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Does Chinese Investment into Europe Facilitate Strategic Asset Growth in the Chinese Parent Company? The Role of Entry Mode

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Abstract: Strategic asset seeking foreign direct investment has undergone tremendous growth over the past decade. This paper first attempts to evaluate the location choice of such investments in Europe. We find that Chinese companies target strategic assets in Europe. The paper then moves to understand the efficacy of these investments in terms of the creation of strategic assets in the Chinese parent company. Our results show the intangible assets of Chinese domestic parent firms significantly increase in the wake of their investments. For greenfield investments, there is a longer time-lag in creation of intangible strategic assets than for acquisitions. However, greenfield investments result in a larger increase in intangible asset creation than acquisition investments.

Keywords: Chinese outward FDI; innovation; event study; strategic asset seeking

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1. Introduction

Chinese outward foreign direct investment (FDI) has been on the rise since China's ascension into the World Trade Organization in 2001. It has gone from relatively low levels of outward FDI in the early 2000's to being a leading source country of FDI for many host countries around the world in the early 2020's. The upward trajectory of Chinese FDI has precipitated a large, and growing, academic interest in the behaviors and strategic approaches of these firms. Many contributions, for example, have argued that it is the combination of their relatively early stage of development coupled with their (often) strategic-assets-seeking motivation which makes Chinese FDI unique (Liang et al. 2022; Tang et al. 2019; Zhu et al. 2017). Following Anderson et al. (2015) we define strategic assets as 'critical resources or capabilities, including, for example, research and development capacity, proprietary technology, design facilities, brands and reputation, and distribution and production networks which give firms competitive advantages over others' (p. 759).

This paper identifies two gaps within the extant research. First, many past studies consider whether managers of Chinese multinational enterprises (MNEs) acquire strategic assets via FDI (Deng 2013; Anderson et al. 2021) by using location choice methods, often finding in the affirmative (Piperopoulos et al. 2018; Alon 2010; Deng 2009; Ramasamy et al. 2012). We, too, undertake a location choice study, though looking specifically at Chinese FDI into Europe[1]. Second, past studies have questioned the ability of Chinese MNEs to meaningfully integrate acquired strategic assets for deployment in their home country (Meyer and Xin 2018). To date, however, research on the actual firm-level impacts of Chinese MNE FDI is still limited (Du and Zhao 2023; Liang et al. 2022). Here we explore whether Chinese FDI to Europe manifests itself in further strategic asset creation from the perspective of the Chinese MNE parent company. We do so using firm-level intangible asset balance sheet data and using event study methodologies. Our study

therefore evaluates not only whether Chinese MNEs exhibit strategic asset seeking (SAS) behavior in Europe but also the outcomes of SAS FDI in terms of domestic intangible asset performance. Moreover, we also consider the impact of entry mode strategies (greenfield versus acquisitions), and in doing so cast further light on the strategic asset seeking debate (Liang et al. 2022; Buckley et al. 2007; Hennart 2012; Ramamurti 2012). Our research question is: does Chinese FDI into Europe facilitate intangible strategic asset creation?

Our location choice results show that Chinese MNEs do prefer European nations rich in intangible assets. More importantly, we also find that managers of Chinese MNEs that undertake FDI projects in Europe exhibit significantly higher intangible asset growth in the post-investment period within the parent firm and entry mode has an impact. Benefits from greenfield projects, while larger, take longer to be realized than those from acquisitions, suggesting they may be a more effective means for the reverse transfer of intangibles over the long-term (Liu and Meyer 2020).

The paper proceeds with the literature review and hypothesis development sections. It then outlines the data and methodologies used in this paper. This is followed by results, discussion and conclusion sections.

2. Emerging Market MNEs, Strategic Asset Seeking and Intangible Asset Creation and Use

2.1. Motivations for Emerging Market Outward FDI to Europe

The outward expansion of FDI by Chinese MNEs has generated significant interest over the last decade (Alon et al. 2018). Many recent contributions find their strategic-asset-seeking behavior to be a unique aspect of their internationalization approach. Luo and Tung (2018), for example, argue that many emerging market (E)MNEs look to catch up with their developed market counterparts via 'aggressive' acquisitions in developed markets (i.e. the 'springboard perspective'). Somewhat similarly, Mathews (2006), with a more direct focus on East Asian 'dragon multinationals', suggests a 'LLL' (link, leverage and learn) framework which argues that EMNEs link with, then leverage their relationships with, developed market (D)MNEs, from which they subsequently learn. Via repetition, EMNEs rapidly develop their intangible strategic assets which may eventually lead to successfully catching up with incumbent MNEs. Arguing along similar lines, though focusing specifically on R&D-related acquisitions, Awate et al. (2014) also note that EMNEs' foreign subsidiaries generally have higher knowledge levels than the parent headquarters. Thus, managing "reverse" knowledge flows from these subsidiaries to the parent becomes of crucial importance to their catch-up strategies (Liu and Meyer 2020; Du and Zhao 2023; Yang and Driffield 2022; Zhu et al. 2017). Awate et al. (2014) note, however, that given the EMNE parent's knowledge deficit relative to its foreign R&D affiliates, reverse knowledge flows involve complex negotiations if 'knowledge accessing' is to be successful. These strategies are 'in contrast to the [advanced economy] MNE where it is the headquarters that initiates the teaching knowledge flow—that we call knowledge sourcing' (Awate et al. 2014, p. 3).

