

Chinese investments in the European Union

A critical approach

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Abstract

Chinese outward FDI increased sharply over the last decades, subjecting them to considerable public debate. Yet, empirical research concerning Chinese investments in the EU is sparse. In this thesis, we attempt to investigate in a comprehensive way if and how Chinese investments in the EU differ from investments with other origins. Our empirical analysis focuses on factors attracting Chinese investments in France and on how Chinese ownership affects the size, performance, and productivity of French firms. By applying an IV probit model, we find that that higher international experience of the target firm attracts Chinese investors, but also that they are comparatively less discouraged by the poorer financial health of their targets. Furthermore, using an IV fixed effects model, we find clear evidence that Chinese ownership is associated with a smaller size, poorer performance, and lower productivity of the French subsidiary. These results remain valid after rigorous robustness testing by using propensity score matching and restricting our sample to various subsamples, although the negative effect associated with Chinese ownership loses significance taking into account the level of democracy and annual growth rate of the owner's country. This may imply that Chinese investments are "special" by the important role of the state and by the economic environment in China stimulating its firms to catch up quickly.

This thesis has been written during the outbreak of SARS-CoV-2, which limited the possibilities of data collection. The reader may want to take this into account when reading this thesis.

Contents

1	Introduction	4
2	Literature review	7
2.1	General theory of FDI	8
2.1.1	What is FDI?	8
2.1.2	Why do firms engage in outward FDI?	8
2.1.3	How may FDI enhance the target’s performance and productivity?	9
2.1.4	Effect on wages	10
2.1.5	Distinguishing several types of FDI	10
2.1.6	Process of internalization	11
2.1.7	How may FDI enhance the productivity of other firms through spillover effects?	11
2.2	Empirics - what can FDI research tell us about the performance of Chinese outward FDI?	12
2.2.1	Outcomes depending on the country of origin of FDI	12
2.2.2	Process of internalization	13
2.2.3	Impact on wages	13
2.2.4	Entry mode of FDI	14
2.3	Location choice of Chinese outward FDI	15
2.4	Implications for Chinese investments in the European Union	18
3	Data	20
4	Summary statistics	21
5	Methodology	25
5.1	Determinants of Chinese ownership in France: probit estimation	25
5.2	Impact of Chinese ownership on size, performance and productivity of the target firm – OLS based on foreign-owned firms in 2017	27
5.3	How may endogeneity bias our results?	29
5.3.1	Omitted variable bias	29
5.3.2	Reverse causality	29
5.3.3	Measurement error	29
5.4	Impact of Chinese ownership on size, performance and productivity of the target firm – 2SLS based on foreign-owned firms in 2017	30
5.5	Impact of Chinese ownership on size, performance and productivity of the target firm – panel data based on foreign-owned firms in 2010-2017	31
6	Results	32
6.1	Determinants of Chinese ownership in France: probit estimation	32
6.1.1	Baseline specification: all variables with data from 2017	32
6.1.2	Endogeneity-accounting specification: variables with lagged instruments (data from 2015 and 2014)	33
6.2	Impact of Chinese ownership on size, performance and productivity of the target firm – OLS based on foreign-owned firms in 2017	33
6.3	Impact of Chinese ownership on size, performance and productivity of the target firm – 2SLS based on foreign-owned firms in 2017	35
6.4	Impact of Chinese ownership on size, performance and productivity of the target firm – panel data based on foreign-owned firms in 2010-2017	35
7	Robustness checks	39
7.1	Propensity score matching	39
7.2	Using subsamples	41
7.3	Testing previous findings by adding additional control variables	44

8	Beyond performance and productivity – common debates on Chinese investment projects	47
8.1	A small digression: China’s Belt and Road Initiative	47
8.2	Geopolitical criticism	48
8.3	Economic criticism	50
9	Discussion and conclusion	52
	References	54

List of Tables

1	Stock of Chinese FDI in EU member states (in 10,000 USD)	7
2	Summary statistics of all variables	23
3	Summary statistics of key variables for subsamples	23
4	Number of firms with identified GUO in each sectoral section in 2017 . .	24
5	Names of Chinese GUOs of French firms in 2017 (10 largest)	25
6	Probit - results	34
7	OLS/2SLS/IV-FE - results for turnover	36
8	OLS/2SLS/IV-FE - results for added value	36
9	OLS/2SLS/IV-FE - results for total assets	37
10	OLS/2SLS/IV-FE - results for employees	37
11	OLS/2SLS/IV-FE - results for profit margin (change in percentage points)	37
12	OLS/2SLS/IV-FE - results for labor productivity	38
13	OLS/2SLS/IV-FE - results for TFP (revenue-based)	38
14	OLS/2SLS/IV-FE - results for TFP (added value-based)	39
15	Propensity score matching - results	41
16	Robustness checks with subsamples	42
17	Adding control variable indicating democracy level of owner’s country . .	45
18	Adding control variable indicating growth level of owner’s country	46

List of Figures

1	Stock of Chinese FDI in EU member states (in 10,000 USD)	7
2	Stock of Chinese FDI in France (in 10,000 USD)	22
3	Chinese imports in France (in 10,000 USD)	22
4	Share of Chinese ownership in each sectoral section	24

1 Introduction

China’s strong economic growth has transformed the country into a major global economic power. Its gross domestic product (GDP) has risen from slightly above 190 billion USD in 1980 to over 14.3 trillion USD in 2019, which implies much higher growth rates than in most other countries; especially from the 21st century onward. Recently, one can see an increased Chinese interest in activities abroad, including in the European Union (EU). Chinese global outward FDI flows are now second or third to those from the United States, depending on whether one includes FDI originating from Hong Kong (UNCTAD, 2019). This rise in acquisitions and other investments abroad is not unusual for new economic powers. They are a logical consequence of increased wealth and can be a sign of successful integration in the globalized economy. They may also boost the performance of the company invested in, and by spillover effects even suppliers, customers, or competitors. After all, spillovers, potentially boosting the domestic economy, are the main reason countries decide to attract foreign investments.

However, investments in key industries or infrastructure in developing countries, mainly in Asia and Africa, but also increasingly in developed countries, including in the EU, have given rise to questions about the benefits and desirability of these investments for the receiving countries. Criticism about strategic Chinese investments is also fueled by the allegedly important role of the Chinese state, combined with the fact that the country is governed by an authoritarian regime with global ambitions, such as the ‘Made in China 2025’ strategy aimed at obtaining a dominant global position in high-end technological production (The Diplomat, 2019). It is often feared that Chinese investments are “special” by having non-economic motivations, or are motivated to access advanced technologies not present at home. Chinese firms would also outcompete domestic firms through unfair competition, it is often argued (as an example, see European Commission (2019a) for an overview of anti-dumping measures, the majority of which have been targeted towards Chinese imports). These factors sparked a public debate, most notably by US President Donald Trump, who referred to China “raping our country” and committing “the greatest theft in the history of the world”.¹ In Belgium, the potential acquisition of 20% of the shares of the electricity distribution manager Eandis by the Chinese state-owned State Grid Corporation of China failed because of security concerns (VRT, 2016).

Chinese FDI to the EU has increased sharply over the last decades after the “Going Out” strategy of the Chinese government established in 1999 to prepare domestic Chinese firms for foreign competition following the future accession of China in the WTO. It is only after the implementation of this strategy that investments by Chinese private firms caught off (Deng, 2013; Ebbers and Zhang, 2010; Lyles et al., 2014; and Yang et al., 2018). A more recent evolution can be seen in figure 1 and table 1 depicting the stock of Chinese FDI in each European region between 2010 and 2018 (Statistical Bulletin of China’s Outward Foreign Direct Investment, 2018). This data, however, may be partly distorted as it excludes investments performed via offshore centers and tax havens, including Hong Kong or the Cayman Islands. The uninterrupted rise is the most pronounced in Western Europe, where Chinese FDI stock rose from 8.2 billion USD in 2010 to almost 57 billion USD in 2018, with no signs of stabilization. While Chinese FDI is much less present elsewhere in the EU, an almost continuously rising trend can also be observed there. The EU member states with the largest stock of Chinese FDI in 2018 were the Netherlands, followed by Luxembourg, Germany, Sweden and France (Statistical Bulletin of China’s Outward Foreign Direct Investment, 2018). Even though Chinese investments in the EU attract considerable attention, in 2010, they still seem to be relatively limited compared with investments performed by China in Asia, Africa and Latin America, or investments by other countries in the EU. Most notably, investments from US firms are still far ahead of Chinese investments both in terms of the number of transactions as in transaction value (e.g. Ebbers and Zhang, 2010).

Despite the rapidly increasing share of Chinese outward FDI, public debate and relevance for policy-making, Chinese investments have not attracted much attention in empirical research, with most

¹During a May 2016 election campaign

research looking into the location determinants of Chinese investments (e.g. Buckley et al., 2007; Cheung and Qian, 2009; Kolstad and Wiig, 2012; and Ramasamy et al., 2012). Our topic of interest, however, is how outward FDI by Chinese firms affects the performance and productivity of the receiving firm. A large extent of the research so far has focused on the question of how Chinese investments abroad affect the company's performance at home. Cozza et al. (2015), for example, find an overall positive effect on the efficiency and performance of the parent firm, as well as on its productivity and scale. Reaching similar conclusions, Tian et al. (2016) argues that Chinese manufacturing firms engaging in FDI are more profitable and productive (in terms of TFP) than their Chinese counterparts that do not invest abroad, although this relationship is only significant for firms in labor-intensive industries. Looking at innovation rather than financial indicators, Fu et al. (2018) find that Chinese outward FDI in developed countries increases the innovation performance of the Chinese parent firm, especially if this firm has a knowledge-seeking orientation and prior experience with exporting.

These findings, however, do not allow policy-makers to assess the benefits and desirability of Chinese investments for the receiving countries. Surprisingly, this topic has been largely neglected in economic research, at least specifically looking into Chinese FDI. In general, there is a wide consensus that FDI may, under the right circumstances, benefit the parties involved by efficiency gains due to technology transfer and economies of scale and scope (e.g. Bertrand and Zitouna, 2008; Conyon et al., 2002a; Djankov and Hoekman, 2000; and Vermeulen and Barkema, 2002). Most research, however, focused on the benefits for other firms in the host country through spillovers (e.g. Alfaro et al., 2004; Blomström and Sjöholm, 1999; Crespo and Fontoura, 2007; and Smarzynska Javorcik, 2004), although one may assume that spillovers to other firms in the host country only occur if the foreign subsidiary is sufficiently productive. The starting point of our research, the performance and productivity of the receiving firms, is thus a necessary condition to allow for spillovers. Moreover, much of this research is based on FDI originating from industrialized country's firms. Given the "special" nature of Chinese investments in terms of risk aversion (e.g. Buckley et al., 2007; De Beule et al., 2018; and Ramasamy et al., 2012), and process of internalization (e.g. Berning and Holtbrügge, 2012 and Lyles et al., 2014), it is also not clear whether these findings can be extended to Chinese outward FDI. We will elaborate on these China-specific aspects several times throughout this thesis. Furthermore, EU-specific institutional factors may also play a role in determining the characteristics and outcome of inward FDI.

Specifically assessing Chinese-owned subsidiaries, Ebberts and Zhang (2010) find that the success rate of Chinese investments in the EU is generally lower than when performed by American or European companies. This may be due to the lower institutional quality in certain EU member states, the lower intensity of trade between the EU and China, and the more limited experience of Chinese firms to operate in the EU compared with in the US (Ebberts and Zhang, 2010). The relatively high share of takeovers by Chinese SOEs combined with a rather hesitant attitude in European countries towards Chinese acquisitions, also makes deals more sensitive and thus less likely to succeed (Ebberts and Zhang, 2010). This research, however, is methodologically weak as it does not attempt to establish a proper causal relationship between Chinese ownership and performance/survival. Piperopoulos et al. (2018) analyze how investments in foreign countries influence the innovation performance of the subsidiaries of Chinese firms, and finds that investments in developed countries are associated with a higher innovation performance of the subsidiaries. This analysis, however, does not compare how Chinese-owned subsidiaries perform relative to subsidiaries from other countries. It also solely uses innovation performance (forward patent citations) as a dependent variable, which is only one of the many indicators to consider. Generally, economic research into the benefits of inward FDI for the host country tends to have a narrow focus on one certain indicator, neglecting other, economic and non-economic aspects.

In this thesis, we attempt to investigate in a comprehensive way whether EU countries should encourage Chinese investments or should be more cautious about them. While there are many factors to take into account when assessing inward FDI, we limit our empirical analysis to factors attracting Chinese investments, and, more importantly, to the size, performance and productivity of Chinese-

owned firms in France.² Well-performing and productive firms are a necessary condition for potential spillovers to domestic firms. Such an analysis of the performance and productive effects for the target firm of Chinese FDI in the EU, however, has, to the best of our knowledge, not been performed before, despite its relevance for policy-makers. Besides this empirical analysis, we also briefly touch upon other economic and geopolitical factors one may consider when investigating the desirability of Chinese investments. We hope this comprehensive approach will shed some light on how inward Chinese investments may be approached.

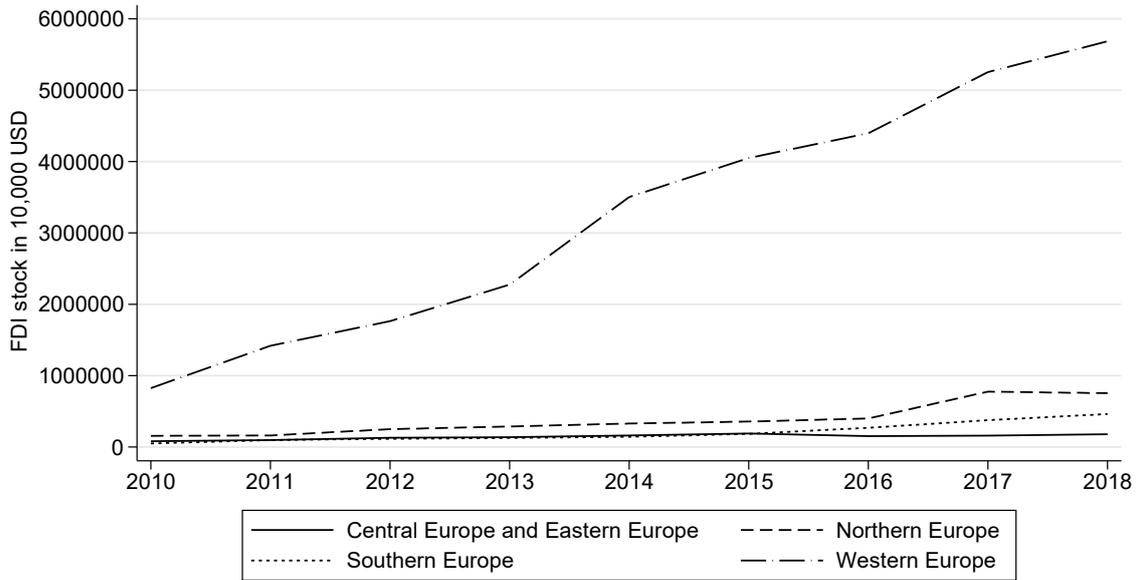
For our empirical analyses, we use 2010-2017 panel data from the Orbis database by Bureau van Dijk (2018), which offers detailed firm-level financial indicators and ownership information for our sample of globally-owned French firms. We start by testing various hypotheses regarding factors that might attract or discourage Chinese investments in France, using a cross-sectional probit model with Chinese ownership in 2017 as dependent variable. In our most advanced specification, we instrument our hypothesis variables by their $t - 2$ and $t - 3$ lagged variants to account for potential endogeneity caused by simultaneity. We find that Chinese owners tend to invest in French firms with superior export performance and poorer financial health (defined by the solvency ratio). No proof has been found for the statement that Chinese firms invest more in sensitive industries. On the contrary: in France, the leisure industry seems to attract Chinese investors the most.

The bulk of this thesis, however, treats the size, performance and productivity of Chinese-owned firms in France compared with French firms with global owners from other countries. As mentioned, before, previous literature largely neglected the effects of Chinese ownership for the target firms. Our most advanced specification uses panel data, allowing us to include firm-level fixed effects to control for potentially omitted firm-specific factors constant over time, and year fixed effects to control for time trends. We again instrument our independent variable, this time Chinese ownership, by its $t - 2$ and $t - 3$ lagged variant to account for potential reverse causality caused by Chinese firms self-selecting into the best-performing and most productive firms. We find clear evidence that Chinese ownership is associated with a smaller size, poorer performance and lower productivity of the French subsidiary. This result continues to hold after our extensive robustness checks. We first attempt to confirm our results by using propensity score matching methodology, a non-parametric estimation technique to compare firms with similar observable characteristics. We then re-estimate our fixed effect specifications restricted to certain subsamples. Finally, we add to our fixed effect specifications variables controlling for the level of democracy and economic growth of the owner's country. We find that the negative effect of Chinese ownership on the size, performance and productivity of the French subsidiaries is robust for the alternative, non-parametric estimation method and for various subsamples, but loses significance controlling for the level of democracy and partly loses significance controlling for the economic growth of the owner's country, which indicates that the Chinese investments are indeed "special" in the senses previous literature noted: lower risk aversion due to the role of the Chinese state, and an investment behavior adjusted to the position of China as a high-growth country attempting to rapidly catch up with developed country's firms.

This thesis is structured as follows. In section 2.1, we begin with providing a brief overview of FDI theory. We then look into empirical findings that may relate to Chinese FDI in section 2.2. In section 2.3, we state findings of the extensive literature on the location choice of Chinese outward FDI. Section 2.4 concludes our literature review by linking the previously-mentioned literature to Chinese investments in the EU. Our empirical analysis looking into the determinants, size, performance and productivity of Chinese-owned firms in France commences with a description of the data at hand (sections 3 and 2), followed by an extensive discussion of the methodology used (section 5) and our findings (section 6). We then perform various robustness checks in section 7. We conclude this thesis with a summary of our findings in section 9.

²Limiting our research to France stems from the wider availability of data for France than for other EU member states. Furthermore, the outbreak of SARS-CoV-2 in 2020 did not allow us to extend the data as planned.

Figure 1: **Stock of Chinese FDI in EU member states (in 10,000 USD)**



COUNTRIES: *Western Europe*: Ireland, Austria, Belgium, Germany, France, Netherlands, Luxembourg; *Southern Europe*: Malta, Portugal, Cyprus, Spain, Greece, Italy; *Northern Europe*: Estonia, Denmark, Finland, Latvia, Lithuania, Sweden; *Central and Eastern Europe*: Bulgaria, Poland, Czech Republic, Croatia, Romania, Slovakia, Slovenia, Hungary

REFERENCE: author's calculations based on Statistical Bulletin of China's Outward Foreign Direct Investment (2018)

Table 1: **Stock of Chinese FDI in EU member states (in 10,000 USD)**

Region	2010	2011	2012	2013	2014	2015	2016	2017	2018
Western Europe	826,230	1,419,385	1,764,485	2,275,909	3,503,612	4,050,816	4,397,057	5,254,441	5,686,590
Southern Europe	49,872	97,043	115,586	127,332	143,835	185,048	270,082	377,254	462,981
Northern Europe	156,081	162,332	250,645	288,115	329,658	357,612	401,122	777,109	755,231
Central Europe and Eastern Europe	82,484	98,079	130,544	138,513	163,469	189,291	154,228	160,859	180,782

REFERENCE: author's calculations based on Statistical Bulletin of China's Outward Foreign Direct Investment (2018)

COUNTRIES: *Western Europe*: Ireland, Austria, Belgium, Germany, France, Netherlands, Luxembourg; *Southern Europe*: Malta, Portugal, Cyprus, Spain, Greece, Italy; *Northern Europe*: Estonia, Denmark, Finland, Latvia, Lithuania, Sweden; *Central and Eastern Europe*: Bulgaria, Poland, Czech Republic, Croatia, Romania, Slovakia, Slovenia, Hungary

2 Literature review

We begin our literature review, in which we attempt to answer the question of how FDI affects various actors in the host country, with a brief overview of FDI theory (section 2.1). We then look into empirical findings that may relate to Chinese FDI (section 2.2). In section 2.3, we state findings of the extensive literature on the location choice of Chinese outward FDI. Finally, we conclude our literature review by linking the previously-mentioned literature to Chinese investments in the EU.

