.628	-0.730	-0.621	3.422	4.464	4.773	3.651	4.868	4.362	3.035
	(-0.89)	(-0.91)	(-0.87)	(-1.11)	(-0.87)	(-1.04)	(-0.85)	(0.51)	(0.73)	(0.79)	(0.59)	(0.81)	(0.72)	(0.51)
THT	-0.0669	-0.107	0.0853	-0.176	-0.0812	0.0377	0.0910	-10.46	-5.971	-3.508	-6.421	-5.439	-3.603	-4.696
	(-0.08)	(-0.13)	(0.11)	(-0.22)	(-0.10)	(0.05)	(0.11)	(-0.97)	(-0.59)	(-0.36)	(-0.63)	(-0.55)	(-0.37)	(-0.47)
SAS	2.015***	2.054***	2.026***	1.940***	1.482*	1.388*	0.996***	26.59***	22.22***	21.87***	21.48***	10.48	9.870	9.895***
	(2.91)	(3.03)	(3.01)	(2.82)	(1.94)	(1.78)	(2.94)	(3.15)	(3.12)	(3.14)	(3.06)	(1.55)	(1.50)	(3.16)
CD	-0.628*	-0.655*	-0.622*	-0.634*	-0.659*	-0.606*	-0.623*	-12.26**	-9.206**	-8.789**	-9.070**	-9.298**	-8.776**	-8.725**
	(-1.80)	(-1.90)	(-1.81)	(-1.87)	(-1.94)	(-1.82)	(-1.85)	(-2.39)	(-2.25)	(-2.16)	(-2.22)	(-2.46)	(-2.32)	(-2.46)
FIRMAGE	-0.302	-0.309	-0.274	-0.470	-0.372	-0.493	-0.310	-17.53	-16.73	-16.29	-17.77	-18.02	-18.57	-13.36
	(-0.32)	(-0.33)	(-0.30)	(-0.51)	(-0.40)	(-0.56)	(-0.34)	(-1.51)	(-1.36)	(-1.32)	(-1.44)	(-1.48)	(-1.53)	(-1.09)
NO.PAT	-0.0815	-0.0800	-0.0733	-0.107	-0.0354	-0.0588	-0.0393	3.799*	3.638**	3.723**	3.466**	4.555***	4.436***	4.202***
	(-0.44)	(-0.43)	(-0.39)	(-0.58)	(-0.19)	(-0.31)	(-0.21)	(1.85)	(2.23)	(2.33)	(2.12)	(2.83)	(2.79)	(2.99)
EMPY	-0.184	-0.191	-0.198	-0.265	-0.261	-0.335	-0.270	8.773*	9.596***	9.512***	9.118***	8.166**	7.682**	8.274**
	(-0.39)	(-0.40)	(-0.42)	(-0.58)	(-0.56)	(-0.74)	(-0.58)	(1.88)	(2.68)	(2.68)	(2.66)	(2.51)	(2.43)	(2.57)
TA	-0.0817	-0.0826	-0.0557	-0.0354	-0.0690	0.00333	-0.0431	-4.543*	-4.449**	-4.104**	-4.142**	-4.171**	-3.567**	-4.164**
	(-0.36)	(-0.36)	(-0.25)	(-0.16)	(-0.30)	(0.02)	(-0.19)	(-1.68)	(-2.23)	(-2.24)	(-2.22)	(-2.12)	(-2.06)	(-2.32)
INTAN	0.279	0.284	0.287	0.332	0.309	0.357*	0.318	-6.088***	-6.643***	-6.611***	-6.331***	-6.136***	-5.825***	-5.626***
	(1.25)	(1.27)	(1.30)	(1.51)	(1.41)	(1.66)	(1.45)	(-3.41)	(-4.71)	(-4.76)	(-4.60)	(-4.53)	(-4.25)	(-4.24)
VOT	-0.0276	-0.0293	-0.0281	-0.0574	-0.00782	-0.0364	-0.000786	-3.705**	-3.521**	-3.506**	-3.704**	-3.081**	-3.258**	-2.321*
	(-0.22)	(-0.23)	(-0.22)	(-0.47)	(-0.06)	(-0.30)	(-0.01)	(-2.01)	(-2.29)	(-2.33)	(-2.45)	(-2.06)	(-2.23)	(-1.66)
POAT	1.572	1.588	1.620	1.634	1.582	1.660	1.582	11.02	9.337	9.752	9.638	9.224	9.901	5.330
	(1.46)	(1.48)	(1.49)	(1.51)	(1.48)	(1.52)	(1.47)	(1.16)	(1.01)	(1.03)	(1.04)	(1.03)	(1.08)	(0.61)
INDY	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
YEAR	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
H1: DIV		-1.190	-4.954**	0.0430	-4.548*	-6.760***	-0.652*		132.9***	84.68***	140.9***	63.91***	29.39	28.85***
		(-0.80)	(-2.40)	(0.03)	(-1.93)	(-2.74)	(-1.92)		(6.80)	(4.09)	(6.50)	(4.40)	(0.82)	(7.86)
SAS*DIV					5.842*	5.365*	0.660*					120.0***	115.6***	10.04**
					(1.95)	(1.97)	(1.86)					(3.42)	(3.56)	(2.56)
H2: BGA*DIV			5.375**			5.303**	0.639*			68.82*			63.87*	7.105*
			(2.03)			(2.06)	(1.87)			(1.95)			(1.78)	(1.86)
DIV*SOE				-13.78*		-13.70*					-89.53**		-85.80**	
				(-1.79)		(-1.89)					(-2.29)		(-2.14)	
BGASAS							0.0443							10.10***
							(0.12)							(3.29)
H3:SAS*BGA*DIV							0.133							9.850***
							(0.39)							(2.69)
_cons	0.952	1.143	0.862	1.276	1.745	1.549	1.964	64.71	43.31	39.70	44.17	55.65	52.68	70.31*
	(0.24)	(0.28)	(0.22)	(0.33)	(0.44)	(0.40)	(0.50)	(1.34)	(0.99)	(0.94)	(1.00)	(1.33)	(1.31)	(1.75)
r2	0.117	0.119	0.129	0.144	0.134	0.166	0.143	0.234	0.406	0.416	0.412	0.442	0.456	0.475
F	2.563	2.646	2.945	2.523	2.656	2.707	2.737	5.327	7.910	7.690	7.605	8.454	8.517	11.93

t statistics in parentheses * p<0.1, ** p<0.05, *** p<0.01   Note: For model 7 and 14 all independent variable are standardized before calculation of the product terms.

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Table 23. The effect of diversification (*Change of HHI*) on firm performance conditional on SAS and *different types* of BGA, SOE

	Short-term Performance								Long-term Performance							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
RDBGA	0.542	0.639	0.157	0.673	0.627	0.505	0.668	0.0913	23.82***	16.27***	9.649*	15.91***	16.19***	15.47***	16.89***	9.238*
	(0.78)	(0.92)	(0.20)	(0.98)	(0.89)	(0.73)	(0.99)	(0.12)	(3.20)	(2.83)	(1.77)	(2.87)	(2.85)	(2.72)	(3.02)	(1.81)
FBGA	-1.305**	-1.300**	-1.341**	-1.775**	-1.238*	-1.361**	-1.290**	-1.816***	-12.35	-12.74	-13.31	-7.626	-12.29	-13.11	-12.53	-8.572
	(-2.07)	(-2.06)	(-2.15)	(-2.58)	(-1.95)	(-2.13)	(-2.09)	(-2.67)	(-1.33)	(-1.52)	(-1.58)	(-0.90)	(-1.44)	(-1.56)	(-1.51)	(-1.02)
CSOE	2.011*	1.925*	1.905*	1.921*	2.336*	2.064**	1.963*	2.606**	0.241	6.929	6.655	6.972	9.890	7.759	7.775	11.50
	(1.79)	(1.73)	(1.76)	(1.74)	(1.93)	(2.02)	(1.80)	(2.59)	(0.02)	(0.65)	(0.64)	(0.64)	(0.86)	(0.74)	(0.76)	(0.99)
LSOE	0.945	0.733	0.835	0.683	0.800	0.865	0.773	1.033	-33.71***	-17.18	-15.77	-16.64	-16.69	-16.39	-16.30	-13.22
	(0.68)	(0.55)	(0.63)	(0.53)	(0.60)	(0.64)	(0.59)	(0.79)	(-3.05)	(-1.53)	(-1.42)	(-1.48)	(-1.48)	(-1.52)	(-1.49)	(-1.26)
AHT	-0.755	-0.671	-0.550	-0.762	-0.713	-0.680	-0.688	-0.731	2.493	-4.081	-2.419	-3.104	-4.387	-4.134	-4.459	-2.368
	(-0.99)	(-0.89)	(-0.74)	(-1.01)	(-0.94)	(-0.92)	(-0.93)	(-1.02)	(0.28)	(-0.52)	(-0.31)	(-0.40)	(-0.55)	(-0.52)	(-0.55)	(-0.29)
PREHHI	0.355	0.174	-0.354	-0.00552	0.150	-0.133	-0.351	-1.390	14.24	28.28*	21.04	30.22*	28.11*	26.46*	16.82	10.08
	(0.21)	(0.10)	(-0.20)	(-0.00)	(0.09)	(-0.08)	(-0.21)	(-0.84)	(0.97)	(1.87)	(1.41)	(1.94)	(1.85)	(1.73)	(1.34)	(0.77)
ROA	0.0156	0.0222	0.0196	0.0157	0.0215	0.0183	0.0184	0.00417	1.143**	0.631	0.595	0.701*	0.626	0.608	0.548	0.549
	(0.30)	(0.43)	(0.38)	(0.30)	(0.42)	(0.35)	(0.36)	(0.08)	(2.07)	(1.56)	(1.39)	(1.71)	(1.54)	(1.43)	(1.34)	(1.18)
TOBINQ	0.0378	0.0482	0.0581	0.0341	0.0434	0.0424	0.0653	0.0487	1.330**	0.525	0.661	0.675	0.491	0.490	0.897**	1.067**
	(0.74)	(0.92)	(1.11)	(0.67)	(0.81)	(0.79)	(1.26)	(0.94)	(2.10)	(1.16)	(1.48)	(1.31)	(1.07)	(1.06)	(1.99)	(2.09)
THOECD	-0.646	-0.664	-0.639	-0.683	-0.653	-0.742	-0.645	-0.702	2.603	4.021	4.358	4.229	4.096	3.554	4.440	4.529
	(-0.90)	(-0.93)	(-0.89)	(-0.96)	(-0.91)	(-1.07)	(-0.89)	(-0.98)	(0.38)	(0.65)	(0.71)	(0.69)	(0.66)	(0.57)	(0.73)	(0.73)
THT	-0.458	-0.504	-0.331	-0.590	-0.458	-0.584	-0.485	-0.425	-10.62	-7.093	-4.716	-6.166	-6.764	-7.570	-6.678	-3.738
	(-0.55)	(-0.61)	(-0.41)	(-0.70)	(-0.55)	(-0.71)	(-0.59)	(-0.51)	(-0.65)	(-0.68)	(-0.47)	(-0.59)	(-0.64)	(-0.72)	(-0.65)	(-0.37)
SAS	1.902***	1.959***	1.931***	2.025***	1.979***	1.893***	1.420*	1.417*	25.24***	20.87***	20.49***	20.15***	21.01***	20.48***	9.111	8.535
	(2.65)	(2.77)	(2.75)	(2.89)	(2.83)	(2.63)	(1.80)	(1.83)	(2.98)	(2.93)	(2.94)	(2.91)	(2.95)	(2.91)	(1.32)	(1.29)
CD	-0.649*	-0.690*	-0.659*	-0.752**	-0.724**	-0.653*	-0.695**	-0.742**	-12.22**	-9.095**	-8.676**	-8.421**	-9.341**	-8.880**	-9.213**	-8.264**
	(-1.80)	(-1.94)	(-1.86)	(-2.11)	(-2.03)	(-1.87)	(-1.98)	(-2.14)	(-2.40)	(-2.23)	(-2.14)	(-2.07)	(-2.30)	(-2.19)	(-2.45)	(-2.18)
FIRMAGE	-0.203	-0.225	-0.176	-0.438	-0.203	-0.385	-0.283	-0.588	-19.66*	-17.98	-17.32	-15.68	-17.82	-18.93	-19.25	-17.34
	(-0.20)	(-0.22)	(-0.18)	(-0.43)	(-0.20)	(-0.38)	(-0.28)	(-0.60)	(-1.72)	(-1.51)	(-1.46)	(-1.33)	(-1.51)	(-1.59)	(-1.65)	(-1.55)
NO.PAT	-0.0531	-0.0527	-0.0458	-0.00936	-0.0611	-0.0737	-0.00929	0.0140	3.402*	3.369**	3.464**	2.903*	3.309**	3.244**	4.317***	3.763**
	(-0.28)	(-0.28)	(-0.24)	(-0.05)	(-0.32)	(-0.40)	(-0.05)	(0.07)	(1.69)	(2.14)	(2.25)	(1.90)	(2.10)	(2.06)	(2.81)	(2.58)
EMPY	-0.195	-0.203	-0.212	-0.257	-0.221	-0.266	-0.268	-0.421	8.994*	9.642***	9.511***	10.23***	9.510***	9.267***	8.212**	8.148***
	(-0.40)	(-0.42)	(-0.44)	(-0.52)	(-0.45)	(-0.57)	(-0.57)	(-0.88)	(1.93)	(2.73)	(2.71)	(2.90)	(2.70)	(2.68)	(2.57)	(2.63)
TA	0.105	0.101	0.133	0.133	0.0909	0.155	0.114	0.216	-3.583	-3.293	-2.863	-3.635	-3.368	-2.975	-3.006	-2.658
	(0.48)	(0.47)	(0.62)	(0.61)	(0.42)	(0.71)	(0.52)	(0.97)	(-1.24)	(-1.51)	(-1.39)	(-1.61)	(-1.53)	(-1.42)	(-1.39)	(-1.28)
INTAN	0.293	0.304	0.303	0.310	0.290	0.343	0.326	0.353	-5.107***	-5.917***	-5.928***	-5.981***	-6.012***	-5.682***	-5.420***	-5.378***
	(1.22)	(1.26)	(1.27)	(1.29)	(1.21)	(1.47)	(1.38)	(1.55)	(-2.97)	(-4.20)	(-4.30)	(-4.11)	(-4.20)	(-4.16)	(-4.10)	(-4.02)
VOT	-0.0296	-0.0335	-0.0318	-0.0427	-0.0476	-0.0574	-0.0131	-0.0616	-3.981**	-3.678**	-3.653**	-3.579**	-3.779**	-3.820**	-3.231**	-3.399**
	(-0.23)	(-0.26)	(-0.24)	(-0.33)	(-0.36)	(-0.47)	(-0.10)	(-0.50)	(-2.13)	(-2.32)	(-2.36)	(-2.26)	(-2.42)	(-2.42)	(-2.11)	(-2.30)
POAT	1.534	1.557	1.587	1.543	1.557	1.515	1.553	1.525	10.64	8.843	9.248	9.001	8.837	8.592	8.749	9.023
	(1.42)	(1.45)	(1.46)	(1.42)	(1.45)	(1.40)	(1.45)	(1.37)	(1.12)	(0.95)	(0.97)	(0.99)	(0.95)	(0.93)	(0.97)	(1.00)
INDY	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
YEAR	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
H1: DIV		-1.717	-5.284**	-3.246	-1.364	-0.803	-4.903**	-8.753***		133.5***	84.58***	150.0***	136.1***	139.0***	64.00***	42.93*
		(-1.14)	(-2.47)	(-1.58)	(-0.85)	(-0.58)	(-2.08)	(-3.53)		(6.84)	(4.11)	(5.36)	(6.39)	(6.66)	(4.19)	(1.23)
DIV*SAS							5.520*	5.636**							120.4***	113.8***
							(1.85)	(2.23)							(3.44)	(3.60)
H2a: DIV*RDBGA			5.083*					4.950**			69.78**					67.47**
			(1.91)					(2.04)			(1.99)					(2.02)
H2b: DIV*FBGA				4.759*				5.082**				-51.15				-44.16
				(1.97)				(2.32)				(-1.38)				(-1.36)
DIV*CSOE					-6.519			-8.447**					-46.88			-50.00
					(-1.22)			(-2.01)					(-0.79)			(-0.83)
DIV*LSOE						-15.21		-14.41						-90.39**		-91.85**
						(-1.56)		(-1.65)						(-2.10)		(-2.17)
_cons	-0.957	-0.701	-0.983	-0.0610	-0.371	-0.626	-0.128	0.793	44.26	24.34	20.47	17.46	26.71	24.79	36.86	29.47
	(-0.24)	(-0.18)	(-0.25)	(-0.02)	(-0.10)	(-0.16)	(-0.03)	(0.21)	(1.01)	(0.60)	(0.53)	(0.43)	(0.65)	(0.62)	(0.97)	(0.79)
r2	0.102	0.107	0.116	0.115	0.110	0.129	0.119	0.162	0.238	0.413	0.423	0.419	0.414	0.418	0.450	0.469
F	2.004	2.164	2.285	2.097	2.211	2.170	2.202	2.091	4.640	7.088	7.044	7.263	6.983	6.916	7.885	9.060