In short, a basic premise of the 'springboard' and 'LLL' models (and a considerable volume of the EMNE literature that builds from these ideas) is that outward FDI (OFDI) is sometimes undertaken by EMNEs for the purpose of 'catching up' with DMNEs (i.e., the idea of 'accelerated internationalization' as defined by Tan and Mathews (2014)). This involves acquiring technologies, brands, various forms of intellectual property or management know-how (Sutherland et al. 2018). These are important potential means by which catch-up may take place. At the firm-level, catching up seems to imply reaching levels of international competitiveness, including the ability to innovate and undertake high value-added activities, such as creating internationally recognized brands, cutting-edge technology, leading managerial competency and orchestrating complex global value chains.

Much discussion of EMNEs is thus interested in the idea that EMNEs undertake FDI in locations with abundant strategic assets: strategic-asset-seeking-related acquisitions are more likely to take place in markets which have an abundance of firms with high levels of strategic assets. Likewise, the assumption that knowledge spillovers from local European

firms to EMNEs via greenfield investment takes place is predicated by the supposition that the strategic asset levels of local European firms are higher than those of the investing firm (Liang et al. 2022). In fact, general FDI theory (i.e., non-EMNE specific theory) assumes the opposite: one of the most cited benefits of FDI in policy circles is the potential for net positive knowledge spillovers for the local firms. In other words, general FDI theory suggests negative spillovers are likely to take place when a foreign firm locates in a given country. EMNE-specific theories typically discount this possibility and instead assume SAS motivations.

Empirical research on EMNEs provides some support for the asset seeking hypothesis, including research on SAS FDI to Italy from China (Liang et al. 2022; Pietrobelli et al. 2011) and Chinese FDI into the US (Anderson and Sutherland 2015). Our first hypothesis explores whether this is true for Chinese FDI in Europe, which includes countries with high levels of strategic asset availability.

Hypothesis 1. *Chinese MNE FDI in Europe is attracted to countries with high concentrations of strategic assets*.

2.2. Intangible Asset Growth and Strategic Asset Related FDI

While many past studies have shown that Chinese MNEs engage in SAS behavior, the outcomes of this behavior are less clear (Wu et al. 2023a; Liang et al. 2022; Howell 2020). Conversely, many studies have looked at the outcomes of developed market (D)MNEs (Surdu and Narula 2021; Cloodt et al. 2006; Van de Vrande et al. 2011). Thus, an interesting question concerns not simply whether Chinese MNEs locate in markets with abundant strategic assets, but rather if such asset-seeking investments have positive impacts on intangible asset generation.

There are two potentially important conditions for catch-up-related SAS FDI to be effective. First, an emerging market (EM) parent firm investing in developed markets (DMs) for the purposes of SAS should realize significantly increased levels of intangible asset creation (Du and Zhao 2023). In the case of EMs, it is beneficial if the strategic assets acquired in DMs are transferable and exploitable in the EMs' home market (Hennart 2012). This may be achieved via either an acquisition or greenfield investment (Wu et al. 2023b). Second, OFDI undertaken by EMNEs should lead to at least sustained performance in the DM target firm in the case of acquisitions. A Chinese acquisition of a European firm should not impede, for example, its ability to innovate and generate further intangible assets. This condition preserves the foreign acquired firm as a potential source of learning and reverse knowledge flows (Anderson et al. 2015). Here we consider primarily the case of the Chinese parent firm.

The Relevance of the Home Market: Domestic Acquirer Performance

In some cases, it has been argued that FDI may lead to reverse transfers of intangible assets such as technologies, brands, managerial competency and global value chain orchestration (Zhong et al. 2021; Hennart 2012). This is seen to be the case as many EMNEs hail from domestic markets with tremendous untapped market growth potential. The managerial strategic approach of engaging in SAS-acquisition FDI in DMs to improve domestic market competitiveness was popularized by Child and Rodrigues (2005) and there is evidence suggesting this managerial strategy is used in the case of SAS acquisitions (Anderson et al. 2015).

Intangible assets can be and are, of course, also generated through greenfield investments (Wu et al. 2023b). The primary channels through which growth in technological capability, managerial and marketing competency take place in the case of greenfield investment are knowledge spillovers. Knowledge spillovers take place, for example, when an EM firm offers more competitive salaries than other firms in the same geographic location to entice local talents to bring their technological or managerial ability to the EM firm. Typically, however, when a firm decides to undergo greenfield investment, it already possesses

firm-specific advantages it wishes to exploit in a new market. In the case of EM FDI into DMs, it has been found that many EMNEs are unable to successfully compete with DM firms in their (DM) home markets. In light of this, it is interesting to note that greenfield investment is the primary mode of entry into Europe by Chinese MNEs according to a frequency count of investments from 2010–2022. This begs the question of why managers of Chinese MNEs prefer greenfield investments in DMs, when they apparently lack the firm-specific assets to compete head-on with the host market firms. One possibility is that greenfield strategic asset seeking is taking place.

There may, of course, be considerable barriers to the digestion of acquired DM firms by EMNEs (Liu and Woywode 2013). In fact, many Chinese firms investing in DMs report disappointing post-acquisition results and sometimes outright failure (Deng 2009). Rather than developing internal long-term capabilities for developing technological innovation or managerial competency, many EMNE acquisitions of DM firms have simply led to the transfer of codified knowledge, such as patents (Jiraphanumes et al. 2023; Si et al. 2021; Sutherland et al. 2020; Liu 2019; Anderson et al. 2015). When engaging in SAS FDI via greenfield investment, the transfer of pre-established codified knowledge is not generally possible. Rather, the investing firm must attempt to hire local talent and then productively integrate them into the cultural and institutional fabric of the parent EM firm (Escandon-Barbosa and Salas-Páramo 2023). Meyer and Xin (2018) for example note: 'Their [EMNEs] lack of internationally experienced talent has become a major obstacle to strategy implementation: they need to fill leadership roles with international responsibility based abroad and at home, and they need to develop talent for future international leadership roles. The key challenge for catch-up strategies thus is to attract, develop, and retain talents who can lead international operations' (p. 1827). Answering the question of whether managers of EMNEs are drawn to locations with abundant strategic assets (H1), therefore, becomes very important in the context of greenfield FDI, as it is the availability of strategic assets (i.e., talented people) that is of direct importance for the success of such greenfield SAS investments (Meyer and Xin 2018; Wu et al. 2023b).