2.1 General theory of FDI

2.1.1 What is FDI?

FDI, which stands for *foreign direct investment*, differs from portfolio investments in one crucial way: with FDI, the investing firm has to hold a certain degree of control over the foreign firm. A commonly used threshold for control is a 10% ownership stake in the foreign firm (e.g. OECD, 2008). Generally speaking, FDI may be divided between mergers and acquisitions (M&As), greenfield investments and joint-ventures. One can speak of an M&A as soon as control is exercised over the target firm. A greenfield investment, on the other hand, involves the establishment of an entirely new (subsidiary) firm in the host country. A joint-venture is a looser form of internalization by cooperating with a local partner. We will discuss various entry modes more extensively in subsection 2.1.5.

FDI is not the only type of internalization strategy a firm can follow. It is, in fact, not even a very obvious one, given the risks associated with doing business in another country. In this sense, FDI is associated with a high degree of information asymmetry – which Bertrand and Zitouna (2008) refer to as a ‘double lemons’ problem: acquirers are less well-informed about the target firm, and have a lower monitoring capacity. Chang and Rhee (2011) and Kolstad and Wiig (2012) refer to this as the ‘liability of foreignness’. It may therefore be better for a firm to reduce the risks associated with international operations by adopting internalization strategies as exporting, outsourcing and licensing - all of which shift a major part of the risk to the foreign firm (e.g. Helpman et al., 2004). In the next subsection, we will provide potential reasons why FDI may nonetheless be a proper business strategy.

2.1.2 Why do firms engage in outward FDI?

In business literature, the so-called “eclectic paradigm”, also sometimes referred to as the OLI framework, is often used to assess whether an FDI strategy would be beneficial to a firm (Dunning, 2000). This paradigm lists three key factors for FDI to be beneficial: ownership advantages (“O”), implying that a firm holding competitive advantages is more likely to engage in FDI; location advantages (“L”), meaning that the location in which the firm wants to invest, must portray certain comparative advantages, such as the presence of skilled labor or natural resources; and internalization advantages (“I”), which arise when it is better for a firm to engage in FDI than outsourcing production to a third party. This “I” corresponds to Buckley et al. (2007), who asserts that an FDI strategy is generally executed by firms to internalize missing or imperfect external markets, and this until the costs of further internalization outweigh the benefits. Firms then choose locations for their international presence that minimize the overall costs of their operations (“L”). Expansion by the internalization of markets means that firms replace imperfect external markets in intermediate products and knowledge (for example through exporting and licensing) by FDI and may yield profits from doing so (Buckley et al., 2007). Similarly, for horizontal FDI (meant to serve customers in a foreign market), according to the proximity-concentration trade-off, every firm needs to decide whether it finds it beneficial to serve a foreign market, and whether these foreign markets should be served through exports or by the establishment of local subsidiaries (Helpman et al., 2004). In general, firms decide to invest abroad when the gains from avoiding trade costs outweigh the costs of having capacity in multiple markets. Taking into account firm heterogeneity, Helpman et al. (2004) models that only the most productive firms expand into foreign markets, and only the most productive of those eventually decide to engage in FDI.

Dunning (2000) identifies four primary motivations for firms to engage in FDI: foreign-market-seeking motives (FDI to export products to foreign markets more efficiently), efficiency-seeking motives (induced by economies of scale and scope), resource-seeking motives (e.g. seeking for natural resources), and strategic-asset-seeking motives (e.g. seeking for advanced technology). Foreign-market-seeking FDI, strategic-asset-seeking FDI and resource-seeking FDI, more likely to be associated with emerging economy firms, allows domestic firms to export their products abroad more easily and to secure natural resources, technology and knowledge not present at home. Due to their comparatively low labor costs at home, firms in emerging markets are less likely to pursue efficiency-seeking FDI.

One could also see FDI through the lens of push- and pull factors. Push factors refer to the economic, institutional and political environment in the country the acquiring firm is based in (*in casu* China). Government policies stimulating FDI and overcapacity in certain markets in the country are examples of such push factors (Ebbbers and Zhang, 2010). Pull factors, on the other hand, relate to the host country. Here, all kinds of locational advantages may play a role. We will discuss many of these location determinants specifically for Chinese investments in section 2.3.

2.1.3 How may FDI enhance the target's performance and productivity?

Bertrand and Zitouna (2008); Conyon et al. (2002b); Djankov and Hoekman (2000); and Vermeulen and Barkema (2002) assert that FDI, which often occurs through big, multinational enterprises (MNEs), is likely to be associated with efficiency gains benefiting the target firm. Well-performing FDI recipients are a necessary condition for potential spillovers to other firms. There are several reasons for this enhanced performance.

First, MNEs are assumed to enjoy superior technology, knowledge and managerial capabilities than domestic firms. This transfer of superior technological and managerial capabilities could increase the performance of local subsidiaries compared to their domestically-owned counterparts. Djankov and Hoekman (2000) assert that technology transfers are greater in the context of formal cooperative agreements, such as M&As, than is possible when firms remain domestic and simply export, outsource or license to foreign firms. Foreign investment may be associated with the transfer of both hard (machinery, blueprints) and soft (management, information) knowledge. There are two dimensions: generic knowledge, such as management skills and quality systems, and specific knowledge, the latter of which cannot easily be transferred without formal cooperation. This corresponds with the hypothesis Nitsch et al. (1996) make that knowledge-transfer is most efficient (least costly) in wholly-owned subsidiaries, especially with respect to complex firm-specific knowledge. Likewise, Djankov and Hoekman (2000) argue that foreign firms are more eager to transfer technologies if the domestic firm is more efficient and invests more in learning activities. Technology transfer may also occur in both directions through the transfer of employees, who can pass on knowledge to the target/parent firm (Cross et al., 2007).

A second source of efficiency gains may be due to significant economies of scale and scope, allowing local subsidiaries to produce more products at a lower average cost than their domestically-owned competitors (Bertrand and Zitouna, 2008; Conyon et al., 2002b; and Vermeulen and Barkema, 2002). Similarly, MNEs may be more effective in purchasing inputs at lower costs (purchasing economies). The better access to foreign markets and thus lower transaction costs associated with international transactions could also be beneficial for local subsidiaries (Bertrand and Zitouna, 2008; Conyon et al., 2002b; and De Beule and Duanmu, 2012). Another form of economies of scale through which local subsidiaries may gain, Conyon et al. (2002b) assert, is the brand name advantages of MNEs.

One could, however, also expect certain negative effects on the performance of local subsidiaries following an inflow of FDI. These could be related to organizational costs following the internationalization of activities: bigger, internationally present firms are more difficult to coordinate effectively. Anti-competitive effects may also arise if the MNE gains significant market power after its acquisition (Bertrand and Zitouna, 2008). In fact, synergies are expected to be relatively small compared to the substantial transition costs (Caves, 1989).

The potential efficiency gains allow MNEs engaging in FDI to compensate for the higher fixed cost of establishing subsidiaries abroad, making it worthwhile to invest abroad, and for the lack of local information, experience and business relationships. The liability of foreignness Chang and Rhee (2011) and Kolstad and Wiig (2012) refer to, as described in section 2.1.1, could best be handled by gradual internalization, as we will detail in subsection 2.1.6.

2.1.4 Effect on wages

In terms of the effects on wages, Conyon et al. (2002b) argue that the effect of M&As on the subsidiary's wage rate could lead to an ambiguous outcome. One effect arises through bargaining over the surplus generated: higher productivity may lead to a greater surplus, allowing higher wages for the employees. Another effect is caused by the relative bargaining power of the parties: companies with plants in multiple countries may have more bargaining power and thus be able to lower wages by credibly threatening to close or switch expansion plans. Lastly, Conyon et al. (2002a) argue that increasing returns to scale may allow firms to produce the same output with fewer, more productive employees, allowing for higher wages for the remaining employees. Foreign-owned firms can also be expected to pay higher wages due to their attempt to prevent technological spillovers through labor turnover by paying a wage premium, and to compensate for a higher labor demand volatility in foreign plants (Conyon et al., 2002b).

2.1.5 Distinguishing several types of FDI

A firm intending to pursue outward FDI must decide on which entry mode is the most applicable to their situation. According to a strategic behavior approach, firms choose their FDI entry mode based on their strategic behaviors, examples of which are maximizing profit, achieving a superior market position, acquiring strategic assets or pursuing global synergies between the firm's internal operations (Cui and Jiang, 2009). Essential is also to take into account the environment of the host country. Stable environments with mature markets allow for different entry modes than volatile, high-growth markets, Cui and Jiang (2009) assert.

With respect to the entry mode of FDI, it is first possible to distinguish between greenfield investments, acquisitions (M&As) and joint-ventures. Greenfield investments, establishing a new entity abroad, is associated with the highest degree of control (meaning: a larger share of the profits, fewer coordination problems, etc.), but also the highest resource commitment and risk (Herrmann and Datta, 2006). M&As, defined as purchasing (parts) an existing company, varies in terms of control, risk and commitment, but typically remain high-control and high-risk. Joint-ventures are the loosest form of FDI as control must be shared with a local partner, but has as potential advantage that they are less risky and require less commitment and has lower fixed costs, depending on the share of equity the investing firm eventually holds in the joint-venture (Herrmann and Datta, 2006). Cui and Jiang (2009) assert that wholly-owned subsidiaries, including greenfield investments and acquisitions, fit better global strategic motivations behind FDI as a high level of control may be needed to make the desired strategic decisions and to be able to acquire strategic assets (in the case of acquisitions). They also allow better to gradually concentrate on firm-specific advantages, which is especially important in mature, competitive environments. Potential threats of partner opportunism are also avoided (Cui et al., 2011). Joint-ventures, on the other hand, may be beneficial for firms inexperienced in operating in distant markets and in high-growth environments in which a more rapid strategy is typically required (Cui and Jiang, 2009 and Cui et al., 2011). Naturally, joint-ventures may also be preferred in the presence of substantial regulatory and cultural barriers, as the local partner possesses knowledge related to the host country's demand and supply markets, legal system and cultural and societal norms (Cui et al., 2011 and Herrmann and Datta, 2006), and can also reduce governmental and societal hostility against the foreign firm (Herrmann and Datta, 2006). Raff et al. (2009), finally, models that the profitability of greenfield investments influences the decision of the firm which entry mode to choose in both a direct and an indirect way. The indirect way occurs as the viability of greenfield investments determines the outside option of potential M&As and joint-ventures: the profitability of a potential greenfield investment reduces the acquisition price, which could make an M&A more attractive to the firm, especially if the fixed costs of the greenfield investment are relatively large. The viability and profitability of a potential greenfield investment also influence the willingness of local partners to cooperate in a joint-venture (Raff et al., 2009). These findings imply that even in the absence of an actual greenfield investment, firms do take the potential gains from greenfield investments into account. Furthermore, Heyman et al. (2007) argue that greenfield investments may be associated with higher wages since greenfield investors must attract new workers, potentially by offering higher wages. Such an investor might

also have to pay a wage premium due to a lack of knowledge about the local labor market. Apart from wages, acquisitions enable the parent firm to access advanced technologies, while this is not possible with greenfield investments (Cui and Jiang, 2009 and Heyman et al., 2007).

One could also distinguish between the effects of related versus unrelated M&A activity. First, looking at changes in employment levels after the acquisition, Conyon et al. (2002a) argue that employment losses are expected to be more substantial in horizontal M&A than in vertical or unrelated M&A, especially when the industry exhibits substantial economies of scale or surplus capacity. For unrelated M&A, such an effect on employment may not arise if the transaction is concluded with as main purpose diversifying the firm's earnings. In the case of vertical M&A undertaken to reduce transaction costs, one would expect to observe a fall in employment in the sales function of the upstream firm and the procurement function of the downstream firm. Second, similarly, Doukas and Lang (2003) compare FDI in the core business with non-core FDI. Industrial diversification may lead to negative synergies among different segments of the firm, resulting in short-term and long-term financial losses.

2.1.6 Process of internalization

Apart from the characteristics of an FDI strategy of a company, also the process of internalization is a crucial factor in determining the outcome (Johanson and Vahlne, 2009 and Vermeulen and Barkema, 2002). When a firm establishes subsidiaries abroad, it needs to invest time and money to adapt to the different setting in the host country, to establish the firm's presence, to hire and train a new labor force, and to integrate the newly established subsidiary into the rest of the company. This implies that successful internalization is constrained by time compression diseconomies combined with a limited absorptive capacity of the firm (Vermeulen and Barkema, 2002). Time compression diseconomies refer to the mechanism of diminishing returns when—everything else equal—the pace of the internalization process increases, and occur partly due to inertia and managerial constraints, the latter of which includes bounded rationality and limited time to evaluate foreign experience may be explanations. In this sense, Vermeulen and Barkema (2002) hypothesize that the success of an internalization strategy depends on its pace, product scope, geographic scope, and rhythm. A firm will be more successful in its international expansion when it spreads its internalization over a longer time (pace), involves fewer products (product scope), involves fewer countries (geographic scope), and more regularity (rhythm). All these factors allow a firm to make its expansion process less complicated and thus easier to manage. Berning and Holtbrügge (2012); Johanson and Vahlne (2009); and Lyles et al. (2014) refer to this gradual approach as the Uppsala internationalization strategy, which consists in an early stage of various low-commitment steps (e.g. first exporting, then establishing international presence through independent representatives, finally gradually setting up a full subsidiary abroad). The Uppsala model also predicts that firms usually begin interacting with countries closer to them with respect to geographical and cultural distances (Johanson and Vahlne, 2009 and Lyles et al., 2014).

One may assert, on the other hand, that, in contrast with following a first-mover strategy in which a firm may make costly mistakes by being first in the market, late-mover advantages in which a firm can learn from the mistakes made by their predecessors, may also exist. In this sense, being a latecomer allows the firm to operate at a faster pace. Lyles et al. (2014) refer to this as the “Chinese way”, an alternative for the Uppsala model mentioned before, characterized by experimental-learning-oriented internationalization to catch up more quickly through a high-commitment strategy. This is one way Chinese investments may be considered as being “special”. We will elaborate on this “Chinese way” in section 2.2.2.

2.1.7 How may FDI enhance the productivity of other firms through spillover effects?

There exists a substantial body of research on how inward FDI may not only affect the performance and productivity of the target firm (direct effect), but also of other, related firms in the host country (indirect effect). Since this thesis focuses on the direct effects of FDI for the receiving firm, we will

only briefly touch upon this topic. One may assume, however, that positive spillovers follow from the higher productivity of the FDI subsidiary. Positive spillover effects may arise through channels as reverse engineering, transfer of skilled staff, demonstration effects (inspiring and stimulating domestic companies) and supplier-customer relationships (Cheung and Ping, 2004). They are typically found to be the most important with respect to backward linkages (upstream spillover effects), especially when the company is jointly domestic/foreign-owned. Fully owned subsidiaries do not significantly seem to exhibit spillovers, presumably since partly foreign-owned firms use more local sourcing than their fully foreign-owned counterparts (Smarzynska Javorcik, 2004). Blomström and Sjöholm (1999), on the other hand, do not find a substantial difference regarding the degree of foreign ownership. Spillovers are most likely to occur when the absorptive capacity of the domestic firms in the host country is sufficiently high (Crespo and Fontoura, 2007). A well-developed financial system in the host country seems to be necessary to achieve positive spillover effects, as local firms may need external financing to pay for their investments following inward FDI (Alfaro et al., 2004). Eventually, spillovers to other firms of the superior skills and technology of the investing firm are likely to cause higher economic growth in the host country (Alfaro et al., 2004 and Borensztein et al., 1998), again especially conditional on the absorptive capacity, which includes the level of human capital (Borensztein et al., 1998). This effect on economic growth may at least partly be due to an increase in innovation by domestic firms following inward FDI (Cheung and Ping, 2004).

2.2 Empirics - what can FDI research tell us about the performance of Chinese outward FDI?

This thesis concerns Chinese FDI, but, naturally, many findings in empirical research regarding FDI, while not directly related to Chinese investments, can still help us to understand potential effects from Chinese FDI. This section treats some of these findings. Additionally, we also list findings from the limited research about Chinese FDI specifically.

2.2.1 Outcomes depending on the country of origin of FDI

Chen (2011) looks into the country of origin of FDI and the performance of the target firms in the United States, and finds that acquirers from industrialized countries increase the labor productivity of the acquired firm by 13%, sales by 29% and employment by 24% three years after the acquisition compared with domestic acquisitions. FDI originating from developing countries, on the other hand, is associated with worse performance than domestic acquisitions: labor productivity, sales and employment were down 23%, 20% and 26% respectively. No significant difference is found between the profits of firms acquired by firms from industrialized and those from subsidiaries from developing countries. These results might suggest that Chinese FDI would perform worse than FDI originating from more advanced country's firms. As a potential explanation for these findings, Chen (2011) asserts that the rationale for emerging market acquirers might be different. One could, for example, assume that acquirers from such countries, endowed with a larger and cheaper labor force, tend to relocate manufacturing to the own country, potentially leading to a decrease in employment and sales in the target country firm. Another indication for the different motives of emerging market acquirers is that a substantially larger share of developing country acquirers are state-owned and are funded through cash, rather than private firms funding through a variety of private capital (Chen, 2011). This corresponds to our findings that most Chinese-owned firms in France are indeed state-owned. We come back to this in section 2.3. The findings of Chen (2011) seem to contradict Takii (2011), who finds, based on FDI in Indonesia, that, while investing firms from Japan and non-Asian countries are more productive than those of Asian countries (excluding Japan), their FDI is associated with smaller positive effects on the performance and productivity of the local subsidiary and subsequently other local firms (through spillovers). This may be due to the wider technological gaps between the Asian, non-Japanese foreign and local firms, which make it harder to implement appropriate technology successfully. Firms from advanced countries may also have difficulties operating in countries with a different institutional environment (Takii, 2011). With respect to Chinese investments, this implies that Chinese firms, although potentially being less advanced than companies from many other countries, may still be able to achieve an above-average

positive effect on the firms in the host country.

Similarly, Bertrand and Zitouna (2008) compare the effects on the performance of the French target firm between domestic M&As and cross-border M&As, while considering intra-EU and extra-EU cross-border M&As separately. Bertrand and Zitouna (2008) find that profit (measured as the EBITDA) does not increase significantly the profit of French target firms, both for domestic and cross-border M&As. Cross-border M&As are associated with productivity gains (TFP) compared with domestic M&As, but this result is entirely driven by extra-EU operations. It is, however, not clear whether one could therefore conclude that Chinese ownership in France may result in an above-average positive impact on the performance and productivity of the Chinese-owned firm solely because it concerns extra-EU FDI.

As described in the previous subsection, Conyon et al. (2002b) identify a positive impact of foreign acquisition on the wages of employees in the acquired firm, an effect that is entirely driven by productivity growth. Controlling for the origin of the acquirer, Conyon et al. (2002b) find that wage gains are the highest in US-acquired firms (4.7%), being significantly greater than in EU-acquired firms (3.9%) and in firms by other foreign acquirers (3.2%).

2.2.2 Process of internalization

Chinese FDI is often regarded as a strategy of rapid international expansion. Lyles et al. (2014) find that approximately 50% of the Chinese firms engaged in outward FDI follow a risky internalization approach instead of step-by-step experiential learning: Chinese firms often make high commitments at entry, experiment, improvise and assimilate relatively quickly - this is the “Chinese way” we mentioned in section 2.1.6 - opposed to the Uppsala model of gradual internalization (Berning and Holtbrügge, 2012; Johanson and Vahlne, 2009; and Lyles et al., 2014). Similarly, in their review article, Berning and Holtbrügge (2012) find that of the 8 articles applying the Uppsala model to Chinese investments, 5 articles find that this model does not sufficiently explain Chinese FDI, while the other 3 either do not come to a clear conclusion, or proposes an extension to the Uppsala model to apply it to the investment behavior of Chinese firms. This provides one indication that Chinese investments are indeed “special”.