t statistics in parentheses * p<0.1, ** p<0.05, *** p<0.01   Note: For model 7 and 14 all independent variable are standardized before calculation of the product terms.

5.6. Robustness test

As mentioned in methodology part, diversification is measured by two different methods: 4-digit SIC code dummy and change of HHI index. While the latter is applied to test the main hypothesis, the 4-digit SIC code dummy variable has also been included in the regression to show whether there will be any different results (Table 24 and 25). Generally speaking, most of the results are in line with the results when applying change of HHI index.

Table 24. The effect of diversification (*Dummy diversification*) on firm performance conditional on BGA, SOE and SAS

	Short-term Performance							Long-term Performance						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
BGA	0.485	0.431	-0.868	0.778	0.480	-0.367	0.188	22.48***	23.21***	1.097	24.14***	23.30***	0.717	10.28***
	(0.71)	(0.63)	(-0.48)	(1.23)	(0.72)	(-0.21)	(0.56)	(3.07)	(3.21)	(0.12)	(3.33)	(3.16)	(0.09)	(2.95)
SOE	3.059***	2.912***	2.840***	8.163***	2.914***	8.109***	2.859***	-25.34***	-23.30***	-24.51***	-9.284	-23.29***	-9.523	-26.85***
	(2.75)	(2.69)	(2.65)	(3.39)	(2.69)	(3.43)	(2.61)	(-3.01)	(-2.77)	(-2.96)	(-0.91)	(-2.77)	(-0.97)	(-3.17)
AHT	-0.881	-0.701	-0.764	-0.578	-0.744	-0.667	-0.759	2.403	-0.0848	-1.161	0.243	-0.156	-0.780	-0.258
	(-1.18)	(-0.94)	(-1.03)	(-0.82)	(-1.00)	(-0.95)	(-1.02)	(0.28)	(-0.01)	(-0.13)	(0.03)	(-0.02)	(-0.09)	(-0.03)
PREHHI	0.681	0.959	0.973	0.975	0.822	0.887	0.840	19.39	15.54	15.78	15.58	15.32	16.13	15.23
	(0.42)	(0.58)	(0.58)	(0.62)	(0.49)	(0.55)	(0.50)	(1.25)	(1.02)	(1.05)	(1.02)	(1.01)	(1.06)	(1.04)
ROA	0.0318	0.0361	0.0249	0.0329	0.0288	0.0173	0.0202	1.182**	1.123**	0.934*	1.115**	1.111**	0.929*	0.899*
	(0.61)	(0.71)	(0.48)	(0.66)	(0.54)	(0.33)	(0.38)	(2.18)	(2.13)	(1.86)	(2.09)	(2.19)	(1.85)	(1.87)
TOBINQ	0.0297	0.0445	0.0414	0.0549	0.0423	0.0504	0.0366	1.240*	1.035	0.982	1.063	1.031	1.013	0.785
	(0.53)	(0.84)	(0.78)	(1.16)	(0.77)	(1.03)	(0.66)	(1.92)	(1.58)	(1.52)	(1.65)	(1.59)	(1.60)	(1.22)
TOECD	-0.639	-0.668	-0.702	-0.916	-0.670	-0.949	-0.693	3.422	3.834	3.256	3.172	3.832	2.515	2.007
	(-0.89)	(-0.95)	(-0.98)	(-1.40)	(-0.94)	(-1.42)	(-0.93)	(0.51)	(0.58)	(0.49)	(0.46)	(0.58)	(0.36)	(0.30)
THT	-0.0669	-0.212	-0.182	0.0657	-0.288	0.0376	-0.262	-10.46	-8.443	-7.931	-7.701	-8.568	-6.946	-9.140
	(-0.08)	(-0.26)	(-0.22)	(0.08)	(-0.35)	(0.05)	(-0.32)	(-0.97)	(-0.81)	(-0.75)	(-0.74)	(-0.82)	(-0.66)	(-0.83)
SAS	2.015***	2.198***	2.233***	2.211***	0.590	1.053	1.124***	26.59***	24.05***	24.64***	24.09***	21.39*	28.08**	12.84***
	(2.91)	(3.16)	(3.19)	(3.18)	(0.30)	(0.55)	(3.00)	(3.15)	(2.93)	(2.98)	(2.96)	(1.79)	(2.44)	(3.08)
CD	-0.628*	-0.604*	-0.570	-0.685**	-0.581*	-0.636*	-0.573	-12.26**	-12.58**	-12.00**	-12.79**	-12.54**	-12.24**	-12.70**
	(-1.80)	(-1.75)	(-1.65)	(-2.00)	(-1.66)	(-1.86)	(-1.62)	(-2.39)	(-2.51)	(-2.41)	(-2.54)	(-2.48)	(-2.43)	(-2.58)
FIRMAGE	-0.302	-0.220	-0.318	-0.468	-0.177	-0.525	-0.237	-17.53	-18.66	-20.33*	-19.32	-18.59	-21.23*	-16.63
	(-0.32)	(-0.24)	(-0.35)	(-0.52)	(-0.19)	(-0.60)	(-0.26)	(-1.51)	(-1.59)	(-1.75)	(-1.64)	(-1.57)	(-1.79)	(-1.47)
NO.PAT	-0.0815	-0.0865	-0.0962	-0.118	-0.0843	-0.126	-0.0909	3.799*	3.869*	3.704*	3.784*	3.873*	3.599*	4.149**
	(-0.44)	(-0.46)	(-0.52)	(-0.71)	(-0.46)	(-0.77)	(-0.50)	(1.85)	(1.91)	(1.83)	(1.86)	(1.91)	(1.76)	(2.15)
EMPY	-0.184	-0.197	-0.148	-0.389	-0.162	-0.319	-0.110	8.773*	8.955*	9.783**	8.442*	9.013*	9.205**	10.73**
	(-0.39)	(-0.42)	(-0.32)	(-0.83)	(-0.34)	(-0.70)	(-0.24)	(1.88)	(1.90)	(2.09)	(1.80)	(1.91)	(1.99)	(2.36)
TA	-0.0817	-0.0895	-0.0694	0.00181	-0.107	0.00723	-0.0936	-4.543*	-4.436	-4.095	-4.193	-4.465	-3.777	-4.744*
	(-0.36)	(-0.40)	(-0.31)	(0.01)	(-0.48)	(0.03)	(-0.43)	(-1.68)	(-1.51)	(-1.43)	(-1.45)	(-1.50)	(-1.34)	(-1.71)
INTAN	0.279	0.313	0.302	0.405*	0.325	0.405*	0.324	-6.088***	-6.551***	-6.735***	-6.306***	-6.530***	-6.508***	-6.718***
	(1.25)	(1.38)	(1.36)	(1.83)	(1.47)	(1.91)	(1.47)	(-3.41)	(-3.75)	(-3.94)	(-3.57)	(-3.76)	(-3.76)	(-3.69)
VOT	-0.0276	-0.0260	-0.0385	-0.112	-0.0199	-0.119	-0.0230	-3.705**	-3.728**	-3.942**	-3.957**	-3.718**	-4.213**	-3.389*
	(-0.22)	(-0.20)	(-0.29)	(-0.93)	(-0.15)	(-0.99)	(-0.17)	(-2.01)	(-2.02)	(-2.12)	(-2.11)	(-2.01)	(-2.24)	(-1.87)
POAT	1.572	1.721	1.648	1.573	1.895*	1.636	1.809*	11.02	8.967	7.732	8.574	9.257	6.873	4.811
	(1.46)	(1.63)	(1.55)	(1.47)	(1.84)	(1.58)	(1.77)	(1.16)	(0.89)	(0.78)	(0.84)	(0.87)	(0.66)	(0.48)
INDY	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
YEAR	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
DIV		-1.719**	-2.651**	-0.151	-2.771**	-1.773	-0.804*		23.81***	7.965	28.00***	22.07**	13.75	10.69***
		(-2.07)	(-2.03)	(-0.16)	(-2.50)	(-1.44)	(-1.91)		(3.24)	(0.87)	(3.37)	(2.05)	(1.08)	(3.59)
DIV*BGA			1.808			1.643	0.323			30.76**			32.53***	5.981**
			(0.97)			(0.90)	(0.74)			(2.56)			(3.04)	(2.40)
DIV*SOE				-7.952***		-7.966***					-21.22*		-22.81*	
				(-3.19)		(-3.29)					(-1.76)		(-1.87)	
DIV*SAS					2.228	1.648	0.424					3.689	-4.660	-0.121
					(1.07)	(0.82)	(0.85)					(0.25)	(-0.33)	(-0.04)
BGASAS							0.0725							11.16***
							(0.20)							(3.12)
DIV*BGA*SAS							0.206							2.963
							(0.48)							(0.90)
_cons	0.952	1.649	2.164	0.301	1.928	0.973	1.127	64.71	55.05	63.81	51.45	55.51	59.86	93.81*
	(0.24)	(0.43)	(0.56)	(0.08)	(0.50)	(0.27)	(0.29)	(1.34)	(1.15)	(1.34)	(1.08)	(1.16)	(1.28)	(1.83)
r2	0.117	0.133	0.137	0.188	0.140	0.197	0.143	0.234	0.253	0.260	0.255	0.253	0.263	0.280
F	2.563	2.532	2.394	2.482	3.362	3.410	2.951	5.327	5.187	5.199	5.160	5.041	5.115	5.506