The literature on CMNEs is decidedly unclear about the nature of SAS via greenfield investment in DMs. One camp has discounted EMNE SAS taking place via greenfield investment as a realistic possibility, as it is seen to be a much slower and highly uncertain source of intangible assets (Luo and Tung 2018) for EMNEs that lack firm-specific ownership advantages (Rugman and Li 2007). When considering the rapid development of EM home markets this is a persuasive argument. If a manager of an EMNE is able to purchase a technologically superior DM firm and rapidly deploy its technology, production techniques or brand, they may be rewarded with an increased market share due to 'first mover' considerations. Buying a firm for an advanced production technique, however, may not lead to future production innovations (Truong and Nguyen 2023), as the acquiring EM firm may not clearly understand the driving forces behind the innovation and thus be incapable of building on any given innovation (Jiraphanumes et al. 2023; Liu 2019). Buying innovation for home market deployment is, therefore, largely a short-term fix for a long-term problem (even if it is sometimes hugely profitable for the EM firm in the short term).

While admittedly slower, EMNE managers engaging in SAS in DMs via greenfield investment do not suffer from the short-term orientation described above (Wu et al. 2023a). This is because the EM firm is forced to develop internal innovative competences through the integration of DM knowledge sources (i.e., people) (Zheng et al. 2022; Muralidharan et al. 2017). In this way, EM firms forgo short-term financial gains for long-term internalized competency, which may lead to larger long-term gains than the simple transfer of codified knowledge. Interestingly, the long-term competitive orientation of managers in EMNEs finds some support. Contractor (2015), for example, has considered the managers of EMNE's long-term orientation as a source of strategic advantage over historically dominant DMNEs: 'Patience and long-term orientation correlate with EMM success' (p. 312). This long-term success is largely defined in monetary gains and the manner in which these long-term monetary gains take place is directly traceable to the internal ability of EMNEs to

develop novel improvements to their existing sources of (domestic) competitive advantage. EMNE greenfield investment in DMs may, therefore, provide a sustainable and significant stream of intangible strategic assets. It may, however, take longer for these gains to be realized when compared with the more immediate returns of SAS-related acquisitions.

Hypothesis 2a. *The growth of intangible assets in Chinese MNEs which undertake FDI in Europe significantly increases in the post-investment period.*

Hypothesis 2b. *Intangible asset performance in Chinese MNEs which undertake FDI in Europe is superior for greenfield rather than acquisition investments, though returns take longer to realize.*

3. Data and Methodology

We use two distinct approaches to explore our hypotheses. First, to ascertain the motivation for location choices in Europe we compile greenfield and acquisition data on Chinese FDI to all European Union countries. We draw greenfield data from the Financial Times fDi Markets database and acquisition data from Thomson One Banker. In aggregate, these two data sources provide 1003 Chinese investment observations spread across the EU. We investigate location choice determinants using hurdle models for both value and number of investments to explore our first hypothesis.

Second, we utilize firm-level intangible assets data from DataStream for publicly listed firms and Orbis (Bureau Van Dijk) for private firms to explore the outcome of SAS-related FDI. Of our initial 1003 observations, we found a total of 86 firms (554 firm years) to have adequate intangible assets data availability when combining the DataStream and Orbis data sources. In order to investigate hypothesis 2a, we employ event study methodology on the full 86-firm sample. To explore hypothesis 2b, we disaggregate our sample using the entry mode and re-run event studies for each group.

3.1. Chinese Investment into Europe

The European Union (EU) was chosen as a suitable setting to explore our hypothesis as it is the largest common market in the world and is typically seen to possess one of the largest pools of intangible assets in the world. The EU rather than a geopolitical definition of Europe was chosen due to a homogeneous set of overarching laws and regulations regarding FDI into the common area and the ease of capital, product and human flows across EU boarders.

3.1.1. Data

Data for Location Choices (Hypothesis 1)

In order to explore our first hypothesis, we conduct hurdle models for both the amount and value of Chinese investment into Europe. Our dependent variables are, therefore, the frequency count of observations of Chinese investment into European countries for count models and the value of Chinese investments into Europe as a share of that European country's gross domestic product (GDP) for value-based models. We opted for using the share of investment to GDP to account for investment and country size overall (i.e., a small investment in a small country would be more equivalent to a large investment in a large country than a small investment in a large country or a large investment in a small country). We employ panel data for all Chinese FDI into EU countries. The number of observations included in our count model is 1003. Due to the unavailability of transactional values for several observations, our value-based models have 900 observations.

Our main explanatory variable is a three-way linear composite index of intangible assets. Capturing and measuring strategic assets is complicated, firstly, by the lack of clear conceptual definition (i.e., they are rather broad and lots of different proxies have been used) as well as the high degree of collinearity between many of the proxies used and other explanatory variables (i.e., GDP per capita). Here, we calculate and use a composite index to measure relative European strategic asset intensity. This index is calculated as the share of country *i*'s patents out of all EU patents plus the percentage of top 500 companies

located in country *i* plus the percentage of master's and PhDs granted as a percentage of total degrees (all denominated by the total for the EU, giving a measure of their intra-EU intensity). We also employ several control variables which are typically included in Chinese FDI location choice studies (Piperopoulos et al. 2018).