As argued in the previous subsection, this contradicts Vermeulen and Barkema (2002), who hypothesize that a slower pace, more limited product scope and geographic scope, and a more regular rhythm, allows an internationally expanding firm to better capture the benefits from internalization. Consistent with these predictions, Vermeulen and Barkema (2002) indeed find that expanding firms are bound by their absorptive capacity, and thus benefit from an easier-to-manage expansion. Chang and Rhee (2011), however, study the circumstances under which rapid FDI expansion can be a viable strategy. Such rapid international expansion occurred in South Korea at the end of the 20th century. South Korean (publicly listed) manufacturing firms between 1980 to 2003 were therefore the subject of this study. One could, however, draw the parallel to Chinese firms which are also said to be engaged in rapid (inter)national expansion in the 21st century. Chang and Rhee (2011) find that rapid expansion may enhance firm performance in industries where globalization pressures are high, and when it is done by firms with a greater absorptive capacity or internal capabilities. This is somewhat contradictory to what was previously assumed in the literature, where there was a widespread belief that the liability of foreignness, which can be generally described as the disadvantages foreign firms face when operating abroad, can be best managed by gradual internationalization: letting firms expand slowly so that they can learn from their previous experience. In the face of increased global competition, however, Chang and Rhee (2011); Johanson and Vahlne (2009); and Lyles et al. (2014) argue that rapid expansion may be required, which could explain the results found.

2.2.3 Impact on wages

One could assume that Chinese firms engaging in FDI are more productive and efficient than domestic firms in the host country. It is often argued that foreign-owned firms therefore pay higher wages

than domestically-owned companies. While, to the best of our knowledge, no research has been performed regarding how Chinese-owned firms remunerate their workers, comparing foreign-owned subsidiaries with domestic companies may also shed some light on Chinese subsidiaries.

Heyman et al. (2007) assert that it can indeed be observed that foreign-owned firms pay higher average wages than domestically owned firms, even after controlling for industries and regions. By observing UK firms between 1989 and 1994, also Conyon et al. (2002b) find that foreign firms pay equivalent employees 3.4% more than domestic firms, but this is wholly attributed to the higher productivity of these foreign-owned firms. Labor productivity grows, on average, by 14% after the acquisition. These results are observed across all types of foreign acquisition. Heyman et al. (2007), however, warn for wage comparisons between firms as it is unclear if foreign firms pay higher wages for identical workers. This because there could be a change in the labor force composition if foreign firms replace less productive (low-wage) workers with more productive (high-wage) workers. Heyman et al. (2007) therefore turn from firm-level observations to individual-level observations, based on firm and employee data in Sweden between 1996 and 2000. The wage premium in foreign-owned firms is significantly lower when one changes from firm to individual-level estimations: from 20% higher using firm-level data to close to zero or even negative when using individual-level data. Wage growth is also lower in acquired firms (Heyman et al., 2007).

2.2.4 Entry mode of FDI

The entry mode of foreign investments may greatly influence the performance of the firm invested in. Full acquisitions, for example, could be associated with more commitment from the parent firm and thus result in a better performance of the subsidiary. Learning about this is may therefore also be relevant when assessing the impact of a certain entry mode of investments originating from China.

Using data from firms in the Czech Republic during the initial post-reform period (1992-96), Djankov and Hoekman (2000) compare firms that established partnerships with foreign firms, either through joint-ventures or through a direct purchase of a majority equity stake, and compared how productivity (TFP) differs between these groups. It appears that fully foreign-owned FDI had a greater impact on TFP growth than joint-ventures, which suggests that parent firms are transferring more knowledge to the foreign target firms if there is a closer formal cooperation (Djankov and Hoekman, 2000). There also seem to be negative spillover effects on firms that do not have foreign partnerships. Based on data from US firms, Shaver (1998) does not find a significant difference in survival rates of the target firm between several entry modes after accounting for selection. Without considering the self-selection of firms, greenfield entries were found to have survival advantages compared to acquisitions. Selection could occur when firms expanding abroad by means of greenfield investments also have better managers, greater innovativeness, and superior marketing skills and thus outperform firms lacking these capabilities, therefore have a higher probability of survival. In fact, Herrmann and Datta (2006) indeed find that the characteristics of the CEO matter greatly for which entry mode a firm selects, but in the opposite direction Shaver (1998) hypothesizes. CEOs with more experience in their firm typically prefer joint-ventures over acquisitions and greenfield investments, just as older CEOs, because of their higher risk aversion and more restricted perceptions. CEOs with more international experience, however, tend to choose for greenfield investments over acquisitions, and acquisitions over joint-ventures, as such CEOs typically have the confidence, mindset and knowledge base to opt for entry modes requiring higher commitment and risk (Herrmann and Datta, 2006).

Specifically assessing Chinese outward FDI, Cui and Jiang (2009) assert that Chinese firms choose their entry mode in response to the environment in the host country. Both threats and weaknesses are taken into account by Chinese investors, this to maximize their profit, strengthen their global market position and access strategic assets. Chinese firms are more likely to choose for the establishment of a wholly-owned subsidiary in a competitive host country with a mature market, as wholly-owned subsidiaries allow for a gradual focus on the firm's competitive advantages to be able to compete with highly efficient firms in the host country. Specific for Chinese firms is that they tend to exploit country-specific advantages rather than firm-specific environments, since Chinese firms possess

domestically of several aspects enabling them to produce at a low cost (inexpensive funding, wide availability of inputs, etc.) This low-cost advantage stimulates the establishment of wholly-owned subsidiaries (Cui et al., 2011). Wholly-owned subsidiaries are also preferred to acquire strategic assets (following acquisitions) as the alternative, joint-ventures, may not allow them to access and lawfully appropriate these assets. joint-ventures, on the other hand, are typically established in high-growth markets where a more rapid strategy may be required (Cui and Jiang, 2009). Chinese firms also prefer joint-ventures when there are substantial regulatory and cultural barriers in the host country (Cui et al., 2011).

2.3 Location choice of Chinese outward FDI

As a framework for this section, we base ourselves on Buckley et al. (2007), who by applying general FDI theory, hypothesize 11 factors that may moderate Chinese FDI: larger host market size (e.g. more opportunities for economies of scale/scope), lower political risk in the host country (political risk creates uncertainty and makes long-term planning difficult), higher degree of host country endowments of natural resources, higher degree of host country endowments of ownership advantages (e.g. the presence of advanced technology and intellectual property has been explicitly stated by the Chinese government as a key goal of outward foreign investments), more cultural proximity with the host country (e.g. presence of Chinese diasporas, as the importance of *guanxi* – personal relationships based on mutual interest, as noted by Farh et al. (1998), is important in Chinese business culture), more import/export between the host country and China, political liberalization in China, a depreciation of the host country’s currency, lower/stable inflation rates in the host country (volatility discourages investments as it creates uncertainty and makes long-term planning difficult), shorter geographical distance between the two countries, and a higher degree of openness in the host country to international investments.

First, there seems to be a wide consensus about the importance of market size as a determinant for the location choice of Chinese outward FDI. Amighini et al. (2013); Buckley et al. (2007); Cheung and Qian (2009); and Cross et al. (2007) find significant positive effects of host market size. Kolstad and Wiig (2012) also identify a positive effect of market size on Chinese investments, albeit only in developed countries. Similarly, De Beule and Duanmu (2012) and De Beule et al. (2018) find a significant market size effect based on data for the EU, as well as a positive effect arising from connectivity with other markets (presence of seaports and airports). This implies that market-seeking incentives are important for Chinese firms expanding to developed countries (Amighini et al., 2013; Cozza et al., 2015; and Ebbers and Zhang, 2010).

Second, surprisingly, Buckley et al. (2007); De Beule and Duanmu (2012); and Ramasamy et al. (2012) find that a higher degree of political stability is negatively associated with Chinese FDI. A 1% increase in the host country risk index (i.e. a decrease in risk) is associated with a decrease in Chinese outward FDI of 1.8% (Buckley et al., 2007). Cheung and Qian (2009) and Cross et al. (2007), however, do not identify a significant effect of risk in the target country and Chinese investments. Political stability is related to the quality of institutions in the host country. Good institutions create order and reduce uncertainty in economic activities (Ebbers and Zhang, 2010). De Beule and Duanmu (2012) do not find that, in general, rule of law, regulatory quality and control of corruption are important for Chinese investors when looking for a location. Combined with the presence of natural resources, this relationship between institutions and location choice does become significant, as we will detail below. This corresponds to the findings of Yang et al. (2018) that the before-mentioned surprising negative relationship is largely due to market-related factors: by accounting for the presence of natural resources and capital intensity in the host country, the negative relationship between institutions and Chinese investments becomes insignificant; institutional risk preference can largely be attributed to the presence of natural resources in the host country and the pursuit of higher profit (given the higher marginal returns to capital investments in poorer countries). Related to political institutions, Blomkvist and Drogendijk (2013) find that Chinese companies tend to invest more in countries with a similar level of democracy as China. More democratic countries are thus less popular as destination for Chinese investments. Overall, from the previously-mentioned results,

there seems to be a consensus that Chinese investors are not discouraged by the lack of stability and good governance in the host country.

Third, Buckley et al. (2007); Cheung and Qian (2009); and Ramasamy et al. (2012) find that the presence of natural resources in the host country positively affected inward Chinese FDI in this country. Connecting political stability and natural resources, Amighini et al. (2013); Kolstad and Wiig (2012); and Yang et al. (2018) assert that the presence of natural resources and the quality of institutions should not be assessed separately, since these two determinants might interact. As rents in natural resource-rich countries are usually high and easily appropriable, it may be that the returns to any competitive advantage China has in operating in countries with poor institutions are greater where these kinds of resources are present. Buckley et al. (2007); De Beule and Duanmu (2012); and Kolstad and Wiig (2012) assume that Chinese companies have a competitive advantage in handling poor institutions (for example through bribery), as China itself is a relatively corrupt country. Companies tend to invest in countries with similar institutional backgrounds, as this might reduce the “liability of foreignness”, as defined in the previous section. “In contrast to companies from developed economies, Chinese companies are experienced in navigating complex patron-client relationships and personal and institutional favors in relatively opaque and difficult business environments and in dealing with burdensome regulations and navigating around opaque political constraints”, Kolstad and Wiig (2012) argue. Deng (2013), however, asserts that these kinds of firm-specific advantages of Chinese firms are still relatively minor and make it especially hard to compete in advanced markets. In resource-rich countries, often less-advanced markets, however, the payoffs from bribes are greater, so that Chinese companies are more likely to invest there.

Amighini et al. (2013) and Kolstad and Wiig (2012) find that the interaction term between institutions and the presence of natural resources is indeed significant: in countries with bad institutions, presence of natural resources attracts Chinese investments. This relationship also holds vice versa: if institutions in the host country are good, Chinese investments are discouraged by natural resources. Similarly, De Beule and Duanmu (2012) find that Chinese firms are more likely to invest in natural resource-rich countries with unstable political environments and poor rule of law. An additional explanation for this may be that Chinese investors opt for locations where firms from developed countries are not yet present in order to face less competition, potentially because investors from developed countries are discouraged by the ethical shortcomings in the host country. The results with respect to institutional quality are not driven by ideological motivations as the interaction term is not significant when proxying institutions by the existence of democracy in the host country (Kolstad and Wiig, 2012). Unlike the findings by Amighini et al. (2013); De Beule and Duanmu (2012); and Kolstad and Wiig (2012), Ramasamy et al. (2012) did not find that Chinese investments are attracted to riskier countries to exploit their national resources.

Fourth, with respect to host country endowments of ownership advantages, Buckley et al. (2007) and Cheung and Qian (2009) do not find a significant relationship between the presence of intellectual property in the host country and Chinese outward FDI in this country. De Beule and Duanmu (2012), however, do observe that Chinese firms usually target technologically advanced countries with a wide range of patents and trademarks: patents and trademarks attract Chinese investments in high-tech manufacturing sectors. Similarly, Ramasamy et al. (2012) also find that Chinese firms invest more in countries with better technology, indicating that these firms attempt to improve their competitive disadvantages in technology by investing abroad. However, Ramasamy et al. (2012) do not find this positive effect concerning to intellectual property. Instead, Chinese companies seem to be attracted by commercially viable knowledge rather than core research, which may explain the discrepancy with respect to the findings by Buckley et al. (2007) and Cheung and Qian (2009), who fail to identify a significant relationship.

Fifth, with respect to cultural proximity, Blomkvist and Drogendijk (2013) observe a positive and significant effect of cultural and religious proximity, with culture defined by the well-known four cultural dimensions of Hofstede (1980). Similarly, Amighini et al. (2013); Buckley et al. (2007); and Ramasamy et al. (2012) find that the presence of Chinese diasporas in the host country is associated

with a higher level of incoming FDI from Chinese firms.

Likewise, Cheung and Qian (2009); De Beule et al. (2018); and Deng (2013) identify agglomeration effects of Chinese firms in the host country as a potential determinant of Chinese outward investments. In order to overcome the “liability of foreignness”, firms engage in strategies to minimize risk and uncertainty, both related to the host country culture and regulations and to the unfamiliarity of operating abroad. Taking other Chinese firms as a role model and learning from their experiences could be one way to do this, and is what De Beule et al. (2018) refer to as an information-based motivation behind choosing a certain destination. Similarly, Deng (2013) points towards the importance of the presence of other Chinese firms in the host country, as this form of *guanxi* (personal and business networks based on mutual gains) may help them to partly overcome the “liability of foreignness” and mitigate the information asymmetries encountered. One could also identify a rivalry-based motivation as Chinese firms might enter the same foreign markets as other Chinese firms to defend their competitive position at home. When Chinese firms decide to imitate other Chinese firms in terms of their location choice, firms can mimic the behavior of other firms purely based on the number of firms adopting a certain strategy (*in casu* entering a certain foreign market) – this is frequency-based imitation – or also based on the status or similarity of other firms – trait-based imitation. If we assume trait-based imitation is dominant, Chinese firms would mainly cluster where other Chinese firms in the same industry are located. Cheung and Qian (2009); De Beule et al. (2018); and Deng (2013) indeed find that the bandwagon effect is an important determinant for Chinese firms when choosing a location to invest abroad. Chinese firms invest more in regions that have already received a higher number of inward investments in the past, both from Chinese as non-Chinese firms. A 10% increase in the number of prior Chinese investments is associated with a 6% higher probability that a Chinese firm will also invest in a given region (De Beule and Duanmu, 2012). This result is both present with respect to investors from the same sector (trait-based imitation) as investors from other sectors (frequency-based imitation). These findings are only significant for privately-owned firms following other privately-owned firms (De Beule and Duanmu, 2012). SOEs may be subject to non-economic motivations, as we will explain later in this section.

Sixth, as hypothesized, trade between China and the host country positively impacts Chinese FDI to the this country (Buckley et al., 2007; Cross et al., 2007; Ramasamy et al., 2012; and Wang et al., 2017). A 1% increase in Chinese exports (imports) to the host country results in a 0.39% (0.21%) increase in Chinese investments in this country (Cross et al., 2007). The importance of exports may be due to the market-seeking motivation of FDI, while the significance of imports suggests that at least a part of Chinese investments in foreign countries has occurred upstream in the supply chain to acquire inputs needed for domestic production (Cross et al., 2007). Cheung and Qian (2009) and Cross et al. (2007), however, assert that this only applies to Chinese exports to developing countries. The effect does not hold for export to developed countries, Cheung and Qian (2009) find, probably because developed countries already possess advanced distribution networks. Wang et al. (2017) also find that this effect is stronger for export to developing countries, but nevertheless also significant with respect to developed countries. Furthermore, the role of the host country as an export platform is also substantial: there is a strong relationship between Chinese investments in the host country and China’s export to surrounding regions (Wang et al., 2017).

As for the other 5 factors hypothesized by Buckley et al. (2007), political liberalization in China is positively associated with FDI flows, just as inflation rates in the host country. This latter result is somewhat surprising since one may expect that high inflation in the host country would lead to lower incoming investments. A potential reason for this finding might be the relatively high share of SOEs in the total amount of Chinese outward investments, as we will discuss later in this section. Buckley et al. (2007) do not find a significant effect of the exchange rate of the host country’s currency, geographical distance between the two countries, and a higher degree of openness in the host country to international investments. This contrasts with Cross et al. (2007), who do find that exchange rates and openness to international investments in the host country seem to matter, while inflation rates do not.

Amighini et al. (2013); Berning and Holtbrügge (2012); Buckley et al. (2007); Deng (2013); Ebbers and Zhang (2010); and Ramasamy et al. (2012) argue that it may not be sufficient to look at general FDI theory when assessing Chinese FDI. Chinese firms seem to invest in countries that do not correspond to the standard profile of host countries. This could be explained by the importance of SOEs in Chinese outward investments. Indeed, in their literature review, Berning and Holtbrügge (2012) find that only 10% of their 62 reviewed articles, traditional internalization theory applies to investment decisions of Chinese firms, with the majority of articles (77%) calling for an extension of this theory, mainly by taking into account the strong role of the Chinese government in outward FDI. Especially prior to 2003, outward investments were almost exclusively pursued by SOEs, and SOEs continue to dominate Chinese outward FDI, with no signs that this trend will reverse soon (Amighini et al., 2013 and Deng, 2013).

Amighini et al. (2013) and Ramasamy et al. (2012) find that Chinese SOEs engaging in FDI portray noticeably different behavior compared with Chinese private firms. While private firms tend to invest more in high-income countries, SOEs are more attracted to lower-income countries. Private firms are also more averse to economic and political risks in the host country, while Chinese SOEs are largely indifferent to those aspects. Furthermore, Chinese SOEs seem to invest more in countries with natural resources than private firms (resource-seeking motivation), which tend to portray a market-seeking behavior and target other assets such as human capital and technology (asset-seeking motivation), Amighini et al. (2013) and Ramasamy et al. (2012) find. High levels of government support may help Chinese firms to offset ownership and location disadvantages abroad. Amighini et al. (2013); Buckley et al. (2007); and Kolstad and Wiig (2012) assert that SOEs benefit from soft budget constraints and thus the availability of capital at below-market rates, and that Chinese state-owned firms are often not profit-maximizers but maximize other government-set goals instead. Verifying this, De Beule and Duanmu (2012) find that in Chinese outward FDI, deal size nor target profitability matter for Chinese investors. This may result in a lower degree of attention for failure and risk associated with such international investments (Amighini et al., 2013; Buckley et al., 2007; De Beule et al., 2018; and Ramasamy et al., 2012). It may also provide us with an explanation for the observation that higher political risk in the host country is associated with an increase in outward Chinese FDI to this country. This is another way the literature considers Chinese outward FDI being “special”, similar to the non-standard pace of investment we discussed in sections 2.1.6 and 2.2.2.

2.4 Implications for Chinese investments in the European Union

Having treated research on the motivations, location choices and performance of Chinese investments in foreign countries in the previous sections, we are now able to draw some inferences with respect to such investments with EU countries as a target.

As for the four motivations for companies to engage in FDI identified by Dunning (2000), Buckley et al. (2007) assert that foreign-market-seeking FDI, strategic-asset-seeking FDI and resource-seeking FDI can be expected to be the most relevant for Chinese outward FDI. Particularly relevant for Chinese outward FDI to the EU would be foreign-market-seeking FDI given the large purchasing power in many European countries. The advanced level of technology and other applicable knowledge implies that the strategic-asset-seeking motivation is also likely to play a major role. While efficiency-seeking motives could be relevant, based on the findings by many scholars about the location choices we discussed in section 2.3, and assuming that Chinese firms can, on average, already enjoy a big domestic market and face relatively low labor costs at home, economies of scale and scope nor the lower cost of production factors abroad seem to be major determinants. Resource-seeking FDI in the EU is not very likely given the lack of natural resources in most European countries.