t statistics in parentheses * p<0.1, ** p<0.05, *** p<0.01

Table 25. The effect of diversification (*Dummy diversification*) on firm performance conditional on SAS and different types of BGA, SOE

	Short-term Performance								Long-term Performance							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
RDBGA	0.542	0.477	-0.929	0.501	0.636	0.537	0.528	-0.383	23.82***	24.73***	3.783	24.75***	25.11***	24.98***	24.81***	2.094
	(0.78)	(0.69)	(-0.50)	(0.73)	(0.91)	(0.80)	(0.77)	(-0.21)	(3.20)	(3.37)	(0.42)	(3.37)	(3.42)	(3.39)	(3.32)	(0.26)
FBGA	-1.305**	-1.224*	-1.201*	-2.533	-1.276*	-1.235*	-1.181*	-2.532	-12.35	-13.48	-13.14	-14.57	-13.60	-13.52	-13.41	-11.22
	(-2.07)	(-1.87)	(-1.85)	(-1.53)	(-1.96)	(-1.86)	(-1.82)	(-1.54)	(-1.33)	(-1.44)	(-1.41)	(-1.51)	(-1.46)	(-1.45)	(-1.42)	(-1.30)
CSOE	2.011*	1.996*	1.951*	2.048**	6.937***	1.902*	2.012*	7.048***	0.241	0.447	-0.223	0.491	12.20	0.0554	0.472	10.35
	(1.79)	(1.91)	(1.89)	(1.98)	(2.95)	(1.95)	(1.92)	(3.48)	(0.02)	(0.04)	(-0.02)	(0.05)	(0.56)	(0.01)	(0.04)	(0.50)
LSOE	0.945	0.840	0.813	0.855	0.764	4.569	0.832	4.554	-33.71***	-32.24***	-32.63***	-32.23***	-32.42***	-16.72	-32.25***	-13.92
	(0.68)	(0.63)	(0.61)	(0.64)	(0.58)	(1.32)	(0.63)	(1.40)	(-3.05)	(-2.91)	(-2.91)	(-2.89)	(-2.95)	(-1.45)	(-2.91)	(-1.20)
AHT	-0.755	-0.576	-0.647	-0.585	-0.508	-0.460	-0.621	-0.484	2.493	-0.00745	-1.053	-0.0143	0.156	0.477	-0.0752	-0.287
	(-0.99)	(-0.76)	(-0.85)	(-0.77)	(-0.68)	(-0.62)	(-0.82)	(-0.67)	(0.28)	(-0.00)	(-0.12)	(-0.00)	(0.02)	(0.05)	(-0.01)	(-0.03)
PREHHI	0.355	0.652	0.673	0.625	0.879	0.618	0.528	0.754	14.24	10.10	10.41	10.07	10.64	9.956	9.908	11.15
	(0.21)	(0.38)	(0.39)	(0.36)	(0.52)	(0.38)	(0.31)	(0.45)	(0.97)	(0.70)	(0.72)	(0.69)	(0.73)	(0.68)	(0.68)	(0.76)
ROA	0.0156	0.0209	0.00874	0.0201	0.0206	0.0198	0.0140	0.00366	1.143**	1.070**	0.889*	1.069**	1.069**	1.065**	1.059**	0.883*
	(0.30)	(0.41)	(0.17)	(0.39)	(0.40)	(0.39)	(0.26)	(0.07)	(2.07)	(1.99)	(1.72)	(1.99)	(1.99)	(1.94)	(2.04)	(1.67)
TOBINQ	0.0378	0.0527	0.0488	0.0495	0.0578	0.0587	0.0501	0.0560	1.330**	1.123*	1.065*	1.120*	1.135*	1.148*	1.119*	1.113*
	(0.74)	(1.09)	(1.00)	(1.03)	(1.18)	(1.32)	(1.00)	(1.22)	(2.10)	(1.75)	(1.68)	(1.75)	(1.79)	(1.80)	(1.76)	(1.81)
THOECD	-0.646	-0.673	-0.717	-0.645	-0.715	-0.698	-0.673	-0.751	2.603	2.988	2.328	3.011	2.888	2.885	2.988	1.991
	(-0.90)	(-0.96)	(-1.00)	(-0.93)	(-1.04)	(-1.01)	(-0.95)	(-1.10)	(0.38)	(0.45)	(0.35)	(0.45)	(0.43)	(0.42)	(0.45)	(0.29)
THT	-0.458	-0.589	-0.554	-0.607	-0.554	-0.641	-0.658	-0.644	-10.62	-8.787	-8.260	-8.802	-8.702	-9.002	-8.891	-8.183
	(-0.55)	(-0.72)	(-0.67)	(-0.73)	(-0.69)	(-0.79)	(-0.80)	(-0.79)	(-0.95)	(-0.81)	(-0.75)	(-0.81)	(-0.80)	(-0.83)	(-0.82)	(-0.75)
SAS	1.902***	2.103***	2.139***	2.173***	2.219***	2.052***	0.564	1.140	25.24***	22.44***	22.96***	22.49***	22.71***	22.22***	20.10	26.83**
	(2.65)	(2.90)	(2.93)	(3.03)	(3.01)	(2.75)	(0.29)	(0.58)	(2.98)	(2.73)	(2.78)	(2.72)	(2.77)	(2.73)	(1.74)	(2.38)
CD	-0.649*	-0.625*	-0.586	-0.653*	-0.728**	-0.625*	-0.602*	-0.712*	-12.22**	-12.57**	-12.00**	-12.59**	-12.82**	-12.57**	-12.53**	-12.18**
	(-1.80)	(-1.76)	(-1.65)	(-1.81)	(-2.05)	(-1.73)	(-1.67)	(-1.94)	(-2.40)	(-2.53)	(-2.42)	(-2.54)	(-2.53)	(-2.53)	(-2.50)	(-2.42)
FIRMAGE	-0.203	-0.126	-0.253	-0.114	-0.294	-0.292	-0.0892	-0.535	-19.66*	-20.74*	-22.63**	-20.73*	-21.14*	-21.43*	-20.68*	-24.17**
	(-0.20)	(-0.12)	(-0.26)	(-0.11)	(-0.29)	(-0.28)	(-0.09)	(-0.56)	(-1.72)	(-1.80)	(-1.98)	(-1.79)	(-1.83)	(-1.83)	(-1.78)	(-2.02)
NO.PAT	-0.0531	-0.0603	-0.0715	-0.0590	-0.0678	-0.0670	-0.0576	-0.0809	3.402*	3.501*	3.333*	3.502*	3.483*	3.473*	3.505*	3.256
	(-0.28)	(-0.32)	(-0.38)	(-0.31)	(-0.36)	(-0.37)	(-0.31)	(-0.47)	(1.69)	(1.79)	(1.70)	(1.79)	(1.76)	(1.78)	(1.79)	(1.64)
EMPY	-0.195	-0.206	-0.149	-0.210	-0.346	-0.183	-0.172	-0.259	8.994*	9.160*	10.02**	9.156*	8.828*	9.257**	9.212*	9.826**
	(-0.40)	(-0.42)	(-0.31)	(-0.43)	(-0.70)	(-0.38)	(-0.36)	(-0.54)	(1.93)	(1.96)	(2.15)	(1.95)	(1.91)	(1.98)	(1.97)	(2.13)
TA	0.105	0.0852	0.104	0.0741	0.119	0.104	0.0640	0.128	-3.583	-3.306	-3.033	-3.316	-3.225	-3.227	-3.338	-2.758
	(0.48)	(0.38)	(0.47)	(0.33)	(0.52)	(0.46)	(0.30)	(0.58)	(-1.24)	(-1.07)	(-1.01)	(-1.07)	(-1.06)	(-1.04)	(-1.06)	(-0.91)
INTAN	0.293	0.331	0.320	0.312	0.414*	0.317	0.344	0.383	-5.107***	-5.635***	-5.804***	-5.651***	-5.439***	-5.695***	-5.616***	-5.708***
	(1.22)	(1.36)	(1.35)	(1.25)	(1.66)	(1.35)	(1.45)	(1.63)	(-2.97)	(-3.38)	(-3.44)	(-3.29)	(-3.10)	(-3.33)	(-3.29)	(-3.36)
VOT	-0.0296	-0.0282	-0.0413	-0.00961	-0.0151	-0.0855	-0.0223	-0.0610	-3.981**	-4.001**	-4.196**	-3.986**	-3.970**	-4.239**	-3.992**	-4.523**
	(-0.23)	(-0.21)	(-0.31)	(-0.07)	(-0.12)	(-0.67)	(-0.17)	(-0.49)	(-2.13)	(-2.12)	(-2.21)	(-2.07)	(-2.10)	(-2.20)	(-2.11)	(-2.27)
POAT	1.534	1.693	1.615	1.634	1.609	1.607	1.862*	1.521	10.64	8.423	7.265	8.375	8.225	8.065	8.680	6.183
	(1.42)	(1.61)	(1.52)	(1.58)	(1.52)	(1.49)	(1.81)	(1.44)	(1.12)	(0.83)	(0.73)	(0.83)	(0.80)	(0.78)	(0.81)	(0.58)
INDY	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
YEAR	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
DIV		-1.805**	-2.808**	-2.423**	-1.236	-1.197	-2.816**	-2.765*		25.21***	10.28	24.69**	26.56***	27.74***	23.67**	16.70
		(-2.22)	(-2.07)	(-2.18)	(-1.42)	(-1.42)	(-2.46)	(-1.92)		(3.39)	(1.13)	(2.45)	(3.46)	(3.40)	(2.16)	(1.06)
DIV*RDBGA			1.958					1.596			29.17**					32.21***
			(1.02)					(0.82)			(2.48)					(3.06)
DIV*FBGA				1.848				1.826				1.542				-3.056
				(1.07)				(1.06)				(0.11)				(-0.22)
DIV*CSOE					-6.890***			-7.142***					-16.39			-15.69
					(-3.01)			(-3.65)					(-0.74)			(-0.73)
DIV*LSOE						-5.855		-5.971*						-24.36		-29.71*
						(-1.61)		(-1.76)						(-1.50)		(-1.68)
DIV*SAS							2.136	1.569							3.243	-5.440
							(1.02)	(0.79)							(0.22)	(-0.38)
_cons	-0.957	-0.158	0.437	0.688	-0.703	-0.311	0.151	0.669	44.26	33.10	41.97	33.81	31.81	32.47	33.57	38.69
	(-0.24)	(-0.04)	(0.11)	(0.17)	(-0.18)	(-0.08)	(0.04)	(0.18)	(1.01)	(0.75)	(0.95)	(0.80)	(0.73)	(0.74)	(0.76)	(0.91)
r2	0.102	0.119	0.125	0.124	0.141	0.137	0.125	0.173	0.238	0.259	0.266	0.259	0.260	0.261	0.259	0.269
F	2.004	2.267	2.197	2.388	2.651	2.568	3.385	4.202	4.640	4.677	4.764	4.921	4.519	4.720	4.556	4.660

t statistics in parentheses * p<0.1, ** p<0.05, *** p<0.01

5.7. Discussion and conclusion

The phenomena of unrelated deal making in Chinese MNEs has been highlighted recently (Shi et al. 2021). Such research argues that diversified business groups are more inclined to select unrelated targets when undertaking cross-border M&As. Here this chapter has further explored the underlying logic and theory raised in this literature by testing whether such deals lead to outperformance in the acquiring firm. This paper has looked at several different types of event window, with the longer-term performance arguably being of most interest and significance, as this focuses on how value is earned and created from such deals over the longer time horizons required to properly evaluate their impacts. Short-term share movements are of interest, but arguably only reflect the immediate perceptions of investors (who may or may not be right about the ability of such firms to eke value out of such deals).