Data for Event Study Models (Hypothesis 2)

Our sample of 1003 Chinese investments into Europe consists of approximately 77% private Chinese investing firms. Of the listed acquirer firms approximately 85% were listed on the Hong Kong (28%), Shanghai (34%) and Shenzhen (24%) stock exchanges. There are 86 observations, resulting in 554 firm year observations being included in our event study sample. Beneath are the descriptive statistics for the intangible assets of the firms included in our event study analysis broken up by pre and post event[2]. See Table 1 for descriptive statistics.

Table 1. Descriptive statistics of intangible assets for 554 firm year observations included in our sample.

	Obs.	Avg.	Std. Dev.	Min	Max
All FDI Events					
1–3 Years Before Event	247	134,609	657,010.00	0	6,987,122
0–3 Years After Event	307	322,594	1,252,269	0	12,200,000
Acquisition Events Only					
1–3 Years Before Event	69	22,537.5	39,791.8	0	183,964
0–3 Years After Event	79	130,487	312,601	0	1,883,816
Greenfield Investment Events Only					
1–3 Years Before Event	186	181,648	758,748	0	6,987,112
0–3 Years After Event	237	365,729	1,371,037	0	12,200,000

First, it should be noted that intangible assets of MNEs for all FDI events, acquisitions only and greenfield investment only at least doubled, on average, after the investment took place as compared to before the investment. Furthermore, the average intangible assets of the MNEs which conducted greenfield investment were significantly higher than those MNEs that acquired European companies. We use intangible assets as our main explanatory variable for the event study as this balance sheet measure is the most comprehensive way of capturing strategic assets. Intangibles have been used in a number of previous studies, dating back to the seminal work of Delios and Beamish (2001). The valuation of intangibles is controlled by standardized accounting standards in China and captures a variety of key strategic assets, including attributing values to such things as patents, brands, goodwill and supply chain networks. As such, we consider the use of intangibles as an excellent way of quantifying and testing a major topic in the EMNE literature—namely impact of FDI on strategic asset generation.

3.2. Location Choice: Model Definition

We estimate how the value (as a share of GDP to control for size) and amount of Chinese outward FDI to European Union countries is influenced, by among other things, national strategic asset intensity. We use the following models, incorporating in this preliminary study some commonly used control variables in extant location choice studies[3]:

$$\begin{aligned}\text{Count FDI}_{it} = f(&\beta_1\text{Strategic Asset Index}_{it\text{-}1}, \beta_2\ln(\text{GDP per capita}_{it\text{-}1}), \beta_3\text{GDP Growth}_{it\text{-}1},\\ &\beta_4\text{Union Coverage}_{i}, \beta_5\text{Corporate Tax Rates}_{it\text{-}1}, \beta_6\ln(\text{Distance}_{it\text{-}1}),\\ &\beta_7\ln(\text{Geographic Size}_{it\text{-}1}), \beta_8\text{Unemployment}_{it\text{-}1}, \beta_9\ln(\text{Population Density}_{it\text{-}1}),\\ &\beta_{10}\text{Percentage Chinese}_{it\text{-}1})\end{aligned} \quad (1)$$

$$\text{Value FDI}_{it} = g(\beta_1\text{Strategic Asset Index}_{it\text{-}1}, \beta_2\ln(\text{GDP per capita}_{it\text{-}1}), \beta_3\text{GDP Growth}_{it\text{-}1}, \beta_4\text{Union Coverage}_{i}, \beta_5\text{Corporate Tax Rates}_{it\text{-}1}, \beta_6\ln(\text{Distance}_{it\text{-}1}), \beta_7\ln(\text{Geographic Size}_{it\text{-}1}), \beta_8\text{Unemployment}_{it\text{-}1}, \beta_9\ln(\text{Population Density}_{it\text{-}1}), \beta_{10}\text{Percentage Chinese}_{it\text{-}1}) \quad (2)$$

where Count FDI_{it} is the number of FDI projects from China into country i in year t and Value FDI_{it} is the value of FDI as a share of GDP from China into country i in year t.

We use the first lag of all independent variables to account for the time lags involved in FDI decision making. Moreover, as Chinese MNEs are likely to face different barriers when first entering a new market when compared to subsequent investments (i.e., increasing their presence in that market once entered may be facilitated by prior entries) a hurdle model is used for both model specifications. The hurdle model firstly involves a logistic regression, run on all the data for both Equations (1) and (2). These estimate the same equation, since a country that receives zero dollars of FDI does not have any outward FDI counts. This estimation helps us understand what variables are important for Chinese companies investing in a country as compared to not investing. The second step of the hurdle model is to understand how these variables determine the amount of FDI (both value and count in this case) once a company has decided to invest. We do this by estimating Equation (1) using a zero-truncated negative binomial model on all non-zero counts of FDI. While both a Poisson and a negative binomial model both estimate count data, a zero-truncated negative binomial model is preferable to a zero-truncated Poisson model in this case due to an over dispersion of zeroes in the outward FDI counts; the mean is 3.60 while the standard deviation is 10.05. When over dispersion becomes an issue, negative binomial regression can be used (Hilbe 2011), as Poisson models tend to over-estimate significance of variables by under-estimating standard errors (Beneito et al. 2009).