Both push factors and pull factors can be expected to have played a vital role in Chinese investments in the EU. Push factors relate to FDI-related policy in China, in which the Go Global strategy and the Belt and Road Initiative (BRI) are examples of policies that are likely to exhibit positive effects on outward investments. The latter policy is especially relevant for European countries as Europe

is the start/end of the new Silk Road the Chinese government intends to create through BRI. This policy can therefore be assumed to act as a substantial push factor. Also important is the weaker institutional and more competitive and volatile economic environment in China compared to the environment in the European host countries, which are both push- and pull factors. The respect for property rights, the overall stable business environment in most EU member states and overcapacity in China combined with a large consumer demand in Europe, for example, may serve as significant factors stimulating Chinese investments in the EU, since Chinese firms would face a more predictable future and a potentially higher payoff from innovations in the EU than in China. This corresponds to Deng (2013), who asserts that the domestic institutional environment in China encourages firms to engage in FDI: weak intellectual property rights in China, for example, discouraged firms to pursue R&D activities in China and encourages them to substitute to FDI as a way to obtain advanced technologies. The increasingly competitive domestic environment in China may serve as another push factor as Chinese firms could obtain more advanced technology by investing abroad and use this technology to strengthen the domestic competitiveness of the firm (Golley, 2013). Policies in European countries stimulating foreign investments, especially from China, would also be major pull factors. EU member states that have declared to participate in BRI, for example, could attract more Chinese investments. As for other pull factors, we refer to the analysis of location choices of Chinese investments for the EU we discussed in section 2.3.

In terms of performance or productivity enhancements for the target firm following Chinese FDI, we argue this does not play a crucial role since European firms are in general already relatively efficient, especially in the EU's core member states. Knowledge transfer from Chinese to European firms has not been discussed in the literature so far. Transferring managerial capabilities may also be relatively difficult given the very different business culture. More relevant are economies of scale and scope, since European firms tend to be rather small, at least compared with their Chinese counterparts. Chinese-owned firms may also be able to access cheaper inputs. The extent to which the European subsidiary is able to benefit depends on the level of integration of this subsidiary in the Chinese parent company and the motives behind the FDI decision. If a market-access motivation dominates in the FDI decision, the EU-based subsidiary may not be able to benefit much from economies of scale and scope. Other potential benefits for European firms and consumers may be the easier access to and better knowledge of the Chinese market, and a higher degree of product diversity for European consumers.

Based on extensive research on location determinants, Chinese firms can be expected to invest in European countries with a large domestic market and easy access to neighboring markets, which implies that the countries in the EU's core would be advantaged in this aspect. Connectivity is also a crucial factor, playing in favor of countries with big ports (The Netherlands, Belgium and Germany) and easy railway access to China (Central and Eastern European countries). Similarly, the existing degree of trade with China, which also seems to be a major determinant, is the highest in the EU's most developed countries.

While there does not seem to be a consensus in the literature with respect to the quality of institutions in the host country, the finding that Chinese investors do not seem to be greatly discouraged by weak institutions in the host country and the argument that Chinese firms have a competitive advantage in handling poor institutions, could imply that peripheral EU member states, typically associated with worse institutions than in Western Europe, would be a logical destination of Chinese firms. However, as the EU lacks natural resources, perhaps the impact of institutions is not significant. Nevertheless, Chinese firms seem to be less risk-averse than can usually be observed, so that they may be less discouraged to invest in peripheral EU member states.

The presence of superior technology, especially commercially viable knowledge, seems to attract Chinese firms. This plays in the advantage of Western European countries which generally possess the most advanced technology in the EU. Similarly, the number of Chinese diasporas is the highest in Western Europe: proportional to the total population, France, followed by The Netherlands and Italy have the largest Chinese population (Poston Jr and Wong, 2016). As research suggests Chi-

nese firms tend to follow other Chinese firms in their internationalization strategy and thus invest in countries with an already large presence of Chinese companies, self-reinforcing clustering forces seem to be relevant: the most popular destination countries of today could also become the preferred investment locations of tomorrow.

Finally, we would like to point out that although Chinese SOEs seem to dominate outward FDI, this effect could be less pronounced in the EU, especially in the most developed member states. Chinese SOEs are more attracted to lower-income countries, while private firms tend to invest more in high-income countries. Given the generally good institutions in EU member states, Chinese private firms will also not be discouraged by instability and risk in the host country. This implies that the cautiousness that one may have with respect to investments by foreign SOEs may be less relevant in the EU.

We can conclude from this subsection that compared with the total stock of Chinese outward FDI, the EU is an attractive destination for Chinese investments, but they are more likely to be performed by private companies for market-access reasons and would be especially targeted towards the EU's core member states. In this sense, Chinese FDI in the EU would be more in line with the general theory of FDI than has been debated by the media and some scholars who have pointed towards the "special nature" of Chinese FDI. Nevertheless, especially in Western Europe, it can be expected that asset-seeking motives remain important given the presence of advanced technology in the EU.

3 Data

As discussed in the introduction, we limit the empirical part of this thesis to France. The findings for France in the following sections can therefore not necessarily be extended to the entire EU. To assess the effect of Chinese ownership on the productivity of French firms, we use the Orbis database by Bureau van Dijk (Bureau van Dijk - ORBIS, 2018). This database contains information about more than 275 million companies worldwide, including details about ownership and financial indicators. Our data is based on the database snapshot taken on December 17th, 2018 containing firm-level information dating back to 2017. We extend our data by internally requested ownership data for the period 2010-2016 for all firms with global ultimate ownership in 2017. It is worth noticing, however, that for many companies, certain data is missing. In fact, our decision to focus on the productivity effects of French firms partly stems from this reason, as comparatively more information is available for French firms than for firms operating in other EU countries. Still, using of the database snapshot taken on December 17th, 2018, of the 244,342 French firms identified having a GUO (global ultimate owner) holding at least 50.01% of the shares, the country of origin of this owner is unknown for 172,342 of these firms. French firms with an identified Chinese owner are only 545, which equals 0.76% of the total number of firms with a GUO from a known country (Bureau van Dijk - ORBIS, 2018). This may be problematic if the reporting decision of firms is non-random. Given this, the results obtained in this paper should be interpreted with a certain caution. We would also like to point out that this data may be partly distorted since it excludes investments performed via offshore centers and tax havens, including Hong Kong or the Cayman Islands. In the rest of this thesis, we estimate the effects of Chinese ownership with respect to 4 size indicators (turnover, added value, total assets and number of employees), 1 performance indicator (profit margin) and 3 performance indicators (labor productivity and total factor productivity calculated in two ways). The total factor productivity (TFP) indicators are estimated using Levinsohn and Petrin (2003) by using logarithmized data of employees as free variable, and material cost as intermediate input. Our choice for the method by Levinsohn and Petrin (2003), is that the widely-used alternative from Olley and Pakes (1992) uses investments by firms to construct a TFP measure, instead of material costs, while investments have the tendency not to respond smoothly to productivity shocks. As mentioned before, we calculate TFP in two ways: both based on the total revenue and on the added value of the firm.

4 Summary statistics

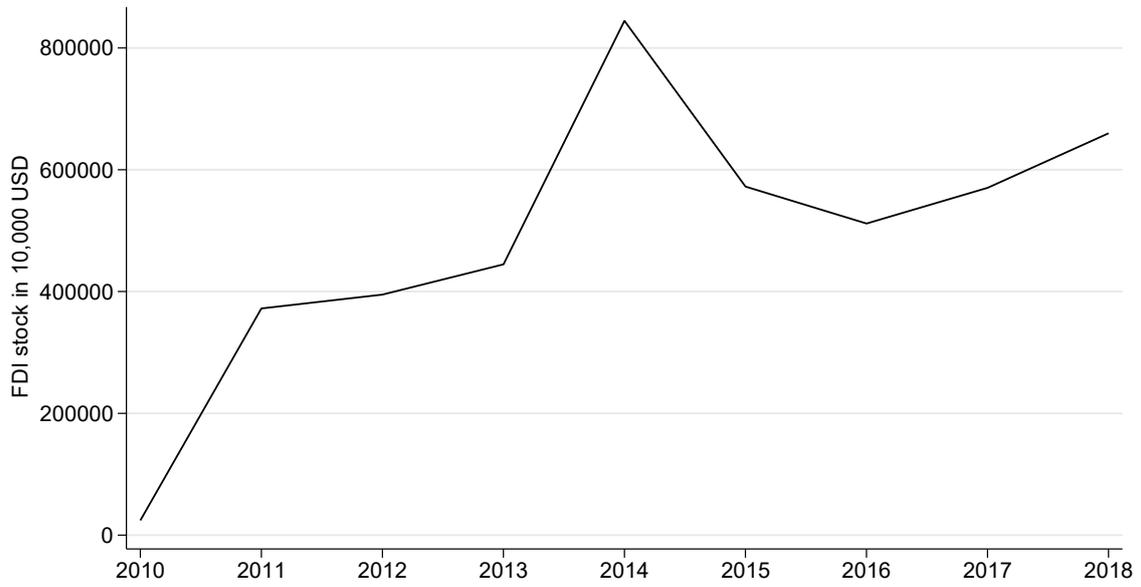
Before attempting to estimate whether Chinese-owned French firms perform better than other globally owned French firms, it is useful to take a closer look at the data at hand. We begin by providing an overview of the evolution of Chinese FDI stock in France between 2010 and 2018 in figure 2. This figure is not based on data from Bureau van Dijk - ORBIS (2018) as this database does not allow us to trace Chinese ownership over time (in our Orbis-data, ownership information is based on global owners in the database snapshot taken on December 17th, 2018). Instead, figure 2 is based on the Statistical Bulletin of China's Outward Foreign Direct Investment (2018). While Chinese ownership in Bureau van Dijk - ORBIS (2018) and Chinese FDI stock in the Statistical Bulletin of China's Outward Foreign Direct Investment (2018) are not equally defined, the trend visible in figure 2 should nonetheless offer a reliable image of the evolution of Chinese ownership. After the 2008 financial crisis and subsequent Eurocrisis, Chinese FDI stock in France increased sharply from 240 million USD in 2010 to 8.4 billion USD in 2014. It then decreased to 5.1 billion in 2016, after which an increase could again be observed to almost 6.6 billion USD in 2018. Chinese FDI stock in France constitutes approximately 12% of the Chinese FDI stock in Western Europe as defined in figure 1.

The evolution of Chinese FDI stock in France seemingly traces the evolution of Chinese imports in France between 2010 and 2018, as can be seen in figure 3 (UN Comtrade, 2020). One may observe a similar rise between 2010 and 2014 (albeit interrupted in the import data), a similar reduction between 2014 and 2016, followed by another increase between 2016 and 2018. This may imply that the Chinese FDI stock in France can be explained by Chinese imports, pointing towards the importance of market-access motivations: Chinese firms invest in France to be able to export to the French market (and perhaps more generally the entire EU's single market). This relationship, however, does not need to imply a causal effect. Chinese FDI and imports in France may, for example, both be driven by a confounding variable (e.g. business cycles or idiosyncratic policies).

Table 2 primarily presents an overview of the number of observations for each variable that will be used later on. One may observe that for turnover, total assets, profit margin, capital, liquidity ratio, solvency ratio, export revenue/operating revenue and number of patents, for the majority of the firms, data is available. This is not true for the number of employees per firm, as only this variable only has a value for 505,616 of the 1,955,760 observations. Consequently, variables using the number of employees, such as labor productivity and total factor productivity, are also not equipped with values for the majority of observations. As mentioned in section 3, a major share of observations also does not contain information concerning ownership. This is especially worrying given the relatively low presence of identified Chinese ownership.

In table 3, we compare the dependent variables for the estimations we will develop in this thesis between several subsamples: all firms (excluding Chinese-owned firms), Chinese-owned firms and firms owned by Asian companies (excluding Chinese-owned firms). Comparing the means of our key outcome variables between these groups reveals substantial differences between Chinese-owned firms and firms owned by other Asian owners, and between Chinese-owned firms and firms by any other country of origin of the owner. Chinese-owned firms seem smaller, perform worse and are less productive than firms by other owners. The standard deviations, however, are large. We will test this hypothesis formally in sections 5 and 6.

Figure 2: **Stock of Chinese FDI in France (in 10,000 USD)**



REFERENCE: Statistical Bulletin of China's Outward Foreign Direct Investment (2018)

Figure 3: **Chinese imports in France (in 10,000 USD)**



REFERENCE: UN Comtrade (2020)

Table 2: Summary statistics of all variables

Variable	# Observations (over 2010-2017)	Mean	Standard deviation	Minimum value	Maximum value
Turnover (in thousand USD)	1298248	26641.2	938029.2	-1144889	8.06e+08
Added value (in thousand USD)	833980	8001.6	192540.2	-4250834	4.10e+07
Total assets (in thousand USD)	1342963	99644.3	6274364	-8226.5	2.23e+09
Number of employees	505616	137.2	3326.9	0	427921
Profit margin (in %)	1177395	4.6	17.2	-100	100
Labor productivity (in thousand USD per employee)	366163	143.1	4086.7	-785490	1171530
Total factor productivity (based on revenue)	407676	80.4	4153.4	0.0	2543882
Total factor productivity (based on added value)	359558	142.1	1449.8	0.0	345686
Capital (in thousand USD)	1340849	5023.9	135497.6	-5708521	2.58e+07
Material cost (in thousand USD)	951200	14419.5	788003.1	-2925983	6.65e+08
Liquidity ratio (in %)	1142483	2.3	6.3	0	100
Solvency ratio (in %)	1310049	37.7	31.3	-100	100
Export revenue/operating revenue (in %)	1226309	4.8	16.5	-96.9	100
Number of patents	1955760	0.8	57.6	0	14889
Total number of observations over 2010-2017: 1,955,760					
Total number of observations in 2017: 244470					
Total number of observations in 2017 with identified origin of global owner: 72128					
Total number of observations in 2017 with identified Chinese ownership: 545					

REFERENCE: Bureau van Dijk - ORBIS (2018)

Table 3: Summary statistics of key variables for subsamples

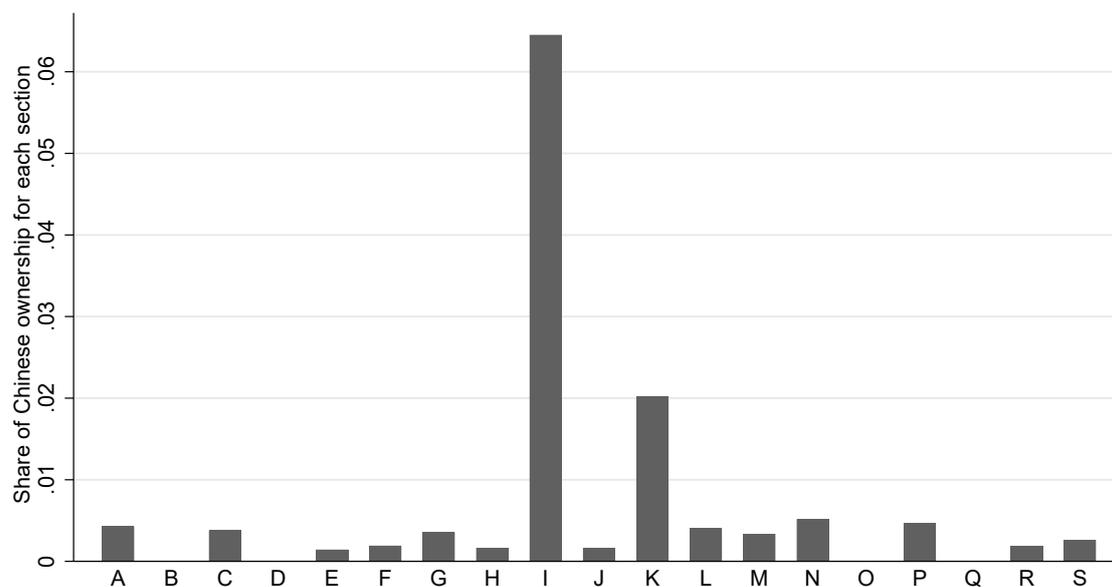
	All firms (excluding Chinese-owned firms)		Chinese-owned firms		Firms owned by Asian companies (excluding Chinese-owned firms)	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
Turnover (in thousand USD)	62185.2	152879.6	27306.7	150992.1	75072.1	284222.4
Added value (in thousand USD)	18611.4	310465.2	10598.6	53642.7	15909.3	49478.3
Total assets (in thousand USD)	280535.6	1.09e+07	25072.9	131281.7	62803.9	214191.8
Number of employees	248.1	3678.3	100.7	581.5	172.1	734.8
Profit margin (in %)	4.9	19.7	-2.4	19.0	2.5	17.8
Labor productivity (in thousand USD per employee)	192.7	6157.7	69.6	294.7	74.2	1441.6
Total factor productivity (based on revenue)	134.6	6973.6	27.2	77.4	88.7	1505.4
Total factor productivity (based on added value)	189.7	2039.8	95.7	135.6	161.3	236.1

ASIAN COUNTRIES: Bangladesh, Bhutan, Brunei, Cambodia, China, Hong Kong, India, Indonesia, Japan, Laos, Macao, Malaysia, Maldives, Mongolia, Myanmar, Nepal, North Korea, Pakistan, Philippines, Singapore, South Korea, Sri Lanka, Taiwan, Thailand, Vietnam

REFERENCE: Bureau van Dijk - ORBIS (2018)

Figure 4 and table 4 allow us to assess the presence of Chinese ownership in each sectoral section in 2017. The NACE Rev. 2 (4 digits) sectoral classification is divided into several divisions (2 digits) and sections (A-S), with the section classification being the most general one. From table 2 one may see that Chinese owned French firms differ significantly from firms with a non-Chinese global owner regarding the sectors they find themselves in. While most globally owned French firms in 2017 were active in the “Wholesale and retail trade” (G) and “Manufacturing” (C) industries, Chinese presence is relatively low in these industries. In the “Accommodation and food service activities” (I) and “Financial and insurance activities” (K), however, Chinese ownership is the highest, while, especially in the former, other global ownership is comparatively low. From observing the data in more detail, it seems that there is a high Chinese presence in the French hotel sector. For example, the Louvre Hotels Group, including several popular French hotel chains like Golden Tulip, Campanile, Kyriad and Première Classe, is owned by the Chinese Jin Jiang International Holdings Company Limited, a state-owned enterprise owned by the Shanghai Municipal People’s Government.

Figure 4: Share of Chinese ownership in each sectoral section



NOTE: see table 4 for legend

REFERENCE: Bureau van Dijk - ORBIS (2018)

Table 4: Number of firms with identified GUO in each sectoral section in 2017

		Firms without Chinese ownership	Firms with Chinese ownership	Total number of firms	Percentage Chinese ownership
A	Agriculture, forestry and fishing	466	2	468	0.43%
B	Mining and quarrying	424	0	424	0.00%
C	Manufacturing	8,680	33	8,713	0.38%
D	Electricity, gas, steam and air conditioning supply	2,633	0	2,633	0.00%
E	Water supply; sewerage, waste management and remediation activities	692	1	693	0.14%
F	Construction	5,712	11	5,723	0.19%
G	Wholesale and retail trade; repair of motor vehicles and motorcycles	14,197	51	14,248	0.36%
H	Transportation and storage	3,016	5	3,021	0.17%
I	Accommodation and food service activities	2,334	161	2,495	6.90%
J	Information and communication	3,106	5	3,111	0.16%
K	Financial and insurance activities	6,314	130	6,444	2.06%
L	Real estate activities	4,678	19	4,697	0.41%
M	Professional, scientific and technical activities	5,633	19	5,652	0.34%
N	Administrative and support service activities	3,649	19	3,668	0.52%
O	Public administration and defence; compulsory social security	3	0	3	0.00%
P	Education	427	2	429	0.47%
Q	Human health and social work activities	1,441	0	1,441	0.00%
R	Arts, entertainment and recreation	526	1	527	0.19%
S	Other service activities	379	1	380	0.26%
Total		64,310	460	64,770	0.72%

REFERENCE: Bureau van Dijk - ORBIS (2018)

Table 5: **Names of Chinese GUOs of French firms in 2017 (10 largest)**

GUO - Name	Frequency	Percent	Cumulative
Shanghai State Owned Assets Supervisi...	321	58.9	58.9
China-People's Rep.	49	8.99	67.89
Mr. Guangchang Guo	28	5.14	73.03
Bank of Communications CO., LTD.	9	1.65	74.68
Hainan Traffic Control Holding CO., LTD.	8	1.47	76.15
HNA Technology CO., LTD.	8	1.47	77.61
China Minsheng Banking Corporation	7	1.28	78.9
Ministry of Education of the People's...	7	1.28	80.18
Midea Group CO., LTD.	5	0.92	81.1
Shanghai Fosun Pharmaceutical (Group)...	4	0.73	81.83

REFERENCE: Bureau van Dijk - ORBIS (2018)

This last-mentioned ultimate owner seems to be the most present Chinese ultimate owner in France in 2017, as can be seen in table 5. The Shanghai State Owned Assets Supervision and Administration Commission accounts for almost 60% of identified Chinese ownership in France. In fact, most of the Chinese ownership in section I is due to this owner (153 of 161). They are also largely present in section K (109 of 130). The second most present owner, the Chinese central government, is also state-owned, making the total Chinese ownership in France more than 70% state-owned (also taking into account smaller state-owned owners). One may consider these as being sovereign wealth funds. The third-largest owner is the (private) Fosun International Limited conglomerate.