Beneath, this paper firstly recaps on the potential mechanisms lying behind different impact of acquiring an unrelated or related foreign business on the short and long-term performance of the acquirer. Secondly, the role of business group affiliation and its heterogeneity are considered in more detail. Thirdly, this chapter comments on the paradox of unrelated diversification in the context of the EMNE literature: how can we reconcile the much talked of proclivity towards catching-up via strategic-asset-seeking in EMNEs with our finding that they positively moderate the unrelated acquisition. Especially, when business group affiliation, strategic asset seeking and diversification impact the performance together, there will be positive impact on firm performance.

5.7.1. The role of diversification

The relationship between diversification and firm performance is always complicated. As the benefits and the costs (disadvantages) should be considered dynamically within different time frames. While the long-term performance is the main results that this paper focused on, the opposite results of short-term performance bring some interesting points. The different results for the impact of diversification on short-term and long-term share price performance show investor's different views in different stages. In the short-term, stockholders might expect a lower market value on Chinese firms that conduct unrelated CM&As relative to firms apply related CM&As because acquirers targeting unrelated business are considered less capable of absorbing the acquired product, owing to substantial bureaucratic and control costs of integrating the target (Jones and Hill, 1988; Porter, 1985), liability of foreignness and the unrelatedness of the product. The information frictions and management costs are higher because of the diverse ethnic and cultural background and institutional environments and geographic difference (Denis and Yost, 2002), which makes it even more difficult for the unrelated CM&A acquirors. On the contrary, firms that acquire related targets are more capable of managing the acquired firm due to better allocation of resources in the similar segments (Doukas and Lang, 2003). In the short-term, such cost raises while the synergy effect of the international product market diversification still not show, China as one of the new participants of EMNEs are less known and understood by investors. In the short-term, shareholders may take a negative view towards firms conduct unrelated CM&As when comparing with the firms apply related acquisitions due to the above reasons.

However, interestingly, the longer-term results show that firms with unrelated acquisitions perform better than related firms. It is believed that BRIC economies are

among the largest, fastest growing markets in the world. Compared with DMNEs, EMNEs from these regions, moreover, generally have lower levels of internationalization. Their home base is typically where their resources and expertise lies. It is crucial to their success. The gravitational pull of the domestic market, moreover, may be intensified by domestic market protection affording EMNEs home market rents. The pull of the home market, therefore, provides one plausible explanation for greater unrelated deal-making and positive long-term performance in EMNEs (versus DMNEs, where markets are generally more accessible). In the long-term, investors need to monitor firms' resources and management skills to manage the acquired unrelated firms to evaluate their performance. In China, the unique institutional environment makes it more suitable to apply unrelated internationalization strategy (Guillen, 2001 and Wan, 2003).

As noted, one of the main motivations for the EMNEs from China is to conduct internationalization strategy is to acquire strategic assets in target market and take them back to domestic market in order to catch up (Luo and Tung, 2007; Mattew, 2006). And the empirical results support such view that Chinese firms are able to catch up because they are able to get access to the complementary local resource (CLRs) such as funds, R&D centres, local markets and distribution channels which are not available for foreign firms (Hennart, 2012). In addition, previous studies prove that firms from emerging markets are better able to apply diversification strategies because diversified firms are able to generate synergies from merging complementary technologies (Clarke, 1985), achieving economic benefit by exploiting interrelationships within divisions such as marketing skills, innovation production and purchasing capability (Teece, 1982), especially in its unique institutional environment where 'Guanxi' is vital (Kock

and Guillen, 2001). Therefore, Chinese firms' conduct unrelated strategy are better able to introduce new products and technology to China, combine with the local resources to absorb new technology and sell the new products in the huge domestic market. Therefore, by introducing more novel products and localizing them in China, unrelated acquisitions seem to achieve higher synergy effect than focused firms. Investors would observe such phenomenon as time goes by. Thus, enhanced firm performance will lead to higher share prices in long-term.

5.7.2. The role of diversified business group affiliation and its heterogeneity

Following from the above, the successful firm of unrelated CM&As need to possess the capability to get access to the CLRs and should be good at coping with the 'imperfect' domestic institutional environment. Preferably, they should have the prior experience to deal with unrelated product diversification in domestic market before conducting international product diversification. All these conditions bring to the distinction role of the diversified business groups as they are considered to obtain all these advantages in China. Few previous studies have discussed how business group affiliation would impact an emerging market acquiring firms' performance after cross-border M&A, especially for the unrelated diversification CM&As. As stated by Yiu (2011) and Chari (2013), business group are more likely to be involved in OFDI due to their advantages of internal linkage with foreign firms (Amsden and Hikino, 1994; Guillen, 2000), access of internal financial (Carney, 2008) and labour market (Leff, 1978), lower operation cost, government support (Yiu, 2011), as well as focus on long-term innovation development (Hoskisson et al. 2002). Moreover, the pyramidal and concentrated ownership type makes it easier for firms to integrate strategic assets within

business group. As most successful business groups are found to be diversified in their domestic market, it is reasonable to deduce that they are more likely to conduct such unrelated deals abroad and are able to absorb them, thus performing better. What's more, business group affiliations are often found to be quite diversified in the domestic market, as this is the reason why in emerging markets unrelated diversification firms perform better (as most of them are business groups). They are able to address the lack of information and legal institutional voids that emerging markets are characterised by.

What's more, the findings of this paper are consistent with prior statements that business groups are equipped with beneficial resources and project execution capabilities that can help unrelated diversification deals (Popli, Ladkani and Gaur, 2017). By further illustrating the heterogeneity of business group affiliation, it is considered that business group's R&D capability help firms to mitigate the negative impact of diversified CM&As on acquiring firms' performance in long-term, while the financing capability only helps firms in short-term. This may be due to the fact that, at the primary stage, funding is most important for the absorption of the acquired products, while in the long-term, the role of financing capability become less important, as the management and R&D capability plays more important role in this stage.

5.7.3. The role of SAS motivation

Without considering other conditions, simply aquiring highly unrelated businesses involves acquisition of technologically *dissimilar* businesses, it seems that the likelihood of successfully learning from unrelated businesses and benefitting from technological synergies would seem small for emerging market firms in international

market (Narula, 2012). Similarly, the acquisition of unrelated international brands (and other intangible assets) is unlikely to lead to an EMNE developing a stronger internationally leading brand – but rather a broad portfolio of such brands. In short, acquiring a diverse range of unrelated businesses is unlikely to lead to the elevation of EMNEs as successful 'international' competitors. However, it is worthy to notice that the main motivation for firms to conduct SAS CM&A is to apply the acquired technology in 'domestic' market rather than internationally (Rui and Yip, 2008).

As stated by Sutherland, Anderson and Hu (2020), EMNEs are proven to be more likely to seek non-location bound strategic assets (like patents) and to bring them back to their domestic market. The main reason behind such tendency is that they are not really interested in international markets, rather they want to use the SAS directly from foreign countries and combine with domestic CLRs (Hennart, 2012) such as local distribution channels and government contacts that are not as easily accessed by foreign firms. By combing non-location bound SAS with CLRs, domestic firms are able to localize the technology and enhance their domestic market performance.

Furthermore, if a firm is affiliated within a business group and at the same time with the motivation of SAS, it will perform better in the long-term. Some cases illustrate how a business group affiliated firm with SAS motivation successfully acquirer unrelated technology and localize in domestic market. The results show a positive impact of SAS on unrelated deal firms' long-term performance, and this impact is magnified when the acquiring firm has a combination of SAS, diversified business group affiliation and diversification characteristics. This paper is novel in demonstrating how *diversified* business groups, especially *diversified SAS* business

group in particular are the key factor that impact the long-term performance of Chinese acquiring firms in unrelated deals. Being affiliated with a business group and have SAS motivation would facilitate to minimize the risks linked with distance and unrelatedness (Capar and Kotabe, 2003) for emerging market firms.

When comparing with non-affiliated firms and other foreign firms in home market, affiliated firms are equipped with stronger domestic market position when acquiring unrelated foreign firms, so this gives business groups advantages over the other two types of firms when applying the acquired technology in home market. Therefore, when affiliated firms realize their technological deficiencies, they are more likely to seek strategic asset in foreign countries (Shi et al., 2021). Such purpose brings affiliated firms with legitimacy for 'augment' their assets by conducting acquisitions (Shi et al., 2021). This internal legitimacy requires affiliated enterprises in a diversified business group to interact with each other to make the breadth of resources and knowledge to be more accessible and utilizable. This study highlights how SAS motives confer additional legitimacy for Chinese diversified groups as their members pursue international product diversification through CM&As. This new finding is in line with Shi et al., (2021)'s argument that 'it is not just about resources and knowledge from within a Chinese business group that allows effective integration in post deal, but also a legitimizing effect (how the enterprise is owned and what its motives are) to engage in and conduct those highly risky deals' (Shi et al., 2021: 148) (i.e. unrelated diversification).

5.7.4. State-owned enterprises

Although not included as a main explanatory variable, SOEs are included in the control variable in this paper. Traditional arguments based on resource-based view would predict SOEs may be able to get access to more local resources, thus perform better when conducting unrelated CM&As. However, the final results run opposite to such predictions. SOEs perform worse than the private firms. The results are somehow in line with the results of the paper in Chapter 4. As recent papers reveal different view regarding the role of government in OFDI, what should be pointed out is that how it impacts firm's performance should be distinguish with the role in how it determines EMNEs' OFDI decision making (motivation). Because the motivation under the SAS OFDI of SOEs may be driven by just political reasons/manager's own decisions they may not actually be in a position to fully exploit such assets.

What's more, when it comes to discuss the relationship of diversification and SOEs, it is worthy noticing that SOEs are often regulated by government-this is usually the State-owned Assets Supervision and Administration Commission of the State Council (SASAC). Such policy notes that SOEs are not encouraged to conduct unrelated diversification strategy, instead, they should focus on their main business. The issue of such regulation policy may be because in previous period, SOEs tend to diversify aggressively with the purpose of employing as many staffs as they can, because the social welfare and the employment are the main interests of the SOEs (Thomsen and Pedersen, 2000). Such phenomenon is proved by several empirical studies by indicating that SOEs are more likely to involve in firm diversification (Du et al., 2015; Fan et al.,

2008; Li et al., 2012). However, the performance of such diversified firms is rarely tracked by government, as a result, the worse performance may lead to a reduction in diversification in recent years. While on the other hand, with the increasing power of private-owned enterprises in recent years, they become diversified with the purpose to improve their competitive advantage in the market where the product and capital system are imperfect. In addition, as private managers are more likely to monitor their business performance more closely than government owners, the international diversification decision was made by measuring if the new business is within their management scope (Zhao, 2010). Thus, private firms are more likely to manage the unrelated business within its capability.