The two-step estimation for equation (1) is a formal hurdle model; however, we opt for a comparable strategy to help solidify the results from Equation (1) by using an ordinary least squares estimation on non-zero values of FDI for the second step of Equation (2). Confirmation of the results for Equation (2) is carried out using a Tobit model with a zero being the lower limit on the dependent variable (descriptive statistics for the data are outlined in Table 2).

Table 2. Summary statistics for determinates of outward FDI.

	Mean	Std. Dev.	Min	Max	Obs.
Count FDI	3.490	10.01	0.000	84.00	249
Value FDI/GDP (%)	0.049	0.196	0.000	2.353	249
Strategic Asset Index	11.33	15.25	0.063	81.05	249
ln(GDP per capita)	9.916	0.656	8.294	11.30	249
GDP Growth	4.612	7.004	−19.08	31.56	249
Union Coverage	30.01	19.68	8.000	74.00	249
Corporate Tax Rates	24.88	7.838	10.00	40.25	249
ln(Distance)	8.928	0.106	8.753	9.178	249
ln(Geographic Size)	10.55	1.277	6.906	12.26	249
Unemployment	8.404	3.876	2.600	24.80	249
ln(Population Density)	4.609	0.810	2.839	6.208	249
Percentage Chinese	0.002	0.002	0.000	0.005	249

3.3. Model Estimation for Outward FDI's Effect on Intangible Assets

If Chinese MNEs are indeed acquiring or investing in European companies for knowledge, this may potentially impact their intangible assets. Event study methodology helps identify the impact of an event (outward FDI) on a company's value (intangible assets). In a recent Research Note in the *Journal of International Business Studies*, El Ghoul et al. (2023) outlined the best practices for using event study in cross-border transactions. We use this methodology to measure the effect of a Chinese FDI project in Europe on intangible asset growth in parent Chinese firms.

In our event study model specification, we designate the year in which a Chinese company acquired or invested in a European company as time $t = 0$, the year following the event as time $t = 1$, the year immediately preceding the event as time $t = -1$ and so forth. An estimation window is used in time periods before an event to estimate predicted performance if an event were not to occur. The estimation window can vary in length, but is always measured in negative time (e.g., $t = -5$ to -2 determines a company's baseline before the event occurred). Finally, a company's actual performance compared to the predicted performance gives an unpredicted and unexplained performance during the event window. The event window encompasses an event and is measured in positive time. More formally, a company's abnormal intangible assets are measured as $AI_{it} = I_{it} - PI_i$ where AI_{it} is the abnormal intangible assets of company i at time t of the event window, I is the actual intangible assets of the company and PI is the predicted intangible assets of the company if no event were to occur. In this paper we use the means return method to estimate predicted intangible assets where PI will equal the mean of a company's intangible assets during the estimation window; it is time invariant.

After abnormal intangible assets are calculated for each company for each year of the event window, average abnormal intangible assets (AAI) are calculated by taking the average abnormal intangible assets across all companies by year. By using averages over several events, a clearer understanding is gained about intangible asset fluctuation to FDI activity. If intangible assets are not influenced by outward FDI, then it is more likely that average abnormal intangible assets will be either positive or negative. We then compare AAI to the variance of abnormal intangible assets across companies for that year to conduct a hypothesis test.[4]

In addition to the parametric testing of AAI, two non-parametric tests can be used in conjunction with AAI. The sign test looks at the proportion of positive AIs to negative AIs by year across events. If abnormal intangible assets are not present, then this proportion should be 0.5; a random distribution of no AI would suggest half positive and half negative; a 0.5 proportion. The sign test compares the actual proportion to 0.5. Finally, the rank test assigns a rank from lowest to highest for each year in the event window for all companies. The average rank for each year of the event window across all events should come out to the median number of years in the event window if no abnormal intangible assets occurred. This test compares the average yearly rank of AIs to that of the median. A lower number signifies lower than expected abnormal returns (negative) and a higher rank signifies positive abnormal returns (Corrado 2011).

Beyond examining abnormal intangible assets for each year following an event, a more important examination is to understand what the overall impact of an event is on intangible assets overall. Cumulative abnormal intangible assets (CAI) are measured as the sum of AIs for each company from the event year to the year specified in addition to the years in between (e.g., a CAAI at year two would be the AAI the year of the event, plus the year after, plus the AAI two years after; the cumulative impact overall. We opt for a three-year event window maximum). As with Ais, cumulative average abnormal intangible assets (CAAI) give better insight into the overall effect of outward FDI on intangible assets. Comparing the CAAI to the variance gives a test statistic that is normally distributed (Mackinlay 1997).

Furthermore, two additional tests are used to support the CAAI findings. The first test determines if the number of positive CAIs in a year is significantly different to the number of negative CAIs. It is equivalent to the sign test described above and assumes the number of positive and negative CAIs should be approximately equal each year (Doukas and Travlos 1988). The second nonparametric method used is the generalized sign test, which is the similar to the sign test described above but uses the proportion of positive to negative AIs during the estimation window as a baseline for comparison instead of 0.5 (Cowan 1992). As with the sign test for AIs, a higher proportion of positive CAIs signifies a higher likelihood that outward FDI has a positive impact on intangible assets.

4. Results

4.1. Results for Determinates of Outward FDI

The hurdle model results for determinates of outward FDI are contained in Table 3. The first column contains the results from the logistic estimation of the outward FDI binary variable (0 if no FDI; 1 if at least one investment). The second column shows the estimated parameters for the zero-truncated negative binomial model for the count of the number of FDI investments from China to country *i*. The third column shows the equivalent estimation using OLS and the value of FDI as a percentage of GDP, with all zeroes excluded. Finally, the fourth column includes the Tobit estimation to coincide with the results in column three. All regressions were run with clustering of the error terms to account for different variances between countries.