Since 35% of the Chinese-owned French companies are in section I (mainly hotels), the estimates obtained in the following sections may be for a significant part based on the performance of hotels, although we do control for unobserved heterogeneity on industry- or firm-level in most of the specifications. After all, the sectoral diversity of Chinese ownership in France seems to be relatively low. Given the discussion of potentially sensitive Chinese investments in key industries, it is worth noticing that such investments in France are relatively unimportant in quantity.

5 Methodology

5.1 Determinants of Chinese ownership in France: probit estimation

Before estimating the performance effects of Chinese ownership, a pertinent question one could ask is which factors play a role when Chinese investors decide to acquire a French firm. In section 2.3, we discussed in a literature review what previous research found to be determinants of Chinese outward FDI. These factors, however, were defined on a country level. In this section, we will use firm-level data to estimate which factors play a role in the investment decisions of Chinese investors. By using a probit model, we compare Chinese-owned firms with other globally-owned firms in France. Estimations are performed with a dummy indicating Chinese ownership in 2017 as a dependent variable. We use two specifications: one with all independent variables based on 2017 data, and one instrumenting independent variables with their $t - 2$ and $t - 3$ lagged variants (2015 and 2014) when available. This latter specification may account for endogeneity caused by reverse causality: while we are interested in what determines Chinese ownership, Chinese ownership itself may also influence the independent variables. Instrumenting the independent variables attempts to break this relationship between Chinese ownership in 2017 and the independent variables. Note that this probit estimation will serve as a base for the propensity score matching estimation technique we will develop later in this thesis.

Based on data availability, we define the following hypotheses establishing a relationship between a firm-specific indicator and the probability for a firm to be Chinese-owned. All data is obtained from Bureau van Dijk - ORBIS (2018), as we discussed in section 3.

Industry. First, it is easy to see why Chinese investors would be more eager to target French firms from the perspective of the four primary motivations for firms to engage in FDI by Dunning (2000): foreign-market-seeking motives, efficiency-seeking motives, resource-seeking motives, and strategic-asset-seeking motives. With respect to market-seeking motives one could expect Chinese firms to invest in French firms in the distribution and retail sector in order to ease export of Chinese (self-produced) goods to France. As for resource-seeking motives and strategic-asset-seeking motives, it is reasonable to assume that sectors with a higher degree of Chinese ownership would be those in possession of strategic assets, including, but not limited to, the manufacturing sector and research sectors. From a first analysis, we also found that the tourism sector is one of the sectors with the highest degree of Chinese ownership in France, presumably because of the rapidly rising share of Chinese tourists traveling to France.³

Hypothesis 1: Chinese investors target specific French industries to engage in acquisitions

We test this hypothesis by including sectoral dummies based on the section level (1 digit: A-S) of the NACE Rev. 2 (4 digits) industry classification. Sectoral dummies are only available for 2017. In the specification using lagged independent variable as instruments, we are therefore not able to instrument sectoral classification in 2017. This may not be of great concern since firms do not tend to change industries very often.

International presence. We assert that it is reasonable to expect that French firms with superior export capabilities are more likely to be acquired by Chinese investors. This could be, for example, because the goods the firm produce may be exported more easily to the Chinese owner, which could be relevant if the French subsidiary would serve as a supplier for the Chinese firm. The opposite would be more likely, but then one should see export capabilities as a proxy for the overall international presence of the French firm. A firm with more exports will have more experience with international activities, we assume, which could be beneficial for the Chinese acquirer. As could be observed by the mimicry effect found by De Beule et al. (2018), Chinese firms seem to attach great importance to the preconditions in a given country or firm. A firm's existing international relations could be a major asset for potential Chinese investors.

Hypothesis 2: Chinese investors target French firms with superior export capabilities

This hypothesis is assessed by using the ratio of export revenue over total operating revenue.

Intellectual property. As mentioned under hypothesis 1, one of the motivations for firms to expand internationally as defined by Dunning (2000) is the strategic-asset-seeking motive. One of these strategic assets could be intellectual property. The importance of this has also been stressed by various scholars, including Buckley et al. (2007); Cheung and Qian (2009); De Beule and Duanmu (2012); and Deng (2013), although no consensus could be found about whether intellectual property actually influenced Chinese investment decisions. Intellectual property is also very relevant from a geopolitical point of view. When US President Donald Trump refers to China "raping our country" and committing "the greatest theft in the history of the world"⁴, he is at least partly referring to the alleged theft of intellectual property.

Hypothesis 3: Chinese investors target French firms with a higher degree of intellectual property

We test hypothesis 3 by accounting for the number of patents the French subsidiary owns. For many (small) firms this will be 0, which may result in a low level of significance, but nevertheless, a nonzero number of patents can be observed for 7,172 of the 244,470 firms in our dataset. Data regarding the number of patents is available for 2017. In the specification using lagged independent variables as instruments, we are therefore unable to instrument the number of patents in 2017. Endogeneity could therefore still be present with respect to this variable.

³World Tourism Organization – Yearbook of Tourism Statistics (2019)

⁴During a May 2016 election campaign

Financial health. Due to the presence of information asymmetry, as discussed in a previous section, potential Chinese acquirers mainly have to rely on financial data available to them. The liquidity ratio and solvency ratio are crucial indicators of the health of a company. The former indicates the firm’s ability to pay off short-term debt obligations without having to resort to external funding, thus being a measure of the short-term financial health of the firm; the latter the sufficiency of a company’s cash flow to pay off both its short-and long-term liabilities, thus indicating the viability of a firm on the longer term. One may expect an investor, both domestic or foreign, to be more eager to acquire financially viable firms. For foreign acquirers, as mentioned, the presence of information asymmetries makes them even more reliant on key financial indicators and therefore probably more conservative towards foreign investments. This could be especially the case for firms based in countries not familiar with European or Western business practices, as may be the case for Chinese firms.

On the other hand, we would like to assert that the financial viability of the French firm is likely to be of only minor importance for Chinese SOEs acquiring the French firm. As discussed extensively in a previous section, SOEs, accounting for a significant share of Chinese outward FDI, is often driven by non-economic motivations (Buckley et al., 2007; De Beule et al., 2018; Deng, 2013; and Ebbers and Zhang, 2010). They are also willing to assume more risk, perhaps by acquiring financially weak firms. We referred to this as one way Chinese outward FDI may be “special”. Therefore, the overall effect of liquidity and solvency of French firms is not clear.

Hypothesis 4: Chinese investors target more liquid French firms, although this may not be the case for Chinese SOEs

Hypothesis 5: Chinese investors target more solvent French firms, although this may not be the case for Chinese SOEs

Hypotheses 4 and 5 are tested by including liquidity ratio and solvency ratio variables.

We estimate the following models:

$$\begin{aligned}
Pr(\text{ChineseOwnership}_{i,2017} = 1 | X_{i,2017}) & \\
&= \Phi(\beta_0 + \text{SectorSection}_{i,2017} * \beta_1 + \frac{\text{ExportRevenue}}{\text{OperatingRevenue}_{i,2017}} * \beta_2 \\
&\quad + \text{NumberOfPatents}_{i,2017} * \beta_3 + \text{LiquidityRatio}_{i,2017} * \beta_4 \\
&\quad + \text{SolvencyRatio}_{i,2017} * \beta_5) \quad (1)
\end{aligned}$$

$$\begin{aligned}
Pr(\text{ChineseOwnership}_{i,2017} = 1 | X_{i,2017}) & \\
&= \Phi(\beta_0 + \text{SectorSection}_{i,2017} * \beta_1 + \frac{\text{ExportRevenue}}{\text{OperatingRevenue}_{i,2017}} * \beta_2 \\
&\quad + \text{NumberOfPatents}_{i,2017} * \beta_3 + \text{LiquidityRatio}_{i,2017} * \beta_4 \\
&\quad + \text{SolvencyRatio}_{i,2017} * \beta_5) \\
&\quad (\text{with } \frac{\text{ExportRevenue}}{\text{OperatingRevenue}_{i,2017}}, \text{LiquidityRatio}_{i,2017} \text{ and } \text{SolvencyRatio}_{i,2017} \\
&\quad \text{instrumented by their } t - 2 \text{ and } t - 3 \text{ lags}) \quad (2)
\end{aligned}$$

5.2 Impact of Chinese ownership on size, performance and productivity of the target firm – OLS based on foreign-owned firms in 2017

In the first series of size, performance and productivity estimations, we use a database snapshot taken on December 17th, 2018. Ownership information and sector information (NACE Rev. 2, 4 digits) is only available for the last available year, while financial indicators are obtained from 2010

to 2017. We again define a GUO (global ultimate owner) as holding at least 50.01% of the shares. In this series of estimations, since we only have ownership data available for 2017, for the financial information we also restrict ourselves to 2017.

In our baseline estimation, we regress the natural logarithms of various financial indicators portraying size and productivity on a Chinese ownership dummy. Using the natural logarithm of the dependent variables allows us to interpret the marginal effects in a more sensible way. Because of the presence of negative values for profit margin, the profit margin variable is not logarithmized. In fact, the marginal effects for this variable, which is defined in percentages, could already directly be interpreted sensibly without taking a natural logarithm. The size, performance and productivity indicators used are the turnover, added value, total assets, number of employees, profit margin, labor productivity, and total factor productivity (estimated in two different ways, as described in section 3).

$$\ln(\text{SizeIndicator}_{i,2017}) = \beta_0 + \text{ChineseOwnership}_{i,2017} * \beta_1 + \epsilon_{i,2017} \quad (3)$$

$$\text{ProfitMargin}_{i,2017} = \beta_0 + \text{ChineseOwnership}_{i,2017} * \beta_1 + \epsilon_{i,2017} \quad (4)$$

$$\ln(\text{ProductivityIndicator}_{i,2017}) = \beta_0 + \text{ChineseOwnership}_{i,2017} * \beta_1 + \epsilon_{i,2017} \quad (5)$$

Starting from this baseline specification, we control for sector-level heterogeneity in performance and productivity (by using sector dummies). As we are particularly interested in how Chinese ownership affects the performance and productivity of the French firm irrespective of the firm's size, we control for the size of the firm in our specifications with the performance and productivity indicators as dependent variables. Adding these size control variables is important to rule out the possibility that performance is jointly influenced by the size of the firm and by Chinese ownership. The size control variables used are turnover (in thousand USD), total assets (in thousand USD), capital (in thousand USD) and number of employees.

Finally, we obtain the following specifications:

$$\ln(\text{SizeIndicator}_{i,2017}) = \beta_0 + \text{ChineseOwnership}_{i,2017} * \beta_1 + \text{Sector}_{i,2017} * \beta_2 + \epsilon_{i,2017} \quad (6)$$

$$\begin{aligned} \text{ProfitMargin}_{i,2017} = \beta_0 + \text{ChineseOwnership}_{i,2017} * \beta_1 + \text{Sector}_{i,2017} * \beta_2 \\ + \text{SizeIndicator}_{i,2017} * \beta_3 + \epsilon_{i,2017} \end{aligned} \quad (7)$$

$$\begin{aligned} \ln(\text{ProductivityIndicator}_{i,2017}) = \beta_0 + \text{ChineseOwnership}_{i,2017} * \beta_1 + \text{Sector}_{i,2017} * \beta_2 \\ + \text{SizeIndicator}_{i,2017} * \beta_3 + \epsilon_{i,2017} \end{aligned} \quad (8)$$

In an attempt to detect potential heteroscedasticity, we perform Breusch-Pagan (1979) and Cook-Weisberg (1983) tests for heteroskedasticity on all 8 specifications including control variables. These tests offer resounding evidence in favor of heteroskedasticity, so that the standard analytical standard errors may not be reliable. We will therefore report White (1980) heteroskedasticity-robust standard errors. Furthermore, given the low variance inflation factors (close to 1), multicollinearity does not seem to be problematic.

5.3 How may endogeneity bias our results?

5.3.1 Omitted variable bias

One generally identifies three major sources of endogeneity. One of these sources may be the result of the omission of certain factors in our specifications. While it is, in principle, not necessary to include every determining factor of the outcome variable if such determinant is not relevant for the question at hand, endogeneity may arise when an omitted determinant is correlated with both the dependent variable and one of the independent variables.

The situation we just described is highly likely in specifications 4 and 5, where we regress performance and productivity indicators on the Chinese ownership dummy. It may be, for example, that Chinese-owned firms are smaller/larger than other globally owned firms (hence the firm's size may be correlated with the Chinese ownership dummy). The firm's size is also likely to be correlated with the dependant variable: the performance/productivity indicator. To avoid out estimates to be biased due to the omission of the firm's size in our specification, we added size indicators in specifications 7 and 8, as described before.

While the firm's size is an observable indicator, there may also be several unobservable factors correlated with both Chinese ownership as the outcome variables (size in specifications 3 and 6, performance and productivity in specifications 4, 5, 7 and 8). While it is not our intention to specify such unobservable factors, one may think of management skills or the presence of highly-skilled personnel. The fixed effects strategy we discuss in section 5.5 controls for these unobserved omitted factors to the extent they are time-invariant, and may therefore reduce the potential bias arising from endogeneity. If we assume the firm's size is constant over time, it would not be necessary to include the size indicators separately, as we do in specifications 13 and 14, although adding them to the specification may be better as it allows the firm's size to vary over time. Our results indicate, however, that including these control variables does not substantially influence our estimated coefficients for the Chinese ownership dummy, indicating that the firm's size remains relatively constant over time or does not greatly influence the performance and productivity of the firm.

5.3.2 Reverse causality

Another potential source of endogeneity is reverse causality, which may arise when Chinese-firms self-select into the acquisition of best-performing French firms. If this is the case, the causal effect Chinese ownership has on performance, may be distorted by this relationship running into the other direction: the effect performance has on the acquisition by potential Chinese buyers. This seems plausible, which is why we attempt to alleviate such reverse causality by adopting a two-stage least squares (2SLS) instrumental variable regression, as we will detail in section 5.4. Our fixed effects estimation (section 5.5) uses a similar instrumental variable strategy.

5.3.3 Measurement error

We finally discuss endogeneity arising from measurement error, which is often neglected in empirical research, but may nevertheless be important. We identify 2 types of measurement error. First, in the situation of classical measurement error, the error is not correlated with the dependent and independent variables. Measurement error in the dependant variable (the size and performance indicators) yields unbiased and consistent, but less efficient estimates. Somewhat more problematic is measurement error in the independent variable (Chinese ownership), as this may lead to the attenuation of the estimate for this variable. However, given the generally significant results we obtain, this may not be problematic in interpreting the sign and significance of our estimates. When interpreting the size of the effect estimated for the variable measured with error, however, one has to be aware that this effect may be underestimated and therefore serves primarily as a lower bound. Second, non-classical measurement error, in which there is correlation between the error and the variables, is more problematic as it leads to biased estimates, even if only the dependent variable is measured with error. The direction of the bias (underestimation/overestimation) is also not known *a priori*.

Is measurement error likely in our data? Perhaps not, since our data is based on financial statements of companies, which are required by law to be accurate and are composed based on strict regulations and guidelines. The potential error could be correlated with the dependent or independent variable if one assumes that larger, better-performing firms have incentives to understate their financial figures, but we assume this is not a major problem. More problematic is that not all companies report all data, but this limitation has generally not received much attention in the literature. Note that firm-specific differences in reporting are controlled for by our fixed effects estimations, as long as these differences are constant over time.

5.4 Impact of Chinese ownership on size, performance and productivity of the target firm – 2SLS based on foreign-owned firms in 2017

In this section, we extend our data by internally requested ownership data for the period 2010-2016 for all firms with global ultimate ownership in 2017. Having full data for 2010-2017 allows us to exploit this time dimension in several ways.

First, in this section, we re-estimate the 2017-based specifications with sector-level dummies and White (1980) heteroskedasticity-robust standard errors, but this time using two-stage least squares (2SLS) with Chinese ownership in 2015 and 2014 as instrumental variables for Chinese ownership in 2017. By doing this, we attempt to control for potential endogeneity caused by selection: Chinese firms might, for example, decide to acquire only well-performing French firms. This reverse causality between performance in 2017 and Chinese ownership in 2017 could be alleviated by instrumenting Chinese ownership in 2017 by Chinese ownership in 2015 and 2014. We then assume that 2017 ownership is correlated with 2015 and 2014 ownership, but that performance in 2017 does not influence ownership in 2015 and 2014.

A Hausman test indicates that endogeneity is present for all our specifications with the performance indicators as dependent variables. With respect to the size indicators, endogeneity is only found for the number of employees variable. The results from this test may help the reader to correctly interpret the results we find. Moreover, a comparison of the Cragg and Donald (1993) F-statistics with the Stock and Yogo (2002) critical values, offers strong evidence against a potential problem of weak instruments. These F-statistics are, depending on the specification, a thousandfold of the critical values.

$$\begin{aligned} \ln(\text{SizeIndicator}_{i,2017}) &= \beta_0 + \text{ChineseOwnership}_{i,2017} * \beta_1 + \text{Sector}_{i,2017} * \beta_2 + \epsilon_{i,2017} \\ &\text{(with } \text{ChineseOwnership}_{i,2017} \text{ instrumented by } \text{ChineseOwnership}_{i,2015} \\ &\text{and } \text{ChineseOwnership}_{i,2014}) \end{aligned} \quad (9)$$

$$\begin{aligned} \text{ProfitMargin}_{i,2017} &= \beta_0 + \text{ChineseOwnership}_{i,2017} * \beta_1 + \text{Sector}_{i,2017} * \beta_2 \\ &+ \text{SizeIndicators}_{i,2017} * \beta_3 + \epsilon_{i,2017} \text{ (with } \text{ChineseOwnership}_{i,2017} \\ &\text{instrumented by } \text{ChineseOwnership}_{i,2015} \text{ and } \text{ChineseOwnership}_{i,2014}) \end{aligned} \quad (10)$$

$$\begin{aligned} \ln(\text{ProductivityIndicator}_{i,2017}) &= \beta_0 + \text{ChineseOwnership}_{i,2017} * \beta_1 + \text{Sector}_{i,2017} * \beta_2 \\ &+ \text{SizeIndicators}_{i,2017} * \beta_3 + \epsilon_{i,2017} \text{ (with } \text{ChineseOwnership}_{i,2017} \\ &\text{instrumented by } \text{ChineseOwnership}_{i,2015} \text{ and } \text{ChineseOwnership}_{i,2014}) \end{aligned} \quad (11)$$

5.5 Impact of Chinese ownership on size, performance and productivity of the target firm – panel data based on foreign-owned firms in 2010-2017

Second, we perform a fixed effects instrumental variables estimation (IV-FE hereafter) using both ownership and performance and productivity data for the whole 2010-2017 period. Note that this data is only based on firms with a global ultimate owner in 2017. In this series of estimations, we include both firm-level fixed effects to control for time-invariant unobserved heterogeneity regarding firms, as well as time fixed effects to control for general time trends. Including sector-level fixed effects results in the issue of perfect multicollinearity. Controlling for time-invariant unobserved heterogeneity may alleviate endogeneity caused by omitted factors that influence both the dependent and the independent variables, as long as these factors are constant over time. Note that Hausman specification tests rejected the hypothesis that random effects models could be applicable.