To conclude, the findings of this paper suggest that Chinese firms that conducted unrelated international M&As perform worse than the firms that acquire related firms in short-term, while they perform better in the long-term (in terms of share price). Being part of a diversified business group helps unrelated firms to perform better in the long-term due to the advantages that a business group can bring. Especially, SAS motivations would combine its domestic advantages such as domestic relationships, abundant resources such as R&D capability within the business group. Hennart (2012) and others (Petersen and Seifert, 2014) have explicitly explained the arguments relating to domestic market advantage as an essential factor in their reasons for the internationalization strategy of EMNEs. Luo and Tung (2007; 2017) have also stressed the importance of 'home court advantage'. Like the example of the successful domestic diversified Fosun Group, some Chinese MNEs are undertaking a new strategy: acquiring unrelated strategic assets in foreign countries and localizing them domestically to become successful. This argument rests partly on the assumption that

it is difficult for Western MNEs to enter the Chinese market and use their firm specific assets to out compete Chinese businesses – an argument that is receiving increased validity in light of recent geopolitical trade and business frictions between China and developed markets.

Chapter 6. Summary and conclusions

6.1. Discussion of main findings

With the rise of EMNEs, a hot debate in international business regarding whether they are different from developed market MNEs has emerged. Studies such as Mathews (2006) and Luo and Tung (2007, 2018) are representative literatures that kicked-off the theoretical debates on EMNEs, looking closely at the motivations of EMNEs and their strategic asset seeking (SAS) in foreign countries, especially developed markets, with a view to catching up in terms of innovation performance. Compared with the studies of the antecedents and motives of EMNE internationalisation, which is what these early studies mostly focused on, studies on post *SAS* FDI performance are comparatively rare. Few studies focus on the specific objectives of *SAS* acquisitions, namely acquisition of technological catch-up capabilities. Although there are some performance studies that have investigated the short-term financial performance (namely stock market price) (e.g. Aybar and Ficici, 2009; Ning et al., 2014,), short-term performance results are not sufficient to answer the long-term innovation catch-up outcome. We lack long-term performance studies to answer the questions regarding how do EMNEs perform and what factors influence their performance after acquisition. The two long-term performance studies in this thesis in part address this research gap.

Chapter 6 will firstly summarize the key findings and contributions of the two performance studies, which highlight the importance of understanding long-term performance of firms with strategic asset seeking motivation in EMNEs and also the significant role of home country effects. Finally, limitations and future research suggestions will be illustrated.

Table 26, 27 below summarizes the key findings as well as contributions of the two performance studies of this thesis. Detailed discuss will be followed in section 6.2.

Table 26. Key findings of performance study 1 on Chinese CM&A

Performance Study	Purpose	Key Findings	Contributions
Performance Study 1	1. To understand the general post CM&A performance of the Chinese CM&A deals, especially the role of strategic asset seeking motivation	1. Technology related strategic asset seeking M&A deals will positively affect the domestic innovation performance of Chinese acquiring firms	**Contribution 1. Unlike other studies that automatically assume all firms conduct OFDI in developed counties are seeking strategic assets, this study differentiates the strategic asset seeking motivation deals from deals with other motivations, thus highlighting the '*innovation*' outcome that is directly derive from SAS deals**
			A. Studies for developed market such as Ahuja and Katila (2001), Cloodt et al., (2006) have indicated the importance of distinguishing technological acquisition and non-technological acquisition. While studies for emerging market lacks such awareness.
			Contribution 2. Unlike most previous studies that only focus on short-term performance, this study specifically focuses on the *long-term innovation* outcome of *SAS* Chinese acquirers, which are the 'real' strategic asset seeking innovation outcome and makes contribution to the following literatures:
		2. Chinese acquirers with accumulated experience of foreign linkages in their domestic market will be better able to reap higher innovation returns in their domestic market via reverse knowledge transfer from the acquired strategic assets relative to acquirers that have no such experience	**A.** Luo and Tung (2007) and Mathews (2006)'s paper predict that in theory, EMNEs would catch up by seeking strategic asset in foreign countries. This study provides further empirical evident to support such theories.
			B. Ramasamy et al. (2012) and Jindra et al. (2016)'s location choice studies provide empirical evident of EMNEs' SAS motivation. This study further tests the performance under such motivation.
			C. Buckley et al. (2014) (2015); Aybar and Ficici, (2009), Ning et al. (2014), Li et al. (2016), Du and Boateng (2015), Bhagat et al. (2011), Gubbi et al. (2010), Kohli and Mann (2012), Bertrand and Betschinger (2012), Kling and Weitzel, (2011) find short-term stock price performance of EMNEs, however, this study moves a step forward to test the real long-term impact of such acquisition.
			Contribution 3. This paper tests the role of HCEs on firm performance, which is overlooked in current research, thus contributing to HCEs literature and related literatures such as topics regarding business group affiliation, state-ownership and prior international experience and linkages of EMNEs. In addition, this study combines resource-based view (RBV) and knowledge-based view (KBV) together with the home country effects to explain the mechanism behind the improvement of innovation performance.

	2. To understand the extraordinary role of home country effects especially business group affiliation, state-ownership and prior international expertise on firm performance	3. The innovation performance of State-owned Chinese acquirers is inferior to acquirers that are private-owned	**A.** Cuervo-Cazurra, (2012), Narula, (2012) and Ramamurti, (2012) argue that emerging market home country effects are different from those of the developed market and can affect firms' SAS OFDI behaviour quite significantly. This study illustrates three main home country effects from China to explain how these home country effects can impact a firm's absorptive capacity, thus further leading to a better post-acquisition long-term performance.
			B. Mathews's (2006a) LLL model, for example, typifies this reasoning. It argues inward internationalization, via iterations of linking and learning, will lead to better innovation outcomes for firms attempting to catch-up. Choi, Lee & Williams, (2011) and Jiang et al., (2013) find positive and significant impact of prior foreign ownership on firm's innovation performance The results of this paper are in accordance with the above argument
		4. Chinese acquirers that are affiliated to a business group will have better post acquisition innovation performance than non-affiliated acquiring firms	**C.** Yiu (2011) argues that Chinese business groups facilitate Chinese firms' strategic asset-seeking internationalization activities. Chari's (2013) study illustrates that Indian firms' outward FDI is significantly facilitated by business group affiliation. While there exist such business group studies, few tests how being affiliated to a business group affiliation are beneficial for firm's long-term performance. Are they really that important?
			D. Cui and Jiang, (2012), Luo, Xue and Han, (2010), Yiu, (2011), Wang et al., (2012) and Bent, (2014) find state-owned firms enjoy preference from government when conducting OFDI; while Cui and Jiang, (2012), Morck, Yeung and Zhao, (2008) argues state-owned firms are suffered from bureaucracy and management issues. This paper contributes more towards the contrary argument regarding the ownership literatures of EMNEs.
			E. Traditional resource-based view of Barney (1974) emphasize how resources are be able to impact a firm's strategy and its performance, while knowledge-based view of Barney, Wright and Ketchen, (2001) further adds the important role of knowledge as the key factor that determines the successful of a firm's performance. This paper combines the home country effects with both RBV and KBV to explain how different types of home country effects could be linked to a firm's absorptive capacity and better performance.
			Contribution 4. This paper adopted an established method (PSM+DID) from other discipline, adding methodological richness to the approach, which is a significant problem for the performance study in international business area.

			A. Reeb, Sakakibara and Mahmood (2012)'s paper that published in International Business Studies highlight the existing problems of endogeneity in international business research and emphasise the importance of overcoming such problem. This paper uses propensity score matching problem which is an ideal way to solve such issue.

Table 27. Key findings of performance study 2 on Chinese CM&A

Performance Study	Purpose	Key Findings	Contributions
Performance Study 2	1. To extract the peculiar phenomenon of the Chinese CM&A unrelated diversification deals and understand the performance of such deals 2. To understand the role of SAS and business group affiliation on Chinese CM&A unrelated diversification deals' performance	1. Chinese acquirers that conduct unrelated CM&A deals will perform worse than acquirers with related deals in short-term but better in long-term 2. Business group affiliation will positively moderate the positive impact of unrelated diversification on acquiring firms' post CM&A performance in the long-term 3. Business group affiliation with R&D capability will positively moderate the positive impact of unrelated diversification on acquiring firms' post CM&A performance in the long-term 4. I found no significant impact for business group affiliation with financing capability 5. A strategic asset seeking (SAS) motivation amplifies the positive impact of business group affiliations on acquiring firms'	**Contribution 1. This study draws attention to EMNEs' internationalization activities from a new 'diversification' perspective which is missing in current literatures.** **A.** Doukas and Lang (2003) investigate the international product diversification firm performance from developed market MNEs (DMNEs), research needed to be done in emerging market content. **B.** Li et al., (2016) investigates the role of product diversification of the EMNEs under the international geographic diversification content, while the rest paper only includes product diversification factor as a control variable or even does not consider it in their studies. **Contribution 2. This study focuses on the vital role of business group affiliation's impact on firms' diversification performance, thus contributing to the business group affiliation literatures in international business discipline. Especially, the heterogeneity of business group affiliation is included in this paper which is novel in IB literature.** **A.** Shi, Sutherland and William (2021) argue that affiliation to a diversified business group will have a positive impact on the propensity of an EMNE to acquire unrelated foreign businesses. While this study moves a step forward to test if such motivation can lead to a better performance. **B.** Business groups are equipped with beneficial resources and project execution capabilities that can help unrelated diversification deals (Cheng and Yang, 2017; Popli, Ladkani and Gaur, 2017) **C.** Khanna and Palepu (1997) argue that business groups are better able to achieve better performance due to its internal resources such as internal R&D centre and better financing capability. This paper thus test if such characteristics are able to help affiliated firms perform better. **Contribution 3. This paper contributes to debates on theory of internationalization of emerging market firms (Hernandez & Guillén, 2018).**

		long-term performance of unrelated diversification deals	
		6. Although state-ownership only included here as control variable, it also shows interesting results. It negatively moderates the impact of unrelated diversification in long term, and such local owned SOEs perform worse than that of central-owned SOEs in the long run.	**A.** Is the acquisition of a broad portfolio of unrelated foreign businesses consistent with classical theories of internationalization or newer theories of 'spring-boarding' or 'link, leverage and learning' (i.e. LLL) (Luo & Tung, 2007, 2018; Mathews, 2006, 2017)? This paper contributes to the debate on whether unrelated international diversification strategy can be reconciled with the view that EMNEs are strongly driven by strategic asset seeking motives, thus leading to better domestic firm performance.
			Contribution 4. This paper includes an initial discussion regarding the role of ownership structure on Chinese EMNEs' international product diversification, which shows a future research direction.

6.2. Summary of the two performance studies

6.2.1. Performance study 1: EMNEs' SAS CM&A and firm performance

Among the recent conceptual and empirical studies of EMNEs OFDI strategies is whether EMNEs aim to acquire strategic assets they lack and then apply such assets to improve their firm-specific ownership advantages in order to catch-up. Following a comprehensive literature review in this area, a growing consensus tends to argue that EMNEs seems to acquirer strategic assets such as management know-how and advanced technology and brands via FDI, often via very bold entry modes such as CM&As in developed economies (Deng, 2009; Luo and Tung, 2007). Empirical evidence has been found that China, as one of the most significant emerging markets today, has businesses that try to 'springboard' to catch-up with other developed country businesses that are rich in strategic assets, by directly acquiring cutting edge technological resources (Jindra et al., 2016). However, it is still not clear whether these Chinese firms would be able to integrate, absorb and exploit these acquired strategic assets. Some researchers argue that Chinese firms would find it difficult to absorb such strategic assets due to their liability of foreignness, liability of emergingness, technological gap between two countries and also management issues that would arise (Narula, 2012). However, to date, some research is looking at the short-term financial performance of such phenomenon (e.g. Buckley et al., 2014, 2015; Bertrand and Betschinger, 2012 and Kling and Weitzel, 2011), but little research has been done to investigate the impacts on *long-term innovation* performance. This is of interest, as it is the *long-term innovation* performance is exactly that the LLL and spring-board theory emphasise as the strategic objectives of such activities. Most importantly, current

studies do not investigate the mechanism behind the changes in performance of such firms and few studies link performance to domestic market antecedents, like China's home country effects and characteristics, like imperfect markets driving diversified business group formation, which are the most distinctive factors that are different from developed markets. These factors require more research attention, which was one purpose of this study. In addition, when applying framework to analyse the above factors, current research mainly focuses on analysing the role of absorptive capacity from resource-based view (Li et al., 2016; Amendolagine et al., 2018; Hong et al., 2019; Li, Lee and Park, 2020), or they only analyse solely based on institutional based view such as location choice (Piperopoulos et al., 2018; Fu, Hou and Liu 2018; Deng, Miao and Zhang, 2021), institutional differences (Anderson et al., 2015; Huang and Zhang, 2020) or apply a knowledge based view-organizational learning (Yi et al., 2020) to figure out what factors that may moderating the impact of OFDI on home country firm's innovation performance. However, only focusing on one aspect could not fully explain the complex mechanism behind the phenomenon, current research needs a combination view by applying both RBV and KBV, while this paper fills in such gap. Finally, the newly adopted methodology (PSM+DID) is applied in this paper to avoid the common endogeneity problem in international business studies.