Table 3. Hurdle model results for determinates of FDI.

Regression Type	**Logistic**	**Zero-Truncated Neg. Bin.**	**Zero-Truncated OLS**	**Tobit**
Dependent Variable	Outward FDI Dummy	Count of Outward FDI	Outward FDI Value as % of GDP	Outward FDI Value as % of GDP
Strategic Asset Index$_{it-1}$	0.150 **	0.027 ***	0.006 ***	0.003 **
	(0.063)	(0.008)	(0.002)	(0.001)
ln(GDP per capita$_{it-1}$)	1.089 *	0.526	−0.028	−0.113
	(0.597)	(0.442)	(0.100)	(0.077)
GDP Growth$_{it-1}$	−0.034	−0.005	−0.0008	−0.002
	(0.027)	(0.009)	(0.002)	(0.002)
Union Coverage$_{i}$	0.002	0.011	0.005 **	0.004 **
	(0.013)	(0.009)	(0.002)	(0.002)
Corporate Tax Rates$_{it-1}$	−0.150 ***	−0.102 ***	−0.007	−0.012 **
	(0.039)	(0.031)	(0.005)	(0.005)
ln(Distance$_{it-1}$)	−3.806 **	0.357	1.170 **	0.577 ***
	(1.733)	(1.504)	(0.436)	(0.197)
ln(Geographic Size$_{it-1}$)	0.933 ***	0.920 ***	−0.076 **	0.052 *
	(0.302)	(0.210)	(0.029)	(0.029)
Unemployment$_{it-1}$	0.061	−0.022	−0.003	0.002
	(0.748)	(0.038)	(0.005)	(0.007)
ln(Population Density$_{it-1}$)	2.083 ***	1.317 ***	−0.052	0.103 **
	(0.391)	(0.209)	(0.033)	(0.042)
Percentage Chinese$_{it-1}$	−64.95	−51.87	21.27	17.29
	(132.3)	(69.58)	(13.86)	(10.83)
Constant	6.879	−21.57	−6.595 *	−4.992 **
	(13.43)	(13.38)	(3.282)	(1.958)
Obs.	249	156	156	249
(Pseudo) R-Square	0.355	0.22	-	0.269
Log (Pseudo)Likelihood	−106.1	-	−3252	−54.82

* = $p < 0.10$; ** = $p < 0.05$; *** = $p < 0.01$; Country Clustered Standard Errors in Parenthesis.

The results from the logistic regression indicate that greater strategic asset intensity at a European level is an important factor determining Chinese FDI. Overall, a 1-percentage-point increase in the strategic asset index increases the likelihood of Chinese FDI by around 15 percentage points. Also, higher values of GDP per capita, geographic size and population density significantly increase the probability of FDI, while higher corporate tax rates significantly reduce the likelihood of investment.

For the zero-truncated negative binomial model in column two, the strategic asset index is significant. After the threshold for the first investment is reached, further investments are more likely for higher values of the index; 2.8 percent higher likelihood of investment for a percentage point increase in the strategic asset index. Other important factors for increased FDI include lower corporate tax rates, larger geographic size and higher population density.

Finally, for further validation of the hurdle model, the OLS results on non-zero values of FDI as a percentage of GDP are reported in column 3 with the coinciding Tobit estimation in column 4. As in the zero-truncated negative binomial regression, the last two columns provide additional evidence that the strategic asset index does indeed attract FDI; a ten-percentage-point increase in this index attracts between 0.03 and 0.06 percent more FDI value as a share of GDP. Beyond the strategic asset index, union coverage is positive and significant in these regressions while being insignificant in the logistic and negative binomial models. Furthermore, distance is positive and significant in the last two columns, while tax rates are only significant in the Tobit model. Geographic size is significant in both columns; however, the coefficient is negative in the zero-truncated OLS regression and positive in the Tobit model. Lastly, population density is also positive and significant in the Tobit regression.

4.2. Results for Event Study Analysis of Outward FDIs Effect on Intangible Assets

The estimation results of the event study analysis are contained in Tables 4–6. Table 4 displays the results for all outward FDI occurrences, while Table 5 includes only acquisition events and Table 6 only includes greenfield investment events (Table 4 accounts for both types of events). The top portion of each table shows the results for the tests outlined above for abnormal intangible assets and the lower section shows the results for cumulative abnormal intangible assets. The columns for each table are the same and are as follows: column 2 displays average abnormal intangible assets in USD (cumulative average abnormal intangible assets), and column 3 shows the t-statistic corresponding to the number in column 2. Columns 4 and 5 show the number of positive and negative AIs and CAIs, respectively, while Column 6 shows the corresponding test statistic if the positive and negative numbers are different (i.e., the sign test outlined above). Finally, column 7 contains the rank test statistic for the AIs in the upper half and the bottom half has the generalized sign test statistic for the CAIs.

Table 4. Event study results for all outward FDI events.

Abnormal Intangible Assets						
Year After FDI	AAI	t-stat	# Pos	# Neg	Sign t-stat	Rank t-stat
0	67,154.8	(0.570)	64	19	4.939 ***	−1.589
1	104,618.9	(0.888)	72	10	6.847 ***	−0.584
2	260,291.0 **	(2.209)	57	9	5.908 ***	0.046
3	359,919.4 ***	(3.054)	38	10	4.041 ***	1.064
Cumulative Abnormal Intangible Assets						
Years After FDI	CAAI	t-stat	# Pos	# Neg	Sign t-stat	Gen Sign t-stat
0	67,154.8	(0.583)	64	19	4.939 ***	5.379 ***
1	172,662.7	(1.060)	69	13	6.184 ***	6.623 ***
2	487,405.6 **	(2.443)	59	7	6.401 ***	6.795 ***
3	984,962.6 ***	(4.276)	44	4	5.774 ***	6.110 ***

Estimation Window Ranges from 1–3 Years Before Event; 86 Events in Total; * = $p < 0.10$; ** = $p < 0.05$; *** = $p < 0.01$.