As discussed in section 5.4, self-selection of the best-performing French subsidiaries by Chinese firms may result in endogeneity caused by reverse causality. To control for this potential source of endogeneity, we will adopt an IV approach with lagged values of Chinese ownership (in years $t - 2$ and $t - 3$) as instruments for Chinese ownership in year t . This corresponds to the method used in section 5.4, where we instrumented Chinese ownership in 2017 by Chinese ownership in 2015 and 2014. We assume that implementing this IV approach will alleviate endogeneity since one can assume that ownership in year t is correlated with ownership in years $t - 2$ and $t - 3$, but that performance in year t does not influence ownership in years $t - 2$ and $t - 3$. Again, first-stage regression results offer strong evidence against a potential problem of weak instruments based on a comparison of the Cragg and Donald (1993) F-statistics with the Stock and Yogo (2002) critical values.

$$\ln(\text{SizeIndicator}_{i,t}) = \beta_0 + \text{ChineseOwnership}_{i,t} * \beta_1 + \gamma_t + \gamma_i + \epsilon_{i,t}$$

(with $\text{ChineseOwnership}_{i,t}$ instrumented by $\text{ChineseOwnership}_{i,t-2}$
and $\text{ChineseOwnership}_{i,t-3}$) (12)

$$\text{ProfitMargin}_{i,t} = \beta_0 + \text{ChineseOwnership}_{i,t} * \beta_1 + \text{SizeIndicators}_{i,t} * \beta_2 + \gamma_t + \gamma_i + \epsilon_{i,t}$$

(with $\text{ChineseOwnership}_{i,t}$ instrumented by $\text{ChineseOwnership}_{i,t-2}$
and $\text{ChineseOwnership}_{i,t-3}$) (13)

$$\ln(\text{ProductivityIndicator}_{i,t}) = \beta_0 + \text{ChineseOwnership}_{i,t} * \beta_1 + \text{SizeIndicators}_{i,t} * \beta_2 + \gamma_t + \gamma_i + \epsilon_{i,t}$$

(with $\text{ChineseOwnership}_{i,t}$ instrumented by $\text{ChineseOwnership}_{i,t-2}$
and $\text{ChineseOwnership}_{i,t-3}$) (14)

As testing for heteroscedasticity using a modified Wald test again indicated that heteroscedasticity is present, we estimate these specifications by using heteroscedasticity-robust standard errors (in our result tables, these columns will be labeled as 12a, 13a and 14a). For the sake of verification, we will also estimate these specifications using bootstrapped standard errors (columns will be labeled as 12b, 13b and 14b). Bootstrapping is a technique based on random sampling with replacement (Efron, 1979). It therefore does not assume a certain theoretical distribution and may perform better in handling finite sample sizes. In this thesis, we will use 1000 replications to bootstrap the standard errors. We finally estimate standard errors clustered by industry to allow for correlation of the errors on industry-level over time (columns will be labeled as 12c, 13c and 14c). These clustered standard errors are also heteroscedasticity-robust.

6 Results

6.1 Determinants of Chinese ownership in France: probit estimation

The results obtained through probit estimation are reported in table 6. As dependent variables, we use Chinese ownership in 2017. With respect to the independent variables, we distinguish two specifications: one with data from 2017, and one with independent variables regarding export capabilities and the liquidity and solvency of the French firm instrumented by their lagged variants from 2015 and 2014. This latter specification is used to control for potential endogeneity, as we discussed in section 5.1. Note that the coefficients obtained cannot directly be interpreted as marginal effects. Heteroscedasticity-robust standard errors will be reported.

6.1.1 Baseline specification: all variables with data from 2017

First, the sectoral dummies for all sectors for which standard errors could be estimated are highly significant. This implies that certain industries are more likely to attract Chinese investments than others compared to investments by other global owners. The industries concerned are relatively diverse, but significant are the “Manufacturing”, “Professional, scientific and technical activities”, the “Water supply; sewerage, waste management and remediation activities” and the “Information and communication” sectors, which could be considered as sensitive industries, as hypothesized: firms in these industries are respectively 3.14% and 2.94% more likely to be Chinese-owned than owned by other global owners. A significant effect could also be found for the “Transportation and storage” sector, which corresponds to the market-seeking motivation we discussed: firms in the transportation sector are 2.68% more likely to be Chinese-owned. Given the diverse nature of the sectors for which a significant coefficient could be observed, however, it is hard to draw decisive conclusions about which type of sectors are the main determinants to observe Chinese ownership. However, hypothesis 1 that Chinese owners target specific industries seems to be satisfied.

Second, the export capabilities of the French firm play a significant role in the probability of the firm to be Chinese-owned: firms with a higher export revenue/operating revenue ratio are more likely to be Chinese-owned. As an attempt to quantify this, we estimate that an increase of export revenue over operating revenue by 10% increases the likelihood to observe Chinese ownership by 0.1%. This effect is clearly small, but nevertheless significant, satisfying hypothesis 2.

With respect to hypothesis 3, we observe a negative coefficient, indicating that a rise in number of patents is associated with a lower likelihood of Chinese ownership. This contradicts our hypothesis and the popular opinion that Chinese companies are attempting to appropriate intellectual property from technologically advanced firms. It also opposes the country-level findings of several scholars, as discussed before. However, the negative relationship we observed is not significant on a 5% or 10% significance level, implying that we cannot confirm nor reject hypothesis 3.

Finally, regarding hypotheses 4 and 5, our estimates for the liquidity ratio and solvency ratio are both negative, suggesting that Chinese owners target French firms with a worse financial health. A potential explanation could be that a substantial part of the Chinese-owned firms in France is state-owned, and that these SOEs have other motivations than solely economic ones, indicating the “special” nature of Chinese FDI in terms of the absence of risk-aversion and the strong role of the Chinese government in the investment decisions of Chinese firms. In this sense, the results obtained satisfy hypotheses 4 and 5. The effects estimated are again small, but both significant on a 10% significance level. The coefficient for the solvency ratio is also significant on a 5% significance level. However, as the lower significance of the liquidity ratio may be partly due to the overlap of the liquidity ratio and solvency ratio variables (the correlation between these variables is 31.73% in 2017). Estimating the specification with only the liquidity ratio or solvency ratio yields a significant estimate for both coefficients at a 5% significance level.

6.1.2 Endogeneity-accounting specification: variables with lagged instruments (data from 2015 and 2014)

Accounting for endogeneity, we can only find robust results for the export capabilities and the solvency ratio of the French firm: Chinese owners seem to target less solvent French firms with more international experience (hypotheses 5 and 2 respectively). The somewhat surprising negative relationship between solvency and Chinese ownership may be explained by the substantial degree of Chinese ownership by SOEs, which are less subject to economic logic (indicating the “special” nature of Chinese outward FDI). The importance of the international experience of the acquisition target may be due to the positive effects for the international trade relations with the Chinese firm and because of the existence of the French firm’s international relationships which the Chinese acquirer may see as beneficial.

We cannot draw decisive conclusions regarding intellectual property in the French firm, nor about the liquidity of the target: the coefficients for the number of patents variable (hypothesis 3) and the liquidity ratio (hypothesis 4) remain insignificant. This latter result implies that Chinese owners pay greater attention to the long-term viability of the French acquisition candidate than to the short-term financial health, which seems reasonable since the Chinese acquirer can be expected to provide liquidity for the acquisition target, and by doing so alleviates the importance of the pre-acquisition liquidity of the French firm.

As for hypothesis 1, in which we assumed that Chinese investors target certain industries, now a significant effect could only be found with respect to the “accommodation and food service activities” sector: Chinese investors are more likely to acquire French firms in this sector. The coefficients for all other sectoral sections become largely insignificant and in some cases change signs.

6.2 Impact of Chinese ownership on size, performance and productivity of the target firm – OLS based on foreign-owned firms in 2017

Estimation results are shown in tables 7 to 14, one table for each size and performance/productivity indicators. As described in section 5.2, we estimate two OLS regressions: one with our baseline specification excluding control variables, and one with specifications including control variables, among which industry-level dummies. Including these control variables allows us to control for industry-level heterogeneity in size, performance and productivity (by using sector dummies), and to control for the size of the firm when estimating the performance/productivity effects of Chinese ownership. Heteroscedasticity-robust standard errors are reported.

For the baseline specifications (3, 4 and 5), except for the estimated effect with respect to TFP based on revenue, all estimates are significant on a 5% significance level and show a negative sign. Including control variables alleviates the size of estimated coefficients considerably (except for total assets and TFP based on revenue), up to the point that the estimate for turnover loses significance. The estimated coefficient for TFP based on revenue, however, now does become significant on a 5% significance level. All estimates show a negative sign, indicating that Chinese-owned firms are smaller, perform worse, and are less productive than their non-Chinese owned counterparts. Quantifying this, based on the OLS regression including control variables, we infer that Chinese-owned firms are estimated to have a 34.7% lower turnover ($t = -1.35$, not significant), a 33.5% lower added value ($t = -3.16$), a 185.7% lower level of total assets ($t = -11.51$), 27.9% fewer employees ($t = -2.53$), a 6.10 percentage points lower profit margin ($t = -4.51$), a 29.8% lower labor productivity ($t = -4.24$), a 17.8% lower TFP based on revenue ($t = -2.21$), and a 30.9% lower TFP based on added value ($t = -4.50$).

Table 6: **Probit - results**

	(1)	(2)
	Chinese ownership	Chinese ownership
	Probit	IV-Probit
	All independent variables with 2017 data	Selected independent variables instrumented by 2015 and 2014 data
Export revenue / operating revenue	0.00677*** (7.71)	0.00897*** (7.13)
Liquidity ratio	-0.0145* (-1.64)	-0.000543 (-0.04)
Solvency ratio	-0.00445*** (-5.99)	-0.00616*** (-4.99)
Number of patents	-0.00704 (-1.40)	-0.00592 (-1.34)
sectorA	2.114*** (7.13)	-0.120 (-0.24)
sectorE	1.904*** (6.06)	-0.353 (-0.73)
sectorF	1.568*** (9.41)	-0.663 (-1.63)
sectorH	1.738*** (14.96)	-0.530 (-1.33)
sectorI	3.226 (.)	0.977*** (2.76)
sectorJ	1.654*** (12.44)	-0.569 (-1.37)
sectorM	2.032*** (26.74)	-0.304 (-0.83)
sectorN	2.056*** (13.58)	-0.185 (-0.51)
sectorR	2.054*** (6.46)	-0.153 (-0.31)
sectorS	2.202*** (6.72)	0 (.)
Constant	-4.685 (.)	-2.358*** (-6.69)
Standard errors	Robust s.e.	Robust s.e.
N	31497	25516

Only sectors with significant results reported

Selected independent variables instrumented by 2015 and 2014 data: export revenue/operating revenue, liquidity ratio and solvency ratio

Column numbers refer to the specifications in section 5

t statistics in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

6.3 Impact of Chinese ownership on size, performance and productivity of the target firm – 2SLS based on foreign-owned firms in 2017

Following the logic described in section 5.4, we attempt to control for endogeneity caused by reverse causality by instrumenting Chinese ownership in 2017 by Chinese ownership in 2015 and 2014. Control variables remain included. For the results, we again refer to tables 7 to 14, this time in the columns “2SLS” (9, 10 and 11). Again heteroscedasticity-robust standard errors are used.

It is important to note foremost that our results do not differ in terms of sign and significance from those obtained in the OLS regression including control variables, with the exception of the coefficient for turnover now turning significant (on a 1% significance level). This provides more support for our earlier findings that Chinese-owned firms are smaller, perform worse and are less productive than their non-Chinese, globally owned counterparts. Regarding the size of the effect, for all dependent variables except TFP (revenue-based), using 2SLS strengthens the estimated effect of Chinese ownership. The estimates for profit margin, labor productivity and TFP (estimated in both ways) are relatively close to those obtained with OLS, but especially those for turnover, added value and number of employees increase significantly in magnitude (become more negative). We can now infer that Chinese-owned firms are estimated to have a 56.4% lower turnover ($t = -2.78$), a 58.5% lower added value ($t = -4.67$), a 249.7% lower level of total assets ($t = -14.23$), 56.5% fewer employees ($t = -4.45$), a 7.0 percentage points lower profit margin ($t = -4.12$), a 35.0% lower labor productivity ($t = -4.52$), a 15.3% lower TFP based on revenue ($t = -1.65$), and a 36.3% lower TFP based on added value ($t = -4.74$).

6.4 Impact of Chinese ownership on size, performance and productivity of the target firm – panel data based on foreign-owned firms in 2010-2017

In this last series of regressions, we use an entire panel with data from 2010 to 2017 to control for endogeneity caused by omitted factors constant over time. Firms included in this panel are those with foreign ownership in 2017. Results are presented in tables 7 to 14 in the columns marked “IV-FE” (12, 13 and 14). As described in section 5.5, we again attempt to alleviate potential endogeneity caused by reverse causality by using lagged values of Chinese ownership (ownership in year t instrumented by ownership in years $t - 2$ and $t - 3$). In this series of estimations, we include both firm-level fixed effects to control for time-invariant unobserved heterogeneity regarding firms, as well as year fixed effects to control for general time trends. We again control for the size of the firm in our specifications with the performance and productivity indicators as dependent variables. Note that this is not strictly required since the firm-level fixed effects already capture characteristics that are specific to a firm but fixed over time. Directly including these control variables, however, may be better since it allows for size-related firm characteristics to vary over time. Not including these control variables, however, does not influence our estimated coefficients for the Chinese ownership dummy substantially. Heteroskedasticity-robust standard errors, bootstrapped standard errors (1000 replications) and standard errors clustered by industry are reported.

We again obtain negative signs for all our estimates, offering more support for our earlier findings that Chinese-owned firms are smaller, perform worse and are less productive than their non-Chinese, globally owned counterparts. Using robust standard errors (columns 12a, 13a and 14a), our results for added value, total assets, profit margin, labor productivity and TFP based (calculated in both ways) are significant on a 5% significance level or lower. This implies that our estimates with respect to turnover and the number of employees now lose significance. Our bootstrapped standard errors are of a very similar magnitude compared with heteroskedasticity-robust standard errors. The clustered standard errors do sometimes differ substantially, but this does not alter the significance of our estimates.

While our estimates all remain negative, the magnitudes of the estimated effects of Chinese ownership differ considerably from those obtained via OLS or 2SLS. With the exception of the estimate for profit margin, we obtain estimates closer to zero (less negative). This could be due to the fact that we now control for unobserved firm-level heterogeneity and for time trends.

Using this fixed effects methodology with cluster-robust standard errors, we can now infer that Chinese-owned firms are estimated to have a 12.4% lower turnover ($t = -0.85$, not significant), a 23.8% lower added value ($t = -3.01$), a 97.5% lower level of total assets ($t = -1.95$), 5.1% fewer employees ($t = -0.32$, not significant), a 12.43 percentage points lower profit margin ($t = -6.54$), a 29.0% lower labor productivity ($t = -2.45$), a 10.7% lower TFP based on revenue ($t = -1.89$), and a 25.6% lower TFP based on added value ($t = -2.35$).

Table 7: OLS/2SLS/IV-FE - results for turnover

	(3)	(6)	(9)	(12a)	(12b)	(12c)
	ln(turnover)	ln(turnover)	ln(turnover)	ln(turnover)	ln(turnover)	ln(turnover)
	OLS	OLS	2SLS	IV-FE	IV-FE	IV-FE
				firm-level fixed effects	firm-level fixed effects	firm-level fixed effects
Chinese ownership (dummy variable)	-0.347** (-2.09)	-0.220 (-1.35)	-0.564*** (-2.78)	-0.124 (-0.67)	-0.124 (-0.67)	-0.124 (-0.85)
Constant	8.376*** (567.72)	9.829*** (18.13)	9.620*** (14.78)	8.607*** (1771.44)	8.607*** (716.14)	8.607*** (655.90)
Industry dummies	no	yes	yes	no	no	no
Year dummies	no	no	no	yes	yes	yes
Standard errors	Robust s.e.	Robust s.e.	Robust s.e.	Robust s.e.	Bootstrapped s.e. (1000 reps.)	Clustered s.e. (industry)
N	36850	36849	27501	164719	164719	164718

Column numbers refer to the specifications in section 5

t statistics in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 8: OLS/2SLS/IV-FE - results for added value

	(3)	(6)	(9)	(12a)	(12b)	(12c)
	ln(addedvalue)	ln(addedvalue)	ln(addedvalue)	ln(addedvalue)	ln(addedvalue)	ln(addedvalue)
	OLS	OLS	2SLS	IV-FE	IV-FE	IV-FE
				firm-level fixed effects	firm-level fixed effects	firm-level fixed effects
Chinese ownership (dummy variable)	-0.748*** (-6.13)	-0.335*** (-3.16)	-0.585*** (-4.67)	-0.238** (-2.03)	-0.238** (-2.03)	-0.238*** (-3.01)
Constant	8.051*** (699.64)	7.977*** (14.51)	7.817*** (11.71)	8.055*** (2861.82)	8.055*** (764.05)	8.055*** (1736.49)
Industry dummies	no	yes	yes	no	no	no
Year dummies	no	no	no	yes	yes	yes
Standard errors	Robust s.e.	Robust s.e.	Robust s.e.	Robust s.e.	Bootstrapped s.e. (1000 reps.)	Clustered s.e. (industry)
N	22626	22626	16916	108236	108236	108236

Column numbers refer to the specifications in section 5

t statistics in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 9: OLS/2SLS/IV-FE - results for total assets

	(3)	(6)	(9)	(12a)	(12b)	(12c)
	ln(totalassets)	ln(totalassets)	ln(totalassets)	ln(totalassets)	ln(totalassets)	ln(totalassets)
	OLS	OLS	2SLS	IV-FE	IV-FE	IV-FE
				firm-level fixed effects	firm-level fixed effects	firm-level fixed effects
Chinese ownership (dummy variable)	-1.758*** (-11.45)	-1.857*** (-11.51)	-2.497*** (-14.23)	-0.975*** (-3.94)	-0.975*** (-4.07)	-0.975* (-1.95)
Constant	8.476*** (708.62)	9.517*** (15.77)	9.393*** (13.12)	8.675*** (2734.18)	8.675*** (752.29)	8.675*** (750.05)
Industry dummies	no	yes	yes	no	no	no
Year dummies	no	no	no	yes	yes	yes
Standard errors	Robust s.e.	Robust s.e.	Robust s.e.	Robust s.e.	Bootstrapped s.e. (1000 reps.)	Clustered s.e. (industry)
<i>N</i>	43327	43258	32006	183097	183097	183065

Column numbers refer to the specifications in section 5

t statistics in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 10: OLS/2SLS/IV-FE - results for employees

	(3)	(6)	(9)	(12a)	(12b)	(12c)
	ln(employees)	ln(employees)	ln(employees)	ln(employees)	ln(employees)	ln(employees)
	OLS	OLS	2SLS	IV-FE	IV-FE	IV-FE
				firm-level fixed effects	firm-level fixed effects	firm-level fixed effects
Chinese ownership (dummy variable)	-0.604*** (-5.63)	-0.279** (-2.53)	-0.565*** (-4.45)	-0.0508 (-0.46)	-0.0508 (-0.45)	-0.0508 (-0.32)
Constant	3.679*** (316.73)	3.608*** (6.92)	3.410*** (5.54)	3.662*** (1296.78)	3.662*** (345.89)	3.662*** (1023.19)
Industry dummies	no	yes	yes	no	no	no
Year dummies	no	no	no	yes	yes	yes
Standard errors	Robust s.e.	Robust s.e.	Robust s.e.	Robust s.e.	Bootstrapped s.e. (1000 reps.)	Clustered s.e. (industry)
<i>N</i>	20432	20432	15703	88976	88976	88976

Column numbers refer to the specifications in section 5

t statistics in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 11: OLS/2SLS/IV-FE - results for profit margin (change in percentage points)