The findings of this study suggest that Chinese firms are able to achieve firm-level catch up in the long-term by acquiring strategic assets in foreign countries. Prior international experience, being a private firm and affiliated with a business group ,moreover, are factors that help

EMNEs to achieve better domestic performance in the long-term. The following parts will discuss the results.

6.2.1.1. Strategic asset seeking motivation and home country performance

Significant attention has been given to the argument that CMNEs seek strategic assets via the mode of CM&A to developed market acquisitions with the primary aim to repatriate such assets and apply them in their home country, instead of competing in foreign economies (Luo and Tung, 2007; Rui and Yip, 2008). Thus, in the post CM&A stage, the acquired firms are often given enough autonomy (Estrin and Meyer, 2011; Liu and Woywode, 2013; Rui and Yip, 2008; Zheng et al., 2016), CMNEs generally take a 'light-touch' method to deal with the acquired foreign company (Liu and Woywode, 2013). As is stated by Awate et al. (2012), EMNEs use 'knowledge accessing' strategies to seek strategic assets in knowledge rich market and imitate them by using lower cost production techniques in domestic market. It seems that 'light touch' method helps acquiring firms to suffer less from 'liability of foreignness', it is easier for the parent firm to learn and absorb the technology under the friendly organizational culture environment when technical staffs are sent from foreign subsidiary.

The results of the first performance study finds significant and positive increase in both patent counts and citation for the acquiring firms in domestic country. The result is in line with the argument. The 99 cases of Chinese CM&A that with strategic asset seeking motivation seem to conduct SAS CM&As mainly to exploit them within their home marketplace. One possible reason for such result may lines in the fact that CMNEs that acquire strategic assets abroad

especially developed economies do not to intent to improve firm-specific advantages to compete in international market. Instead, such internationalization behavior is more likely to be seen as a way to transfer various technologies, expertise and management know-how back to the EMNEs' home country (Ramamurti, 2012). They then apply the acquired strategic assets to fight against MNEs from developed market that are quite competitive and have already gain competitive advantage in the home market in China.

Hennart (2012) further explains why foreign firms would be willing to give Chinese firms such resource and what resources would domestic acquirers be able to use to absorb and localize the acquired strategic assets. Since most of the foreign firms are not able to get access to China's locational advantages, only certain Chinese firms can benefit from the rents of country specific advantage (CSAs) such as natural resources, low cost but rich labor forces, distribution channels (so called 'complementary local resources'[CLRs]). As a result, the strategic assets can be 'bundled' with CLRs to facilitate the absorption of the technology and further R&D development. Thus, the Chinese acquiring firms' innovation performance would increase after acquisitions. This is the case for many Chinese acquirers. Being well recognized as 'copycat', China is good evolving from imitation to innovation and '*perform and combine both in some creative ways'*. Known as 'ambidexterity', '*it is true that many EMNEs evolve from imitation to innovation but during such transformation they perform and combine both in some creative ways. This ambidexterity, or composition of imitation, creation, and innovation, is used to develop a composition-based competitive edge and to support future innovations as the firm continues to evolve.*' (Luo and Tung, 2018:58).

6.2.1.2. Home country effects, resource-based view (RBV) and knowledge-based view (KBV)

The IB literature on SAS related FDI suggests there may be important additional factors that may influence the ability of EMNEs to benefit from SAS (i.e. the LLL model) or the 'springboard' perspective (Luo and Tung, 2007). In short, this literature has argued that successful SAS is moderated by a number of conditions that are affected by its distinctive home country environment, which are referred to as 'home country effects (HCEs)' (Cuervo-Cazurra, 2012). The logic behind such arguments is that HCEs, such as links between business and previous experience of 'linking' with and 'learning' from developed market MNEs (as per the LLL model); business group affiliation; state (i.e. via ownership) may all influence the acquiring firms' absorptive capacity, which in turn may influence the success of reverse knowledge transfer. In other words, not all EMNEs equally benefit from foreign strategic-asset-seeking related acquisitions. Hennart (2012) further adds that host country's locational advantages are not available for foreign firms, only certain domestic firms namely business group affiliation, state-owned enterprises can benefit from the rents of country specific advantage (CSAs) such as natural resources, labor forces, distribution channels (so called 'complementary local resources'[CLRs]). As a result, the strategic assets can be 'bundled' with CLRs to facilitate the absorption of the technology and further R&D development.

On the other hand, RBV highlights the important role of owing and controlling resources on firm's performance (Barney, 1991). The RBV pays specifically attention to the inside of the orgnization (i.e., its resources and capabilities) to explain the performance of the organization (Barney, 1991; Grant, 1991). It is used to describe why firms perform differently in the same industry (Hoopes et al., 2003). The RBV claims that firms will have different performance when companies obtain valuable resources that their competitors do not have, leading them to achieve a rent in its quasi-monopolist form (Wernerfelt, 1984). It is widely recognized from the RBV that firm resources not only include physical factors, but also refer to relational capital

(Bontis, 1999), such as the organization's culture, or its reputation (Barney, 1991). The traditional economic production factors are only able to help firms achieve performance above average level, but it is the intangible resources that can build and maintain competitive advantage of the organization (Makhija, 2003). These intangible resources are often found in the manner of tacit knowledge. Thus, the success of a company does not come from the dynamic of the industry, but from the process of collecting and utilizing the assets within the company. In another way, the success is determined by the way how the organization uses the resources it has already possessed (Roos et al., 2001). Thus, KBV is proposed as a recent extension of the RBV (Roos, 1998).

The KBV of the organization highlights knowledge as the most vital strategic assets (De Carolis, 2002) and it determines the capability and competitive advantage of the firm (Kogut and Zander, 1992) because such assets are hard to copy and build the basics for a firm's sustainable differentiation (Kogut and Zander, 1992). As a result, intangible assets (especially tacit knowledge) are highly valued and treated as the essential intellectual capital assets (Mathews, 2003). In addition, KBV points out the tacit knowledge is more important than other content of knowledge or the capacity of knowledge as it involves the knowledge of understanding regarding what the firm does, how it deals with the knowledge and why it is done that way (Zack, 2003). In other words, the knowledge management and creation process are more important than the nature of the knowledge (e.g. explicit or tacit) itself.

Thus, RBV explains it is important to achieve VRIN strategic resources (technology, know-how, brand etc) from abroad and combine with domestic resources (CLRs). However, KBV complements RBV by illustrating the importance of intangible assets and managing existed domestic resources (CLRs) together with the acquired assets. Thus, it is needed to investigate

China' home market environment to find the answers to the following questions: Which firms can get access to the domestic CLRs and what advantages do they have to create a successful organizational learning and knowledge management environment? This paper has successfully combined KBV with RBV and apply them in the discussion of Chinese firms' HCEs including prior international experience, business group affiliation, state-ownership, which brings contribution and novelty to current literature. The prior international experience links with the knowledge and experience that has been highlighted by KBV, while the resources of business group affiliation and management skills of private firms links with both KBV and RBV.

6.2.1.3. Prior international experience and home country performance

While prior international experience of inward linkage of emerging market firms has been discussed as one of the main factors that facilitate the OFDI of EMNEs, its impact on firm's performance has barely been discussed. A significant of literatures has discussed the relationship between IFDI and OFDI, indicating that firms with prior internal network linkage (Luo and Tung, 2007, 2018; Mathews, 2006a, 2006b; Cui et al., 2014; Hertenstein et al., 2015; Stucchi, Pedersen and Kumar, 2015) would be an important factor for its internationalization strategy. As suggested, the prior international experience is the key factor to help firms to eliminate the issue of 'liability of foreignness' (Luo and Tung, 2007; Meyer and Thaijongrak, 2013) and 'liability of emergingness' (Madhok and Keyhani, 2012). However, few research has been done to investigate the role of international experience on firm's long-term innovation performance after CM&A, albeit studies prove that prior foreign ownership has positive effect on firm's innovation performance (Jiang et al., 2013).

The findings of this study shows that CMNEs that with prior international experience have positive impact both on patent quantity (counts) and quality (citation). This is consisted with Luo and Tung (2018)'s 'upward spiral model' in their updated 'springboard perspective'. Inward FDI is treated as the first step for EMNEs to build a solid foundation to springboard abroad and finally achieve their goal of upgrading. KBV suggests that international experience of an organization characterises firm specific intangible assets (tacit knowldge) that is hard to imitate (Barney et al., 2001). Since management ability is valuable and imperfectly imitable, they can produce firm-specific competitive advantages (Barney, 1991). Companies that have top management international experience with the purpose of internationalization will lead to higher level of knowledge (Calori, et al., 1994). As experience offers path dependent managerial competencies, organizations with more international experience are in a better position to conduct OFDI to achieve better performance (Geringer, Tallman and Olsen, 2000).

6.2.1.4. Business group affiliation and home country performance

Given its significant characteristics, business group affiliation as the major distinctive home country effects has been previous discussed insensitively in international business studies. For example, Yiu (2011) and Chari (2013) have discussed how business group affiliation may positively influence EMNEs' strategic asset seeking internationalization strategy. Yiu (2011) and Chari (2013), business group tend to be involved more in OFDI due to their advantages of internal linkages with foreign firms (Amsden and Hikino, 1994; Guillen, 2000), access to internal financial (Carney, 2008) and labour markets (Leff, 1978) and extensive government supports (Yiu, 2011), giving them the ability to focus on long-term innovation development (Hoskisson et al. 2002). The results of this study indicate that firms that are affiliated with

business group are also equipped with the requisite absorptive capacity to manage the acquired strategic assets and develop future innovation performance. This is in accordance with Guillen's (2000) notion of an RBV approach and Zack (2003)'s KBV approach to understand the role of business groups in emerging markets. Specifically, groups provide access to both tangible and intangible resources that them achieve better domestic innovation performance (Carney, 2008, You, 2011). Most importantly, business groups provide excellent organizational learning environment and knowledge management mechanisms enabling firms to achieve competitiveness in the market (Guillen, 2000). The effective knowledge management would lead to a consequence of better innovation performance (Antonelli, 1999).

6.2.1.5. Ownership and home country performance

There are several factors may affect an organization's ability to not only aim for and achieve superior strategic assets in foreign markets, but also to manage and absorb them. Many literatures have discussed how state ownership would impact EMNEs' OFDI (Buckley et al., 2007; Wang et al., 2012). Actually, Cuervo-Cazurra (2012) state that the most significant feature of EMNEs connects to the question of whether the EMNEs' decision of applying internationalization strategy is impacted by domestic institutional environment. In the case of China, for instance, some note that government provides support in terms of resources, such as access to fund, control over the domestic market, etc (Luo et al., 2010). Some studies argue that compared with private-owned enterprises, SOEs have higher tendency of seeking strategic assets (e.g. Alon, 2010), because SOEs receive more support from the government, while some find opposite idea, as the real motivation behind SOEs' SAS OFDI are more likely to be political purpose (Morck, Yeung and Zhao, 2008), thus, this may cause management issues in

the post-acquisition process. Despite there are different views regarding the role of ownership on firm's motivation of internationalization strategy, it is still unclear that whether the impact of ownership would also impact a firm's performance after SAS acquisition.