Table 4 shows results for both acquisitions and greenfield investments. The abnormal intangible assets results suggest that Chinese MNEs do not see a significant increase in intangible assets following an FDI venture until 2 to 3 years after the investment. The sign test confirms these results with a significant difference in positive AIs over negative AIs in those years. The rank test has no significance in any year. The cumulative abnormal intangible assets results in the bottom half present the same story: CAIs are positive and significant every year after an event except the year the event occurred, and the sign test and the generalized sign test are significant in every year. The cumulative average abnormal returns results suggest that on average, a CMNE is likely to experience almost a one million USD increase in intangible assets in total three years after the FDI occurrence.

Table 5. Event study results for acquisition events only.

Abnormal Intangible Assets						
Year After FDI	AAI	t-stat	# Pos	# Neg	Sign t-stat	Rank t-stat
0	60,251.4 ***	(4.349)	20	4	3.266 ***	−1.664
1	91,345.0 ***	(6.593)	22	2	4.082 ***	−0.601
2	156,506.9 ***	(11.296)	16	3	2.982 ***	−0.117
3	147,106.6 ***	(10.618)	9	3	1.732 *	0.925
Cumulative Abnormal Intangible Assets						
Years After FDI	CAAI	t-stat	# Pos	# Neg	Sign t-stat	Gen Sign t-stat
0	60,251.4 ***	(4.396)	20	4	3.266 ***	3.337 ***
1	151,596.4 ***	(7.822)	22	2	4.082 ***	4.154 ***
2	345,472.8 ***	(14.554)	18	1	3.900 ***	3.964 ***
3	666,940.3 ***	(24.333)	11	1	2.887 ***	2.937 ***

Estimation Window Ranges from 1–3 Years Before Event; 24 Events in Total; * = $p < 0.10$; ** = $p < 0.05$; *** = $p < 0.01$.

Table 6. Event study results for greenfield investment events only.

Abnormal Intangible Assets						
Year After FDI	AAI	t-stat	# Pos	# Neg	Sign t-stat	Rank t-stat
0	69,128.2	(0.447)	48	15	4.158 ***	-1.509
1	73,080.1	(0.472)	53	9	5.588 ***	−0.585
2	293,518.6 *	(1.896)	44	6	5.374 ***	0.158
3	479,010.8 ***	(3.094)	32	6	4.218 ***	1.165
Cumulative Abnormal Intangible Assets						
Years After FDI	CAAI	t-stat	# Pos	# Neg	Sign t-stat	Gen Sign t-stat
0	69,128.2	(0.465)	48	15	4.158 ***	4.389 ***
1	143,436.8	(0.682)	50	12	4.826 ***	5.056 ***
2	488,976.1 *	(1.898)	43	7	5.091 ***	5.298 ***
3	1,074,385.9 ***	(3.612)	35	3	5.191 ***	5.371 ***

Estimation Window Ranges from 1–3 Years Before Event; 62 Events in Total; * = $p < 0.10$; ** = $p < 0.05$; *** = $p < 0.01$.

Turning our attention to acquisition events (Table 5) and greenfield events (Table 6) separately, the results for both types of FDI channels mirror the results in Table 4. However, the estimation results for acquisition events show immediately positive and significant abnormal intangible assets the year the acquisition takes place and the first year immediately after (as well as years two and three), while greenfield events appear to take more time for the event to generate intangible assets where AAIs and CAAIs are not significant until two to three years after the investment. Furthermore, greenfield events generate higher intangible assets in total for the years of the event to three years after the event: greenfield events generate 1,074,000 USD of additional intangible assets over the four years while acquisitions only generate about 667,000 USD in total of additional intangible assets (column two of the bottom rows for CAAI in Table 6 compared to Table 5).[5]

5. Discussion

When engaging in FDI in Europe, Chinese firms are attracted to locations with high concentrations of strategic assets. These results are in line with previous studies on the SAS OFDI behavior of EMNEs in developed markets (Liang et al. 2022; Amighini et al. 2013; Anderson and Sutherland 2015; Cozza et al. 2015; Pietrobelli et al. 2011). These location choice results lay the foundation for understanding whether the strategic asset endowment of a given location may enable or hinder the generation of intangible strategic assets: simply because EM firms locate in markets with high levels of strategic assets, for example, does not mean they will be successful in generating firm-level intangible assets.

We find that managers of EMNEs, such as those from China, are not only drawn to strategic asset-rich EU locations, but the growth of intangible assets in EM firms which undertake FDI in Europe significantly increases. This gives preliminary support to the idea of a possible link between managers of EMNEs locating in markets rich in strategic assets and the successful generation of firm-level intangible assets. The FDI entry mode of EMNEs in Europe may help shed additional light on the motivations for investment. Access to strategic assets via acquisitions may, for example, indicate that EMNEs are primarily interested in domestic (or host) market exploitation of strategic assets, preliminarily at least. Greenfield investments, on the other hand, may indicate that EMNEs are interested in building the competency to generate strategic assets. Our results show that both of these entry mode mechanisms produce the desired effect (i.e. increased levels of intangible assets). Entry mode does, however, seem to dictate the relative speed and intensity of strategic asset generation. Acquisitions allow for quicker access to strategic assets than greenfield investments (Liang et al. 2022). Greenfield investments produce a larger aggregated amount of strategic assets than acquisitions, but the strategic asset generation process is comparatively slower for greenfield investments than acquisitions.