	(4)	(7)	(10)	(13a)	(13b)	(13c)
	profitmargin	profitmargin	profitmargin	profitmargin	profitmargin	profitmargin
	OLS	OLS	2SLS	IV-FE	IV-FE	IV-FE
				firm-level fixed effects	firm-level fixed effects	firm-level fixed effects
Chinese ownership (dummy variable)	-8.522*** (-7.50)	-6.100*** (-4.51)	-6.992*** (-4.12)	-12.43*** (-5.26)	-12.43*** (-5.33)	-12.43*** (-6.54)
Employees		0.00000252 (0.06)	-0.0000117 (-0.26)	-0.000168 (-1.31)	-0.000168 (-0.67)	-0.000168 (-1.24)
Capital		-0.00000191 (-1.07)	-0.00000206 (-1.20)	-0.00000503 (-1.02)	-0.00000503 (-0.89)	-0.00000503 (-1.13)
Total assets		-2.44e-08 (-0.55)	-2.61e-09 (-0.06)	0.000000609* (1.67)	0.000000609 (1.16)	0.000000609 (1.58)
Turnover		0.000000111 (1.31)	8.95e-08 (0.99)	-0.000000688 (-1.03)	-0.000000688 (-0.97)	-0.000000688 (-0.87)
Constant	5.174*** (45.73)	1.666** (2.12)	1.844* (1.95)	3.365*** (29.36)	3.365*** (23.36)	3.365*** (29.34)
Industry dummies	no	yes	yes	no	no	no
Year dummies	no	no	no	yes	yes	yes
Standard errors	Robust s.e.	Robust s.e.	Robust s.e.	Robust s.e.	Bootstrapped s.e. (1000 reps.)	Clustered s.e. (industry)
<i>N</i>	33926	18865	14504	83794	83794	83794

Column numbers refer to the specifications in section 5

t statistics in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 12: OLS/2SLS/IV-FE - results for labor productivity

	(5)	(8)	(11)	(14a)	(14b)	(14c)
	ln(laborprod)	ln(laborprod)	ln(laborprod)	ln(laborprod)	ln(laborprod)	ln(laborprod)
	OLS	OLS	2SLS	IV-FE	IV-FE	IV-FE
				firm-level fixed effects	firm-level fixed effects	firm-level fixed effects
Chinese ownership (dummy variable)	-0.431*** (-6.46)	-0.298*** (-4.24)	-0.350*** (-4.52)	-0.290** (-2.20)	-0.290** (-2.18)	-0.290** (-2.45)
Employees		-0.0000286*** (-5.11)	-0.0000267*** (-4.68)	-0.0000508*** (-3.15)	-0.0000508** (-2.03)	-0.0000508*** (-3.26)
Capital		0.000000645*** (3.07)	0.000000624*** (3.00)	-0.000000145 (-1.37)	-0.000000145 (-1.02)	-0.000000145 (-1.31)
Total assets		-2.61e-09 (-0.48)	-2.46e-09 (-0.48)	2.37e-08** (2.07)	2.37e-08 (1.43)	2.37e-08* (1.86)
Turnover		4.90e-08*** (3.69)	4.48e-08*** (3.70)	9.78e-09 (0.37)	9.78e-09 (0.32)	9.78e-09 (0.34)
Constant	4.496*** (637.97)	4.221*** (63.43)	4.247*** (60.79)	4.579*** (645.65)	4.579*** (461.74)	4.579*** (608.32)
Industry dummies	no	yes	yes	no	no	no
Year dummies	no	no	no	yes	yes	yes
Standard errors	Robust s.e.	Robust s.e.	Robust s.e.	Robust s.e.	Bootstrapped s.e. (1000 reps.)	Clustered s.e. (industry)
N	15479	15479	11950	70060	70060	70060

Column numbers refer to the specifications in section 5

t statistics in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 13: OLS/2SLS/IV-FE - results for TFP (revenue-based)

	(5)	(8)	(11)	(14a)	(14b)	(14c)
	ln(TFPprev)	ln(TFPprev)	ln(TFPprev)	ln(TFPprev)	ln(TFPprev)	ln(TFPprev)
	OLS	OLS	2SLS	IV-FE	IV-FE	IV-FE
				firm-level fixed effects	firm-level fixed effects	firm-level fixed effects
Chinese ownership (dummy variable)	0.0587 (0.94)	-0.178** (-2.21)	-0.153* (-1.65)	-0.107** (-2.41)	-0.107** (-2.37)	-0.107** (-1.89)
Employees		-0.0000545*** (-3.95)	-0.0000590*** (-4.06)	-0.000128*** (-4.29)	-0.000128*** (-3.49)	-0.000128*** (-3.74)
Capital		-0.000000160 (-0.99)	-0.000000126 (-0.77)	9.51e-08* (1.91)	9.51e-08 (0.86)	9.51e-08* (1.90)
Total assets		1.04e-08 (1.54)	1.11e-08 (1.54)	-1.87e-08 (-1.45)	-1.87e-08 (-0.87)	-1.87e-08 (-1.18)
Turnover		1.31e-08 (1.35)	1.72e-08* (1.69)	1.25e-10 (0.01)	1.25e-10 (0.01)	1.25e-10 (0.01)
Constant	2.814*** (275.65)	2.271*** (22.59)	2.315*** (20.36)	2.808*** (333.54)	2.808*** (246.04)	2.808*** (295.34)
Industry dummies	no	yes	yes	no	no	no
Year dummies	no	no	no	yes	yes	yes
Standard errors	Robust s.e.	Robust s.e.	Robust s.e.	Robust s.e.	Bootstrapped s.e. (1000 reps.)	Clustered s.e. (industry)
N	14998	14998	11574	67629	67629	67629

Column numbers refer to the specifications in section 5

t statistics in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 14: OLS/2SLS/IV-FE - results for TFP (added value-based)

	(5)	(8)	(11)	(14a)	(14b)	(14c)
	ln(TFPav)	ln(TFPav)	ln(TFPav)	ln(TFPav)	ln(TFPav)	ln(TFPav)
	OLS	OLS	2SLS	IV-FE	IV-FE	IV-FE
				firm-level fixed effects	firm-level fixed effects	firm-level fixed effects
Chinese ownership (dummy variable)	-0.503*** (-7.44)	-0.309*** (-4.50)	-0.363*** (-4.74)	-0.256** (-1.97)	-0.256** (-2.05)	-0.256** (-2.35)
Employees		-0.00000780** (-2.16)	-0.00000741** (-2.04)	-0.0000354*** (-2.79)	-0.0000354* (-1.92)	-0.0000354*** (-3.14)
Capital		0.000000570*** (3.37)	0.000000549*** (3.25)	-0.000000266*** (-3.21)	-0.000000266* (-1.95)	-0.000000266*** (-2.91)
Total assets		-9.22e-09 (-1.43)	-8.14e-09 (-1.37)	2.00e-08* (1.95)	2.00e-08 (1.45)	2.00e-08* (1.74)
Turnover		6.07e-08*** (3.70)	5.53e-08*** (3.76)	1.52e-08 (0.59)	1.52e-08 (0.48)	1.52e-08 (0.54)
Constant	4.744*** (734.71)	4.362*** (55.40)	4.364*** (44.67)	4.805*** (790.92)	4.805*** (549.68)	4.805*** (735.43)
Industry dummies	no	yes	yes	no	no	no
Year dummies	no	no	no	yes	yes	yes
Standard errors	Robust s.e.	Robust s.e.	Robust s.e.	Robust s.e.	Bootstrapped s.e. (1000 reps.)	Clustered s.e. (industry)
N	15471	15471	11942	70015	70015	70015

Column numbers refer to the specifications in section 5

t statistics in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

7 Robustness checks

7.1 Propensity score matching

As an alternative way to estimate the impact of Chinese ownership on the performance of the French target firms, we resort to propensity score matching (PSM), a non-parametric estimation technique. While not entirely without problems, this method allows us to alleviate the presence of endogeneity and to perform a robustness check: if the results obtained are stable, this may be interpreted as an additional proof that our findings are genuine.

The basis of this matching technique is the propensity score, which uses a discrete choice model to obtain the likelihood (“propensity”) a firm receives a given treatment (being Chinese-owned) based on various covariates. The probit model we defined in section 5.1 allows us to obtain these propensity scores based on the covariates we hypothesized there. After obtaining a propensity score for each firm in the treatment group (Chinese-owned) and control group (owned by another known global owner), for each firm from the treatment group, a firm with a similar propensity score needs to be found in the control group (“matching”). This makes sure that we can compare the outcome variable of interest (i.e. the performance indicators) between firms with the same characteristics so that any difference found can be attributed to the treatment.

Similar to the logic presented when we described the probit estimation in section 5.1, we will perform PSM based on two specifications for the propensity score estimation: one with all independent variables based on 2017 data, and one with these 2017 variables instrumented by their lagged variants from 2015 and 2014, where available, this to account for potential endogeneity. We refer to section 5.1 for more information about this.

To be able to compare firms with similar propensity scores, one needs to satisfy the balancing property. This property implies that for a given propensity score, firms from the treatment and control group are similar in observable characteristics, so that following matching based on the propensity score, any differences found between the groups must be due to the treatment. If this property is satisfied, PSM can be used as a substitute for experiments with randomized assignment. The propensity score estimation method we use has a built-in balancing property test. For this, it divides the

propensity scores for each firm into a number of blocks, and checks the balancing property for each variable in each block. In the first specification with all data from 2017, the balancing property is satisfied for 161 of the 162 block-variable pairs. We therefore conclude that the balancing property is sufficiently satisfied to continue our analysis.

Various matching techniques exist, but we will use kernel matching in this thesis. Kernel matching is a non-parametric matching estimator that uses weighted averages of all individuals in the control group to construct the counterfactual outcome. Larger weights are given to closer matches (firms with more similar propensity scores). This is a more sophisticated way of performing matching that has been advised by, among others, Jann (2017), as it is a technique that allows for replacement so that it does not dispose of good data already used. Kernel matching also allows us to obtain lower standard errors because more information is used than when resorting to one-to-one matching (one firm in the control group for each firm in the treatment group). Kernel matching may thus especially be useful in situations in which the treatment group is relatively small compared with the control group, as is the case in our estimations. For more information about the implementation of PSM, we refer to Caliendo and Kopeinig (2008).

After using kernel matching methodology, we are able to estimate the average treatment effect on the treated (ATT): the effect of Chinese ownership on firms portraying the characteristics of Chinese-owned firms. This is equivalent to answering the question of how the performance of a firm changes after obtaining Chinese ownership. Dependent variables are, as before, defined in natural logarithms (with the exception of the profit margin because of the presence of negative values, as discussed in section 5.2). Standard errors are bootstrapped with 1000 replications.

While PSM enables us to compare firms with similar observable characteristics, so that differences found can be entirely attributed to the treatment, endogeneity may still be present if unobservable characteristics are driving both the selection into treatment and the outcome of interest. This estimation technique may therefore not allow us to entirely rule out endogeneity. It should therefore be mainly seen as a robustness check – used to verify the previously obtained results – as PSM is an imperfect, but entirely different technique to estimate the same parameter of interest: the impact of Chinese ownership on the performance of the target firm.

The estimated effects, shown in table 15, are highly significant and have similar signs to those obtained by OLS, 2SLS and IV-fixed effects estimation, the results of which we discussed in the previous subsections. This excludes the revenue-based TFP, which shows a positive but insignificant sign. The results also do not differ substantially between the two specifications for the propensity score we used, although the ATT's using the propensity scores obtained with instrumented covariates are, in most cases, slightly larger. Just as the results we obtained before, Chinese ownership is associated with a smaller size and poorer performance and productivity of the French subsidiary than firms owned by other global owners. The results from the propensity score methodology we applied here are the most similar to the 2SLS estimation implemented before (column 3 in tables 7 to 14). The coefficients for the added value, number of employees, labor productivity and TFP (added value-based) are roughly similar in size. This should not surprise since the methodology in this subsection is based on data from 2017 and is used to account for endogeneity by reverse causality, just as the 2SLS estimations from section 6.3.

Table 15: Propensity score matching - results

Specification 1		Specification 2	
Treatment variable: CN (Chinese ownership in 2017) Covariates for propensity score estimation: data from 2017		Treatment variable: CN (Chinese ownership in 2017) Covariates for propensity score estimation: data from 2017 instrumented by $t - 2$ and $t - 3$ variants where available	
Dependent variables:	ATT	Dependent variables:	ATT
ln(turnover) (in 2017)	-0.291* (-1.772)	ln(turnover) (in 2017)	-0.251* (-1.785)
ln(addedvalue) (in 2017)	-0.476*** (-3.701)	ln(addedvalue) (in 2017)	-0.469*** (-3.149)
ln(totalassets) (in 2017)	-0.288** (-2.298)	ln(totalassets) (in 2017)	-0.387*** (-2.728)
ln(employees) (in 2017)	-0.452*** (-3.684)	ln(employees) (in 2017)	-0.508*** (-3.873)
profitmargin (in 2017)	-4.179*** (-3.925)	profitmargin (in 2017)	-4.812*** (-4.308)
ln(laborprod) (in 2017)	-0.245*** (-3.418)	ln(laborprod) (in 2017)	-0.277*** (-3.760)
ln(TFPprev) (in 2017)	0.029 (0.374)	ln(TFPprev) (in 2017)	0.112 (1.345)
ln(TFPav) (in 2017)	-0.299*** (-4.201)	ln(TFPav) (in 2017)	-0.326*** (-4.466)
Bootstrapped standard errors (1000 replications)		Bootstrapped standard errors (1000 replications)	
<i>t</i> statistics in parentheses		Selected independent variables instrumented by 2015 and 2014 data: export revenue/operating revenue, liquidity ratio and solvency ratio	
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$		<i>t</i> statistics in parentheses	
		* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$	

7.2 Using subsamples

Our estimation results from section 6 have all been obtained from our entire sample of globally-owned French firms. In this section, we perform four robustness checks trying to replicate our results from fixed effects estimations instrumenting Chinese ownership in t by $t - 2$ and $t - 3$ lags (specifications 12, 13 and 14), on specifically selected subsamples of firms. If our results continue to be valid, this may be additional proof in favor of our previous findings. The results obtained in this section use heteroscedasticity-robust standard errors clustered by industry to account for potential correlation between shocks on industry-level. Note that this specification is identical to the one in last columns in tables 7 to 14 - labeled as 12c, 13c and 14c.

First, we drop the 10% smallest and largest firms in terms of total assets measured in 2017. More precisely, we apply this criterion to both Chinese-owned and non-Chinese-owned firms separately. This allows us to remove potential outliers in both categories. Naturally, the results we obtained before may be partly driven by exceptionally small or big firms. The results from this robustness check are displayed in panel A of table 16. For all specifications, our estimates for Chinese ownership keep their significance at a 5% significance level, with the exception of our estimate in the regression for total assets, which is, as before, only significant at a 10% significance level. The estimated coefficients also remain remarkably similar with no clear direction of change. These findings confirm that our initial results were not driven by outliers in terms of firm size.

Second, we re-estimate our specifications based on only firms with global owners from Asian countries in 2017. This is important as the negative impact of Chinese ownership on the size, performance and productivity of the French subsidiary estimated, may be due to ownership from firms from exceptionally well-performing countries. One may also think of the inherent difficulties related to FDI in distant countries with a different corporate culture and business environment. Owners from other Western countries may hence have a competitive advantage over Asian owners. If this poten-

Table 16: Robustness checks with subsamples

	(12c)	(12c)	(12c)	(12c)	(13c)	(14c)	(14c)	(14c)
	ln(turnover)	ln(addedvalue)	ln(totalassets)	ln(employees)	profitmargin	ln(laborprod)	ln(TFPprev)	ln(TFPav)
	IV-FE							
	firm-level							
	fixed effects							
Panel A: Subsample dropping the 10% smallest and largest firms								
Chinese ownership (dummy variable)	-0.0900 (-0.49)	-0.268*** (-3.32)	-0.894* (-1.84)	-0.0437 (-0.24)	-12.72*** (-7.03)	-0.340*** (-3.95)	-0.128*** (-3.77)	-0.307*** (-4.02)
				(...)				
Constant	8.247*** (730.20)	7.521*** (1437.82)	8.145*** (978.07)	3.215*** (749.08)	1.845*** (4.56)	4.494*** (139.23)	2.971*** (110.00)	4.606*** (154.66)
N	96459	64854	105401	52036	50013	40650	40247	40638
Panel B: Subsample of Asian owners								
Chinese ownership (dummy variable)	-0.236 (-1.30)	-0.417*** (-2.87)	-1.100* (-1.93)	0.00778 (0.04)	-11.52*** (-4.18)	-0.400** (-2.08)	-0.195* (-1.67)	-0.356** (-2.00)
				(...)				
Constant	9.205*** (354.38)	8.380*** (300.27)	8.728*** (73.91)	3.732*** (295.62)	2.633* (1.71)	4.619*** (58.95)	2.741*** (75.27)	4.754*** (77.30)
N	4154	2955	4831	2904	2798	2302	2484	2299
Panel C: Subsample of owners from non-democratic countries								
Chinese ownership (dummy variable)	-0.264 (-1.33)	-0.141 (-0.47)	-1.336** (-2.09)	-0.337 (-1.12)	-18.81* (-1.82)	-0.0628 (-0.11)	0.130 (0.41)	-0.108 (-0.20)
				(...)				
Constant	7.859*** (209.73)	7.365*** (212.24)	7.450*** (38.77)	3.034*** (49.20)	1.234 (0.49)	4.360*** (106.21)	2.932*** (44.99)	4.531*** (118.40)
N	2285	1458	2875	1297	1208	995	1044	992
Panel D: Subsample of owners from high-growth countries								
Chinese ownership (dummy variable)	-0.160 (-0.95)	-0.355 (-1.63)	-0.969* (-1.67)	0.0382 (0.17)	-15.28*** (-2.93)	-0.436 (-1.49)	-0.126 (-1.01)	-0.330 (-1.27)
				(...)				
Constant	8.582*** (325.69)	7.986*** (245.20)	8.077*** (60.62)	3.528*** (232.52)	3.490 (1.15)	4.356*** (60.38)	2.758*** (100.35)	4.566*** (72.58)
N	2643	1841	3326	1720	1668	1403	1440	1400
Panel E: Subsample of Chinese and US owners								
Chinese ownership (dummy variable)	-0.0956 (-0.66)	-0.276** (-2.55)	-1.002* (-1.92)	0.0982 (0.57)	-12.43*** (-5.09)	-0.392*** (-2.70)	-0.140* (-1.77)	-0.326** (-2.45)
				(...)				
Constant	9.425*** (465.38)	8.916*** (699.19)	9.415*** (187.23)	4.030*** (430.19)	2.490*** (3.53)	4.802*** (106.78)	2.844*** (61.32)	5.051*** (140.66)
N	10042	6472	11581	6832	6479	4954	4820	4949
Industry dummies	no							
Year dummies	yes							
Size indicator control variables	no	no	no	no	yes	yes	yes	yes
Standard errors	Clustered s.e. (industry)							

Panel A: 10% smallest and largest firms based on total assets of French firms in 2017 - criterion assessed separately for Chinese-owned firms and non-Chinese-owned firms

Panel B: Asian owners in 2017: firms from Bangladesh, Bhutan, Brunei, Cambodia, China, Hong Kong, India, Indonesia, Japan, Laos, Macao, Malaysia, Maldives, Mongolia, Myanmar, Nepal, North Korea, Pakistan, Philippines, Singapore, South Korea, Sri Lanka, Taiwan, Thailand, Vietnam

Panel C: Owners from non-democratic countries in 2017: firms from countries having a score lower than 5.0 on the Democracy Index of the Economist Intelligence Unit (2019)

Panel D: Owners from fast-growing countries in 2017: firms from countries having an annual growth of at least 5% in 2017 according to the International Monetary Fund (2019)

Panel E: Chinese and US owners: based on 2017 data

Size indicator control variables remain included as before, but are not reported in this table

Column numbers refer to the specifications in section 5

t statistics in parentheses

* p < 0.10, ** p < 0.05, *** p < 0.01

tial explanation is true, the size, performance and productivity of Chinese-owned firms should not significantly differ from those from other Asian countries, partly invalidating our previous results. The results from testing this hypothesis are shown in panel B of table 16. However, all our estimates for Chinese ownership keep their significance and negative sign as before, with the exception of our estimate with respect to the number of employees in the target firm, which now become positive, but remains insignificant. In fact, compared with the estimates for the entire sample displayed in tables 7 to 14, our estimated coefficients in the regressions for added value, total assets, labor productivity and TFP (estimated in both ways) now become slightly larger, indicating that, even compared with French firms owned by companies from other Asian countries, Chinese firms perform significantly worse.