Based on existing literature, the ownership of a firm's performance may well be estimated based on the RBV and KBV approach. My finding suggests that private firms perform better than SOEs in terms of both patent counts and citation. Although, state-owned firms benefit more from government support, but it is not uncommon that private firms also receive government support when it comes to conduct a SAS CM&A. Most importantly, private firms are better able to harness the acquired strategic assets than SOEs, as there are some organization management problems that may raise due to SOEs' political purpose and bureaucracy management problem. My results echo the knowledge management view that simply owing certain resources or knowledge is not able to provide any further competitiveness in the market, it does not matter what kind of and how much the resources and knowledge an organization has, it is how they use them that matters most (Zack, 2003).

6.2.2. Performance study 2. 'EMNEs' CM&A and firm performance: the role of diversification strategy': to further compare the performance of whole CM&A deals within two different types: related and unrelated deal

Given the fact that there is a trend in recent year that Chinese firms tend to acquire unrelated firms in foreign countries, research regarding such phenomenon is rare. To the best of my knowledge, there is only one paper that discuss China's such diversification strategy. In their

paper, Shi, Sutherland, William and Rong (2021) find that Chinese private diversified business group affiliated firms with strategi asset seeking have higher possibility of acquiring an unrelated deal in foreign country. While no research has been done to show if the unrelated acquisition brings better firm performance and if so, what factors impact such performance? This paper thus draws attention to the EMNEs' international product diversification strategies, an area that has hitherto, despite its prominence, received comparatively little research attention. Specifically, this paper looks at how diversified business group affiliation leads to longer term market outperformance in cases of unrelated deals and associate outperformance to specific business group attributes, such as R&D centres.

The findings of this study suggest that Chinese acquirers that conduct unrelated CM&A deals will perform worse than acquirers with related deals in short-term but better in long-term, being affiliated with business group affiliation benefits an acquiring firm's long-term performance and the R&D capability is the main contributes to firm's long-term performance. Furthermore, a strategic asset seeking (SAS) motivation amplifies the positive impact of business group affiliations on acquiring firms' long-term performance of unrelated diversification deals.

6.2.2.1. Diversification and performance

Literatures do not have a conclusive view regarding the relationship between diversification and performance. Because it is determined by different aspects including comparing the synergy and the cost of the unrelated deal throughout the different time of the whole management process (Salter and Weinbold, 1979), considering the company's institutional environment etc (Kock and Guillen, 2001 and Wan, 2003). The results find that in short-term, the unrelated deals perform worse than related ones, while the results are opposite in long-term.

This is because the synergy effects and the cost happen at different stage of the process. Due to the fact that Chinese firms encounter liability of foreignness and emergingness when entering foreign market, it is difficult for those firms to have any significant improvement in performance in short-term. Because they realize such difficulties, it is common that Chinese firms apply a 'light-touch' approach to ensure the management and operation to be successful in the host country (Rui and Yip, 2008).

However, since the main motivation for such firms to conduct unrelated acquisition abroad is to bring and deploy the foreign technology and know-how in domestic market, Chinese firms will bring the acquired technology to their home country when they are ready. Therefore, firms that have prior domestic diversification experience, abounded resources, cheap labour force and most importantly the norms to deal with local business in domestic countries are able to localize the acquired technology and bring it into production and profit quickly (Rui and Yip, 2008). The result is in line with the argument that due to the imperfect institutional environment, unrelated/diversified firms perform better than focused firms because most of the diversified firms such as business groups are formed to encounter the disadvantages of the institutional environment, therefore, they have better capabilities in terms of financing ability, R&D capability, distribution channel, internal labour market etc (Guillen, 2000). Firms benefit from such unrelated acquisitions regardless of the type of the technology, because it has prior diversification experience in domestic market and have the capability to localize the acquired technology from abroad. As long as the technology is needed in domestic country and has huge potential, the acquiring firms are able to localize them and bring more profit.

6.2.2.2. Diversified business group affiliation, strategic asset seeking, diversification and performance

As business groups are actively involved in domestic diversification, how such strategy would impact their international diversification is still unclear. Recent research indicates that diversified business groups are more likely to conduct unrelated acquisition abroad (Shi et al., 2021), the results from this thesis move a step forward to show that such motivation do bring better performance. The imperfect institutional environment stimulates the form of business groups in China as it developed to encounter the institutional problems. As a result, business groups have more leverage of internal resources, internal labour market, distribution channel and also its own platform such R&D centres to share the technology etc (Khanna and Palepu, 1997). Thus, such firms tend to expand its business to unrelated areas in domestic market and they perform quite well as they possess capability to minimize the cost that raise from diversification of different types of products thus obtaining synergy (Kock and Guillen, 2001; Wan, 2003). Therefore, when domestic market product/technology does not meet its demand of expand and compete with its rivals in domestic market, they begin to seek such strategic assets (often unrelated) in international market (Rui and Yip, 2008). As the main purpose of business groups' SAS OFDI is to bring the unrelated technology to domestic market rather than competing in international market, when the product is brought to domestic market, such firms' prior diversification experience and the internal resources makes firms fully capable of absorb and localize the technology and bring to better firm performance.

6.2.2.3. State-ownership, diversification and performance

The result from this study shows SOEs have negative moderating impact on unrelated acquisition firms' performance in long-term. Which is opposite from the prediction based on resource-based view that SOEs may be able to get access to more local resources, thus perform

better when conducting unrelated CM&As. However, the result is somehow in line with more recent studies. For example, research shows that SOEs are more likely to be motived by political purpose when conducting OFDI (Morck, Yeung and Zhao, 2008). Zhao (2010) shows that with the purpose of increasing their employment capability and scale, SOEs are motivated to become more diversification in home market. However, their post diversification performance is barely monitored, SOEs have less successful experience of managing product diversification in domestic countries. Such negative impact of diversification would be a possible explanation for the publication of regulations from Supervision and Administration Commission of the State Council (SASAC) to discourage the diversification for SOEs. Instead, they are encouraged to focus on their main business. On the other hand, Li et al., (2017) argue that private firms receive equal government support when it comes to OFDI. Shi et al., (2021) find out private-owned enterprises have higher posibility to conduct unrelated international acquisitions than SOEs. Thus, the strong motivation, superior management style together with government support makes private firms more able to manage the acquired unrelated strategic assets.

6.2.3. Summary of implications from both performance studies

The results of both studies find that for EMNEs, an SAS motivation and home county effects are significant factors that impact upon the acquiring firms' performance. The first common finding from both studies is that an SAS motivation plays a vital role in the improvement of domestic performance. A central debate in international business discipline is 'Are EMNEs different from DMNEs?' One argument that EMNEs are different from DMNEs as they

internationalize in order to catch-up via technological upgrading and improvement of innovation capabilities. The two empirical studies in the thesis further prove such motivation bring better home market performance, and even in extreme circumstances, namely when the target strategic assets are unrelated to the acquiring parent firm. Furthermore, home country effects provide a reasonable explanation regarding how those firms can bring better performance.

Notably, another interesting finding from both studies is the impact of business group affiliation and the role of ownership. Business groups are common in emerging markets and are considered to be a distinct form of organisation, sharing internal capital, product and labour markets. The findings of both studies have suggested business groups do have a very important impact on the strategic behaviours of EMNEs, however, not many research has investigated the relationship between business group affiliation and post-acquisition performance, not mentioned for the unrelated acquisition performance, which is a huge research gap in international business. Research to date has indeed found that business groups have an impact on OFDI strategies of EMNEs (Yiu 2011). Chari (2013) for example found that business groups were more likely to acquire strategic assets and even unrelated strategic assets (Shi et al. etc.). Only one paper (Popli, et al., 2017) has looked at the role of business group on acquiring firm's post-acquisition performance and provides supportive results. The relationship between business group and international product diversification performance is still an unexplored area. The results on business group affiliation of this thesis reveal that Chinese business groups are capable of dealing with and localize acquired strategic assets (even unrelated) due to its internal resources, superior internal knowledge management system and domestic diversification experience prior to internationalization.

Finally, ownership structure has also been tested in both two papers (although only included as control variables in study two). Both studies have found consistent view that SOEs are less capable of managing acquired strategic assets, thus, bringing worse performance than private-owned firms. Study two has also found different impacts for different levels of state-ownership (central vs local owned). When looking at the literature regarding the role of state-ownership on CMNEs' internationalization strategy, there are inconclusive views. Early studies mainly suggest emerging market SOEs are more likely to involve in international acquisition (Cui and Jiang, 2012; Luo, Xue and Han, 2010; Yiu, 2011; Wang et al., 2012; Bent, 2014), because it is easier for them to access funds (Buckley, 2014) and get support from state-owned banks (Luo and Wang, 2012), along with essential materials and resources (Buckley et al., 2007; Goldstein, 2007). Most importantly, SOEs are able to get access to government-funded R&D knowledge and patents and have developed to be China's most important R&D powerhouses (Yiu, 2011). While recent studies provide an opposite view that private firms are more likely to engage in SAS OFDI as they are also supported by the government, favourable strategies and treatment are not supplied alone to SOEs. Li and Ding (2017) found that private-owned firms' internationalization is both motivated by government support and institutional avoid. Private-owned enterprises are also benefitted from government support when it comes to CM&A. For example, Geely who acquired Volvo has received great support from central and local government which enhance Geely's absorptive capacity and encourage its further innovation. Before acquisition, the State Council of China promulgated the 'Plan for the Adjustment and Rejuvenation of the Automobile Industry' in order to promote the optimization and upgrading of the automobile. While on the other hand, SOEs are more likely to be motivated by political

purpose (Morck, Yeung and Zhao, 2008), they are lack of successful management experience which is detrimental for the post-acquisition management. It can be concluded from both studies that state-ownership is a double-edged sword. From one hand, firms benefit from a lot of government support, while on the other hand, the government involvement bring the dark side to firm management.

The results for SOEs from both studies contribute to ownership literature in EMNEs studies. The moderating role on acquiring firm performance based on international product diversification makes a first attempt to test the relationship between ownership structure and international product diversification performance. What's more, the different role of central and local government provides interesting future study.

6.3. Limitations and suggestions for future study

This study is not without its limitations. First of all, this study only focuses on the acquiror side's performance, although it is able to show how such strategy bring real benefits for the firms, it could not show how they perform in the host country. Future study could add a performance study of the target side to see if the Chinese firms really apply a 'light-touch' approach and they are not really interested in international market. Secondly, due to the bloom of unrelated international product diversification, Chinese government start to regulate such unrelated activities for Chinese MNEs, the sample that selected for the performance study two only shows the period when the phenomenon is prevalent. In recent years, government encourage firms to focus more on its core business, rather than diversified in international market, especially for state-owned firms. Performance study two includes state ownership as

control variables and the results show state-owned firms are less able to perform in international unrelated deals, which is in line with the government policy. However, future study should pay more attention to the role of ownership in China in such activity to see if the Chinese government policy have any impact on firm's international product diversification strategy thus affecting firm performance. Thirdly, study two uses stock market price (BHAR) as measurement of long-term performance, this is just an initial attempt to test how international diversification strategy impact firm behaviour, future study could include more long-term measurement such as innovation performance measurement or profit measurement.