5.1. Reverse Transfer of Intangible Assets for Exploitation in the Domestic Market: Exploiting Complementary Local Resources?

Our results lend support to studies which argue emerging market MNEs actively engage in FDI for SAS purposes. Managers of EMNEs may allow their developed market strategic asset-rich acquisitions or greenfield FDI projects, for example, to push leading international technological thresholds (Liang et al. 2022; Grossman and Hart 1986; Meyer and Estrin 2001; Morck et al. 2008). This may facilitate a steady stream of products, processes and services developed in the most stringent of intellectual property rights environments (i.e., the EU) to their home markets, emerging markets such as China. These findings are consistent with some earlier research, looking at patenting activities in CMNEs in the wake of technology-related acquisitions in the US, Japan and Europe. Anderson et al. (2015), for example, found that in the two years following Chinese acquisitions in the US, Japan and Europe, Chinese firms experienced an average increase of 27 patents per year in the domestic (Chinese) market. Another relevant study takes this argument to the level of analysis of individual managers, who effectively act as "boundary spanners" for reverse knowledge transfer when analyzing case studies of acquisitions by Chinese companies in Germany and the UK (Liu and Meyer 2020).

5.2. Entry Mode and Intangible Asset Seeking

The EMNE literature places significant emphasis on the speed of internationalization (i.e., EMNE managers engaging in aggressive, high-risk acquisitions to psychically distant countries) as a means to asset seek and catch up. While acquisitions are important, it is important to note that greenfield FDI appears to have a larger impact in the long term on intangible asset creation. This aspect of EM asset-seeking behavior has been somewhat neglected, with some notable exceptions (Pietrobelli et al. 2011). Why may greenfield FDI be a more effective long-term way of asset seeking for EMNEs? One reason may be that they generally find it hard to manage their European acquisitions (Wu et al. 2023a; Liu and Woywode 2013).

6. Conclusions

This paper pushes the debate on EMNEs forward by investigating the impacts of OFDI on intangible asset creation by managers in CMNEs. It asks not only whether managers of EMNEs, such as those from China, locate in markets with high levels of strategic assets in Europe, but also what the impacts of such FDI are on the parent firms. Our findings suggest that FDI undertaken by managers of CMNEs is drawn to strategic asset-rich locations and that this, in turn, leads to intangible asset creation over the long term in the Chinese parent firm. We use event study methodology to look at the firm-

level impact of FDI on the generation of intangible assets in the investing firm. There are different possible interpretations of our results. Hennart's (2012) bundling model, for example, provides one useful avenue for thinking about why EMNEs may look to, and be successful in acquiring strategic assets. EMNEs preferential access to large fast-growing domestic markets, facilitated via access to complementary local resources secured from abroad provides one plausible explanation for the observed behavior.

6.1. Policy Implications

From a European policy perspective, one interesting insight is that further addressing imperfections in the local Chinese market, particularly encouraging equal treatment for both foreign and Chinese firms (via the WTO, for example), may be one affective means of reducing asset seeking in Europe, and at the same time, opening opportunities for European firms. In doing so, European businesses will be able to exploit their intangible assets in emerging markets, such as China. Similarly, EMNE managers will have significantly reduced incentives to target and transfer intangibles from Europe to EMs. In the absence of such measures, it may still make sense for European businesses rich in intangibles to sell these to EM competitors, as the potential rewards from their exploitation in EMs are significant.

From an EM policy perspective, our findings may indicate that government support for the generation of strategic assets from international knowledge sources best takes place via greenfield investment. Greenfield investment may help facilitate the capability to organically generate intangible assets. Further, the long-term aggregated impact of strategic asset generation via greenfield investment seems to outperform acquisition investment. Providing institutional support to EMNEs which engage in strategic asset-seeking greenfield investment in developed markets may aid in the technological advancement of the home EM economy as a whole.

6.2. Limitations and Future Research

As more EM FDI takes place in the coming years and the geographic reach of their strategic asset seeking investments expands, future studies will do well to have a larger sample size for their event study-type portions of analysis. Other measures of strategic assets, such as patents or trademarks, could also be tested to evaluate how these specific types of intangible strategic assets generated are impacted by entry mode decisions. We use China as a proxy for EMs more generally. Future research may also wish to expand the number and types of countries included to tease out nuances between investing in European countries and other places with high levels of intangible strategic assets. Is there, for example, a moderating impact of colonial ties (or a host of other potential factors) which may impact other EMNEs in a meaningful way when engaging in SAS FDI in Europe?

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Notes

[1] For the purposes of this paper, we define Europe as European Union member states.

[2] An event in this study is an outward FDI case, either acquisition or greenfield investment unless delineated otherwise.

[3] Strategic Asset Index, Economic Performance, Cost Features, Geographic Determinates, Labor Availability, Shared Ethnicity. In this approach some other variables are excluded (i.e., exchange rates, where relevant). Nonetheless, the model fits are good.

[4] Please see Mackinlay (1997) for all the mathematics used in our event study as all formulas and tests are given there in detail unless otherwise noted.

[5] The results of the event study presented here use years -1 to -3 for the estimation window (1, 2, and 3 years before the event occurred). The results are significant for a wide array of estimation windows such as 1 to 6 or 7 years prior to the event to establish "baseline" intangible assets. The results are also robust when adding an additional year to the event window (years 0 to 4), However, adding the additional year takes the number of events from 86 down to 65 in total. Using 0 to 5 years brings the number of events down even further to 45.

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