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Appendix

Appendix A: STATA code of PSM+DID for performance study one in Chapter 4

Codes for patent counts as dependent variable (Patent citation dependent variable is the same):

```
gen sqreal_prepc1=sqrt(real_prepc)

gen sqpcc_1=sqrt(pcc_1)

gen sqpcc_2=sqrt(pcc_2)

gen sqpcc_3=sqrt(pcc_3)

gen sqpcc_aver3=sqrt(pcc_aver3)

global x " sqreal_prepc1 roa1 lnturnover1 lnta1 pm1 lnnoe1 sr1"

probit treatment $x

predict pscore if e(sample), pr


egen industry_year=group(industry year)

gen pscore2=industry_year*10+pscore


cap safedrop u

generate u = uniform()

sort u
```

```
psmatch2 treatment, pscore(pscore2) outcome(sqpcc_1) neighbor(1) caliper(0.5)

eststo model1

psmatch2 treatment, pscore(pscore2) outcome(sqpcc_2) neighbor(1) caliper(0.5)

eststo model2

psmatch2 treatment, pscore(pscore2) outcome(sqpcc_3) neighbor(1) caliper(0.5)

eststo model3

psmatch2 treatment, pscore(pscore2) outcome(sqpcc_aver3) neighbor(1) caliper(0.5)

eststo model4

pstest $x, both
```

Codes to test the role of home country effects, applying state-ownership as example, the code is the same for variable business group, international experience

```
local if "if state==1"

psmatch2 treatment `if', pscore(pscore2) outcome(sqpcc_1) neighbor(1) caliper(0.5)

eststo model5

psmatch2 treatment `if', pscore(pscore2) outcome(sqpcc_2) neighbor(1) caliper(0.5)

eststo model6

psmatch2 treatment `if', pscore(pscore2) outcome(sqpcc_3) neighbor(1) caliper(0.5)

eststo model7

psmatch2 treatment `if', pscore(pscore2) outcome(sqpcc_aver3) neighbor(1) caliper(0.5)

eststo model8
```

pstest $x, both

Codes to capture AUC:

```
probit treatment sqreal_prepc1 roa1 lnturnover1 lnta1 pm1 lnnoe1 sr1

cap drop pr

qui predict pr if e(sample)

roctab treatment pr

estadd scalar auc = r(area)

est store m1

esttab m1, s(r2_p auc N) compress nogap star(* 0.1 ** 0.05 *** 0.01)
```

Codes to draw graph:

```
twoway (kdensity _ps if treatment==1, legend(label(1 "Treatment"))) (kdensity _ps if treatment==0, legend(label(2 "Control"))), xtitle(Pscore) title("Before Matching")
```

```
twoway (kdensity _ps if (treatment==1), legend(label(1 "Treat"))) (kdensity _ps if (treatment==0&_wei!=.), legend(label(2 "Control"))), xtitle("Pscore") title("After Matching")
```

Codes with bootstrap (for patent counts, patent citation is the same):

Nearest neighbor matching:

```
gen sqreal_prepc1=sqrt(real_prepc1)

gen sqpcc_1=sqrt(pcc_1)

gen sqpcc_2=sqrt(pcc_2)

gen sqpcc_3=sqrt(pcc_3)

gen sqpcc_aver3=sqrt(pcc_aver3)


global x " sqreal_prepc1 roa1 lnturnover1 lnta1 pm1 lnnoe1 sr1"


probit treatment $x

predict pscore if e(sample), pr


egen industry_year_state=group(industry year state)

gen pscore2=industry_year_state*10+pscore


cap safedrop u

generate u = uniform()

sort u


bootstrap r(att), reps(500): psmatch2 treatment, pscore(pscore2) outcome(sqpcc_1) neighbor(1)

caliper(0.5)

eststo model1
```

```
bootstrap r(att), reps(500): psmatch2 treatment, pscore(pscore2) outcome(sqpcc_2) neighbor(1)

caliper(0.5)

eststo model2

bootstrap r(att), reps(500): psmatch2 treatment, pscore(pscore2) outcome(sqpcc_3) neighbor(1)

caliper(0.5)

eststo model3

bootstrap r(att), reps(500): psmatch2 treatment, pscore(pscore2) outcome(sqpcc_aver3)

neighbor(1) caliper(0.5)

eststo model4

esttab model1 model2 model3 model4
```

**Codes to test the role of home country effects, applying state-ownership as example, the
code is the same for variable business group, international experience**

```
cap safedrop u

generate u = uniform()

sort u


local if "if state==1"

bootstrap r(att), reps(500): psmatch2 treatment `if', pscore(pscore2) outcome(sqpcc_1)

neighbor(1) caliper(0.5)

eststo model1
```

bootstrap r(att), reps(500): psmatch2 treatment `if', pscore(pscore2) outcome(sqpcc_2) neighbor(1) caliper(0.5)

eststo model2

bootstrap r(att), reps(500): psmatch2 treatment `if', pscore(pscore2) outcome(sqpcc_3) neighbor(1) caliper(0.5)

eststo model3

bootstrap r(att), reps(500): psmatch2 treatment `if', pscore(pscore2) outcome(sqpcc_aver3) neighbor(1) caliper(0.5)

eststo model4

esttab model1 model2 model3 model4

Appendix B: CAR results and STATA code for performance study two in Chapter 5

Table 28. CAR results for full sample

Event window	Mean	Max	Min	% Positive	t test
(-1, 1)	0.95	28.80	-25.46	53.8	3.01***
(-2, 2)	0.72	43.36	-39.53	52.1	1.49
(-5, 5)	0.59	38.23	-38.85	52.4	1.14

* p<0.1, ** p<0.05, *** p<0.01

Table 29. BHAR results for full sample

Year	Mean	Max	Min	% Positive	t test
Year 0 to +1	-0.23	150.36	-79.69	42.6	-0.12
Year 0 to +2	4.56	661.38	-109.07	41.7	1.33
Year 0 to +3	5.20	576.34	-94.97	40.1	1.30

* p<0.1, ** p<0.05, *** p<0.01

Table 30. Comparison of CARs between CMNEs doing related and unrelated deals

Trading intervals	Cumulative average abnormal returns, CAR (%)						Test for difference
	Focused Deals (N=105)			Unrelated Deals (N=252)			
	Mean	% Positive	t test	Mean	% Positive	t test	
(-1, 1)	2.12	61.0	2.50**	0.46	50.8	1.72*	1.87*
(-2, 2)	1.69	57.1	1.38	0.32	50.4	0.69	1.05
(-5, 5)	1.21	54.3	0.95	0.33	51.6	0.65	0.64

* p<0.1, ** p<0.05, *** p<0.01

Table 31. Comparison of BHARs between focused and diversified group

Trading intervals	Cumulative average abnormal returns, BHAR (%)						Test for difference
	Focused Group (N=105)			Diversified Group (N=252)			
	Mean	% Positive	t test	Mean	% Positive	t test	
0 to 1 year	0.03	42.9	0.009	-0.35	42.5	-0.15	0.09
0 to 2 year	-5.17	37.1	-1.49	8.62	43.6	1.86**	-2.38**
0 to 3 year	-7.92	28.6	-1.68*	10.66	44.8	2.02**	-2.62***

* p<0.1, ** p<0.05, *** p<0.01

STATA code for event study and BHAR:

Event study code:

use eventdate, clear

sort company_id

by company_id: gen eventcount=_N

by company_id: keep if _n==1

sort company_id

keep company_id eventcount

save eventcount

use stockdata, clear

sort company_id

merge company_id using eventcount

tab _merge

keep if _merge==3

drop _merge

expand eventcount

drop eventcount

sort company_id Date

by company_id Date: gen set=_n

sort company_id set

save stockdata2

```
use eventdate, clear

sort company_id

by company_id: gen set=_n

sort company_id set

save eventdates2


use stockdata2, clear

merge company_id set using eventdates2

tab _merge

list company_id if _merge==2

keep if _merge==3

drop _merge

egen group_id = group(company_id set)
```

Event window (-1, +1)

(The basic syntax is the same for event window (-4, +4) and (-5, +5))

```
sort group_id Date

by group_id: gen datenum=_n

by group_id: gen target=datenum if Date==event_date

egen td=min(target), by(company_id)
```

drop target

gen dif=datenum-td

by group_id: gen event_window=1 if dif>=-1 & dif<=1

egen count_event_obs=count(event_window), by(group_id)

by group_id: gen estimation_window=1 if dif<-30 & dif>=-120

egen count_est_obs=count(estimation_window), by(group_id)

replace event_window=0 if event_window==.

replace estimation_window=0 if estimation_window==.

tab group_id if count_event_obs<3

tab group_id if count_est_obs<90

drop if count_event_obs<3

drop if count_est_obs<90

set more off

gen predicted_return=.

egen id=group(group_id)

forvalues i=1(1)357{

l id group_id if id==`i' & dif==0

reg RI MR if id==`i' &estimation_window==1

```
predict p if id==`i'

replace predicted_return = p if id==`i' &event_window==1

drop p

}


sort id date

gen abnormal_return=RI-predicted_return if event_window==1

by id: egen cumulative_abnormal_return = sum(abnormal_return)


sort id Date

by id: egen ar_sd = sd(abnormal_return)

gen test =(1/sqrt(11)) * ( cumulative_abnormal_return /ar_sd)

list group_id cumulative_abnormal_return test if dif==0


reg cumulative_abnormal_return if dif==0, robust
```

(-4 , +4)

```
use stockdata2, clear

merge company_id set using eventdates2

tab _merge

list company_id if _merge==2
```

```
keep if _merge==3

drop _merge

egen group_id = group(company_id set)


sort group_id Date

by group_id: gen datenum=_n

by group_id: gen target=datenum if Date==event_date

egen td=min(target), by(company_id)

drop target

gen dif=datenum-td


by group_id: gen event_window=1 if dif>=-4 & dif<=4

egen count_event_obs=count(event_window), by(group_id)

by group_id: gen estimation_window=1 if dif<-30 & dif>=-120

egen count_est_obs=count(estimation_window), by(group_id)

replace event_window=0 if event_window==.

replace estimation_window=0 if estimation_window==.


tab group_id if count_event_obs<9

tab group_id if count_est_obs<90


drop if count_event_obs<9
```

```
drop if count_est_obs<90


set more off

gen predicted_return=.

egen id=group(group_id)

replace RI=0 if RI==.

forvalues i=1(1)357{

l id group_id if id==`i' & dif==0

reg RI MR if id==`i' &estimation_window==1

predict p if id==`i'

replace predicted_return = p if id==`i' &event_window==1

drop p

}


sort id date

gen abnormal_return=RI-predicted_return if event_window==1

by id: egen cumulative_abnormal_return = sum(abnormal_return)


sort id Date

by id: egen ar_sd = sd(abnormal_return)

gen test =(1/sqrt(11)) * ( cumulative_abnormal_return /ar_sd)

list group_id cumulative_abnormal_return test if dif==0
```

```
reg cumulative_abnormal_return if dif==0, robust
```

（ -5 , +5 ）

```
use stockdata2, clear

merge company_id set using eventdates2

tab _merge

list company_id if _merge==2

keep if _merge==3

drop _merge

egen group_id = group(company_id set)


sort group_id Date

by group_id: gen datenum=_n

by group_id: gen target=datenum if Date==event_date

egen td=min(target), by(company_id)

drop target

gen dif=datenum-td


by group_id: gen event_window=1 if dif>=-5 & dif<=5

egen count_event_obs=count(event_window), by(group_id)

by group_id: gen estimation_window=1 if dif<-30 & dif>=-120
```

```stata
egen count_est_obs=count(estimation_window), by(group_id)

replace event_window=0 if event_window==.

replace estimation_window=0 if estimation_window==.


tab group_id if count_event_obs<11

tab group_id if count_est_obs<90


drop if count_event_obs<9

drop if count_est_obs<90


set more off

gen predicted_return=.

egen id=group(group_id)

replace RI=0 if RI==.


forvalues i=1(1)357{

l id group_id if id==`i' & dif==0

reg RI MR if id==`i' &estimation_window==1

predict p if id==`i'

replace predicted_return = p if id==`i' &event_window==1

drop p
```

```
}


sort id date

gen abnormal_return=RI-predicted_return if event_window==1

by id: egen cumulative_abnormal_return = sum(abnormal_return)


sort id Date

by id: egen ar_sd = sd(abnormal_return)

gen test =(1/sqrt(11)) * ( cumulative_abnormal_return /ar_sd)

list group_id cumulative_abnormal_return test if dif==0


reg cumulative_abnormal_return if dif==0, robust
```

BHAR code:

```
net install dm71, from(http://www.stata.com/stb/stb51)


use stockdata.dta, clear

sort company_id Date

*= Date

bysort company_id: gen date_num=_n

replace RI=RI/100

replace MR=MR/100

save stockdata1.dta, replace


use eventdate.dta, clear

joinby company_id using stockdata1.dta

sort company_id Date event_date

gen temp=Date-event_date

replace temp=99999 if temp<0

egen min_dif = min(temp),  by(company_id event_date)

drop if min_dif==99999

gen target=date_num if temp==min_dif

egen td=mean(target), by(company_id event_date)

drop temp min_dif target

gen dif=date_num-td
```

```
keep if dif>=0 & dif<=250

gen RI_1=1+RI

gen MR_1=1+MR

egen RI_2=prod(RI_1), by(company_id event_date)

egen MR_2=prod(MR_1), by(company_id event_date)

gen BHAR=RI_2-MR_2

keep company_id event_date BHAR

duplicates drop company_id event_date BHAR, force

replace BHAR=BHAR*100

save results.dta, replace

ttest BHAR==0
```