Third, we account for the possibility that the comparatively smaller size and poorer performance of Chinese-owned firms may be due to certain characteristics of China as a country. We therefore re-estimate our specifications based on subsamples of countries that may portray similar characteristics as China. In particular, we first hypothesize that the strong role of the government may induce non-economic motives behind the FDI strategy of its firms, as argued in section 2.3. This is one of the ways Chinese investments could be considered as being “special”. We therefore restrict our sample of French firms to those owned by firms from non-democratic countries (which includes China) in 2017. While the level of democracy may not perfectly proxy for the role of the state in these countries, non-democratic countries are typically associated with larger degrees of state intervention, but also with less respect for rule of law and property rights, which could also influence the size and performance of firms. The level of democracy is obtained from the 2019 edition of the EIU Democracy Index by The Economist Intelligence Unit (2019). We define non-democratic countries as having a score lower than 5.0/10.0. The results, shown in panel C of table 16, indeed indicate that Chinese firms do not perform as different compared with firms from other non-democratic countries, as compared with our entire sample. While most of our estimates keep their negative signs, most lose significance, with only our estimates in the regressions with respect to total assets and profit margin remaining significant at a 5% and 10% significance level respectively. These results indicate that our findings regarding Chinese investments in France may be partly due to China being a non-democratic country with strong government intervention in its firms, or, more generally, due to factors associated with non-democratic countries.

Fourth, we hypothesize that firms in fast-growing countries as China may need to adopt different strategies compared with firms from countries with more modest growth levels. Firms from fast-growing countries may, for example, adopt a more rapid and experimental internalization strategy because of their necessity to catch up quickly, as argued in sections 2.1.6 and 2.2.2. In the context of Chinese FDI, Lyles et al. (2014) refer to this as the “Chinese way” as an alternative for the more gradual Uppsala model adopted by well-established firms. This is another way Chinese investments could be considered as being “special”. We therefore restrict our sample to French firms owned by firms from fast-growing countries in 2017, with fast growth defined as annual growth of at least 5% in 2017 according to the World Economic Outlook of the International Monetary Fund (2019). Again, the results shown in panel D of table 16 indicate that this explanation is plausible: most estimates are not significant on a 10% or lower significance level, with the exception of our estimates in the regressions with respect to total assets and profit margin, which still portray a negative sign. These results indicate that Chinese FDI in France may perform worse than FDI from other global owners mainly due to Chinese firms adjusting their FDI strategy to the fast-growth environment they operate in.

Finally, discussing Chinese investments inevitably brings US investments into attention in light of the ongoing competition between the US and China in terms of technological capabilities and potential technological dominance. The question one may ask, then, is how Chinese-owned companies perform compared to French firms with US ownership. We tested this by restricting our sample to Chinese-owned and US-owned firms in 2017. Results are reported in panel E of table 16. Despite the smaller sample, the smaller size and lower performance and productivity of Chinese-owned firms remain visible and continues being significant on the typical significance levels.

7.3 Testing previous findings by adding additional control variables

In section 7.2, we assessed the robustness of our results by using 5 different subsamples, and found that Chinese ownership remains associated with a smaller size and worse performance and productivity of the French subsidiary, restricting our estimations to subsamples of medium-sized subsidiaries (panel A), subsidiaries with Asian owners (panel B), and subsidiaries with either Chinese or US-ownership (panel E). Using a subsample of owners from non-democratic countries (panel C) and high-growth countries (panel D), however, renders our results insignificant, implying that Chinese firms are “special” in the senses we discussed in sections 2.1.6, 2.2.2 and 2.3. To test this hypothesis more properly, we re-estimate the fixed effect specifications labeled as 12c, 13c and 14c in tables 7 to 14, adding a control variable indicating the level of democracy of the owner’s country in 2017, again according to the 2019 edition of the EIU Democracy Index by the Economist Intelligence Unit (2019) - table 17, and a control variable for the level of economic growth of the owner’s country in 2017, according to the 2017 figures from World Economic Outlook of the International Monetary Fund (2019) - table 18.

For each of the dependent (indicator) variables in tables 17 and 18, we start with repeating the fixed-effect estimations labeled as 12c, 13c and 14c in tables 7 to 14. We then estimate a similar specification removing the Chinese ownership and adding the democracy score and growth level variables in tables 17 and 18 respectively. Eventually, we both include Chinese ownership and the democracy score/growth level variables concurrently.

First, only including the democracy level of the owner’s country, we find that these democracy levels are significantly positively associated with the size, performance and productivity of the target firm, as shown in table 17, similar as to how Chinese ownership is negatively associated with the same indicators. However, when we include both Chinese ownership and democracy level at the same time, in most cases, neither of these variables remain significant. This could be partly due to the high correlation between Chinese ownership and democracy level. Testing the joint significance of these variables, we find that, with the exception in the specifications with turnover and number of employees as dependent variable, Chinese ownership and democracy level are jointly significant on a 1% significance level. As Chinese ownership and democracy level are significant separately but lose significance when both variables are added into the specifications, we find an additional indication that the “special” nature of Chinese investments in terms of non-economic motives due to the importance of the Chinese government in Chinese outward FDI, indeed plays a substantial role.

Similarly, we first include only the growth level of the owner’s country. Results are shown in table 18. We now find that the growth level of the owner’s country is significantly associated with our outcome variables only for the total assets, added value, labor productivity and TFP (calculated based on the added value). The signs of these significant estimated effects are negative, indicating that a higher growth rate of the owner’s country is associated with a smaller size and poorer performance and productivity of the target firm. When we include both Chinese ownership and growth level at the same time, in some cases, neither of these variables remain significant, while in other cases, the Chinese ownership variable does remain significant. However, adding both variables does render all estimates for the impact of Chinese ownership for the productivity of the French subsidiary insignificant, which provides a (somewhat weak) indication that Chinese investments are “special” in the sense that they follow a different FDI strategy adjusted to the fast-growth environment they operate in, and that this FDI strategy yields poorer results. The proof for this hypothesis, however, is not as strong as for the special nature of Chinese investments with respect to the owner country’s democracy level, and may, in fact, even be driven by the democracy level if one assumes that less-democratic countries face higher growth rates.

Table 17: Adding control variable indicating democracy level of owner's country

Panel A: size indicators																
	(12c)		(-)		(12c)		(-)		(12c)		(-)		(12c)		(-)	
	ln(turnover)	IV-FE	ln(turnover)	IV-FE	ln(addedvalue)	IV-FE	ln(addedvalue)	IV-FE	ln(totalassets)	IV-FE	ln(totalassets)	IV-FE	ln(totalassets)	IV-FE	ln(totalassets)	IV-FE
	firm-level	fixed effects														
Chinese ownership (dummy variable)	-0.124 (-0.85)		-0.309 (-0.78)		-0.238*** (-3.01)		-0.387 (-1.05)		-0.975* (-1.95)		-3.062** (-2.04)		-0.0508 (-0.32)		-0.172 (-0.33)	
Democracy score	0.00584 (0.68)		-0.0288 (-0.66)		0.0299*** (2.75)		-0.0212 (-0.43)		0.0230** (2.37)		-0.335* (-1.83)		0.00521 (0.98)		-0.0195 (-0.33)	
Constant	8.607*** (655.90)		8.850*** (25.28)		7.572*** (86.66)		8.237*** (20.69)		8.675*** (750.05)		11.41*** (7.68)		3.662*** (1023.19)		3.832*** (8.04)	
Industry dummies	no	yes														
Year dummies	no	yes														
Standard errors	Clustered s.e. (industry)															
N	164718	329363	158029	108236	217614	103257	183065	365317	175447	88976	160289	85060				

Panel B: performance and productivity indicators																
	(13c)		(-)		(14c)		(-)		(14c)		(-)		(14c)		(-)	
	profitmargin	IV-FE	profitmargin	IV-FE	ln(laborprod)	IV-FE	ln(laborprod)	IV-FE	ln(TFPprev)	IV-FE	ln(TFPprev)	IV-FE	ln(TFPprev)	IV-FE	ln(TFPprev)	IV-FE
	firm-level	fixed effects														
Chinese ownership (dummy variable)	-12.43*** (-6.54)		-38.31* (-1.90)		-0.290** (-2.45)		-0.519 (-0.73)		-0.107* (-1.89)		-0.247 (-0.74)		-0.256** (-2.35)		-0.349 (-0.58)	
Democracy score	0.611*** (2.78)		-4.061 (-1.35)		0.0290*** (4.88)		-0.0340 (-0.35)		0.00446 (1.12)		-0.0211 (-0.47)		0.0292*** (4.57)		-0.0123 (-0.15)	
Constant	3.365*** (29.34)		36.48 (1.48)		4.570*** (608.32)		4.859*** (6.18)		2.808*** (295.34)		2.987*** (8.15)		4.805*** (735.43)		4.909*** (7.39)	
Industry dummies	no	yes														
Year dummies	no	yes														
Size indicator control variables	no	yes														
Standard errors	Clustered s.e. (industry)															
N	83794	152065	80188	70060	127102	66892	67629	122510	64850	70015	126989	66848				

Democracy score based on the country of owners in 2017. Score obtained from the Democracy Index of the Economist Intelligence Unit (2019)

Size indicator control variables remain included as before, but are not reported in this table

t statistics in parentheses

* p < 0.10, ** p < 0.05, *** p < 0.01

Table 18: Adding control variable indicating growth level of owner's country

Panel A: size indicators																				
	(12c)			ln(addedvalue)			ln(addedvalue)			ln(totalsasos)			ln(totalsasos)							
	IV-FE	firm-level	fixed effects																	
Chinese ownership (dummy variable)	-0.124 (-0.85)			-0.0886 (-0.42)			-0.238*** (-1.73)			-0.975* (-1.95)			-1.552** (-2.03)			-0.0508 (-0.32)			-0.0572 (-0.26)	
Growth rate				-0.00994 (-1.23)			-0.0165* (-1.76)			0.0161 (0.72)			-0.0183** (-2.34)			0.0949 (1.41)			0.00113 (0.11)	
Constant	8.607*** (655.90)			8.632*** (216.04)			7.854*** (330.64)			8.675*** (750.05)			8.327*** (419.89)			8.469*** (54.44)			3.662*** (1023.19)	3.478*** (364.36)
Industry dummies	no	yes	yes	no	yes															
Year dummies	no	yes	yes	no	yes															
Size indicator control variables	no	yes	yes	no	yes															
Standard errors	Clustered s.e. (industry)																			
N	164718	324828	158010	108236	217587	103242	183065	365282	175428	88976	100276	85052								

Panel B: performance and productivity indicators																				
	(13c)			ln(laborprod)			ln(laborprod)			ln(TFPprev)			ln(TFPprev)							
	IV-FE	firm-level	fixed effects																	
Chinese ownership (dummy variable)	-12.43*** (-6.54)			-17.95*** (-3.05)			-0.290** (-2.45)			-0.421 (-1.11)			-0.107* (-1.89)			-0.155 (-0.92)			-0.256** (-2.35)	-0.313 (-0.96)
Growth rate				0.805 (1.06)			-0.0177** (-2.29)			0.0183 (0.42)			-0.00533 (-1.59)			0.00625 (0.34)			-0.0200*** (-2.72)	0.00641 (0.18)
Constant	3.365*** (29.34)			1.503 (0.86)			4.533*** (227.69)			4.540*** (45.73)			2.808*** (295.34)			2.800*** (66.97)			4.805*** (735.43)	4.757*** (246.68)
Industry dummies	no	yes	yes	no	yes															
Year dummies	no	yes	yes	no	yes															
Size indicator control variables	no	yes	yes	no	yes															
Standard errors	Clustered s.e. (industry)																			
N	83794	152052	80180	70060	127005	66886	67629	122499	64822	70015	126682	66842								

Annual growth rates based on the country of owners in 2017, according to the International Monetary Fund (2019)

Size indicator control variables remain included as before, but are not reported in this table

Column numbers refer to the specifications in section 5

t statistics in parentheses

† statistics in parentheses

* p < 0.10, ** p < 0.05, *** p < 0.01

8 Beyond performance and productivity – common debates on Chinese investment projects

As we mentioned in the introduction, Chinese investments, both in Europe as elsewhere, are subject to a considerable degree of debate. While this debate is primarily of a geopolitical nature, we believe it is nevertheless crucial to discuss some of these criticisms and geopolitical facets of Chinese investments in this thesis, especially given its importance in decision-making. In addition to this, only considering the performance effects of investments is a very narrow view and could lead to wrong conclusions about the desirability of these investments: even if investments portray positive financial performance and are very productive, there could still be some factors that make them undesirable overall. Often, this requires value judgements and is therefore more difficult to assess formally. We will thus limit ourselves to a descriptive overview of potential aspects to consider.

As a relatively controversial and widely discussed topic, we will start this section with a small digression providing a short description of the Belt and Road Initiative (BRI) and its potential economic impact on the EU. We will then continue with some geopolitical and economic criticism of Chinese investments in general, and attempt to apply these criticisms to the EU. This section is partly based on Muylle et al. (2019).

8.1 A small digression: China’s Belt and Road Initiative

The Belt and Road Initiative (BRI), which has been announced by China’s President Xi Jinping in 2013, sometimes also referred to as the One Belt, One Road (OBOR) initiative, is often viewed as one of the largest international investment projects of the past few decades. Its somewhat strange name consists of two separate projects: the “belt”, more precisely called the Silk Road Economic Belt (SREB), being a land-based route, and the Maritime Silk Road Initiative (MSRI), surprisingly sea-based, being the “road” (Blanchard and Flint, 2017 and Rolland, 2017). While the Initiative is defined as two separate projects, which have even been announced separately in 2013, it is now usually considered as being one since they have similar objectives, which can be summarized as advancing international trade by enabling a revival of the ancient Silk Road once transporting silk, ceramics and tea. This ambitious goal to advance international trade and cooperation between countries would be achieved by constructing or upgrading various ports, roads and railway lines in China and in various countries on the Eurasian and African continents (Blanchard and Flint, 2017 and Liu and Dunford, 2016).

The three land-based routes (“belt”) are planned to run from China through Central Asia and Russia to the Baltic region in Europe, between China and the European Mediterranean via Central Asia and West Asia, and from China to the Indian Ocean via Southeast and South Asia. The maritime route (“road”) intends to connect Chinese ports with various ports in Asia, Europe and Africa (Huang, 2016). According to Liu and Dunford (2016), however, these routes should not be seen as being absolute: BRI is said to be open for all countries interested in participating, even if they are not part of the intended routes. It is also important to note that BRI has no clearly-defined development plan, program or budget, and no clear geographical or economic boundaries. It can thus contain plethora of individual investment initiatives, including private investments (Steer Davies Gleave, 2018). In light of this thesis, it is important to note that BRI is associated with a significant increase in FDI flows to the countries participating in the Initiative, both in terms of SOEs, which mainly target firms in the infrastructure sectors, and private firms, investing in non-infrastructure sectors (Du and Zhang, 2018).

From an economic perspective, the main objectives of the Initiative are both on the demand side and supply side of the Chinese economy. On the demand side, important foremost is being able to export more Chinese produce. Some of the targeted markets are currently relatively closed or hard to access, while China, facing an excess production capacity combined with inadequate domestic demand, could use new export markets to sustain its slowing economic growth which could potentially lead to China being stuck in a “middle-income trap”. On the supply side, production

requires natural resources, some of which China does not possess domestically. Easing the access of natural resources abroad would thus be beneficial to support Chinese manufacturing. Another resource, energy supply, is also not available in large enough quantities domestically, hence the need for easier import of energy, facilitated by BRI (Liu and Dunford, 2016; Rolland, 2017; and Steer Davies Gleave, 2018). BRI could also help to find a productive purpose for the large reserve of savings in China (CSIS: China Power, 2017), and plays an important role in the development of China's lagging provinces (Steer Davies Gleave, 2018).

While BRI is often presented as an economic project, some of its explicitly stated objectives are of a geopolitical nature. Blanchard and Flint (2017); Callahan (2016); and Rolland (2017) assert that BRI does not only include hard infrastructure, but a sizable degree of political "soft power" by the establishment of free trade agreements and investment agreements. Strengthening diplomatic ties and cooperation with the countries concerned, most notably, is also a vital point of BRI (Callahan, 2016; Cheng, 2016; Huang, 2016; Liu and Dunford, 2016; and Rolland, 2017). In fact, Callahan (2016) notes that the Chinese government aims creating a "community of shared destiny", first in the Asian region, later on a global scale, which, more specifically, leads to the establishment of a China-centric network of economic, political, cultural, and security relations. The Belt and Road Forum for International Cooperation states that BRI is aimed at "maintaining closer economic ties, and deepening political trust; enhancing cultural exchanges; encouraging different civilizations to learn from each other and flourish together; and promoting mutual understanding, peace and friendship among people of all countries" (Belt and Road Forum for International Cooperation, 2017). This includes China's readiness to "share practices of development with other countries" without "intention to interfere in other countries' internal affairs" (Steer Davies Gleave, 2018).

As of now, Hungary, Romania, Bulgaria, Latvia, Croatia, Greece, the Czech Republic, Poland, Slovakia, Portugal, Luxembourg and Italy have signed a general Memorandum of Understanding (MoU) with China with regard to BRI. The EU member states joining the Initiative were initially only peripheral countries, but gradually more European core countries seem to be in favor of participation. Steer Davies Gleave (2018) assert that most BRI-related investments in the EU concern transport hubs and take the form of acquisitions of shares in ports, railways and airports, mainly at the periphery of the EU, notably in the Balkans and Central/Eastern Europe. As of the direct economic gains from BRI, in one of the few attempts to estimate the potential economic gains, Herrero and Xu (2017) estimate a positive impact for the EU. The reduction in transportation costs, which the authors arbitrarily set to 50% for railway transportation and 5% of sea transportation, would yield significant positive effects for the EU: trade could rise by more than 6%, and therefore the largest gains would be for the EU, followed by non-EU European countries, and for Asia. The rest of the world would see a small negative impact by the reduction of transportation costs. Similarly, Herrero and Xu (2017) simulate the impact of a potential establishment of a free trade area (FTA) corresponding with the BRI area, excluding the EU, with internal tariffs set to 0%. This FTA would yield a negative, but small impact on trade in the EU. The biggest winners of such FTA would be Middle Eastern and Central and East Asian countries (trade increases of 15%). These results correspond with prevailing trade theory: countries participating to the FTA win, those outside of the Area lose since they typically see their export substituted by intra-FTA trade. In the situation in which a reduction in transportation costs and the establishment of an FTA are combined, the EU would benefit, but less than Asia. Within the EU, unsurprisingly, landlocked countries would see the largest gains.

8.2 Geopolitical criticism

International investments, especially those performed by SOEs and being part of a larger framework, are often subject to criticism from a geopolitical viewpoint. While the majority of countries are in favor of easing international trade and improving the competitiveness of regions lagging behind (such as central and eastern Europe, the Middle East and Africa) by introducing new foreign MNEs, strengthening their infrastructure and setting up trade-enhancing schemes, as happened with the US-led Marshall Plan after the Second World War, some do not hold a favorable position towards

the soft power and influence that inevitably goes with economic development, whether this development is China-led (as is the case with BRI-related investments) or US-led (as with the Marshall Plan).

Some argue that this influence would allow China to undermine the US-led international order and the economic architecture based on the ‘Washington Consensus’ (e.g. Callahan, 2016). The international investment strategy of the Chinese government explicitly aims at developing countries, including Pakistan and Iran, based on China’s development model, emphasising a global “community of shared destiny” guided by Chinese values (Callahan, 2016; Liu and Dunford, 2016; and Steer Davies Gleave, 2018). This raises the question of whether this development and governance model is compatible with the existing international order and economic architecture, but also whether it is necessarily problematic that the current architecture would be challenged. The argument, however, goes that China could potentially provide a credible alternative to and thus supplant the liberal international order based on the rule of law and multilateral cooperation through institutions (Callahan, 2016 and Kudnani, 2017). The Chinese alternative would then be a model more based on bilateralism, allowing China to impose a certain degree of pressure on smaller, weaker, lower-income countries, some of which are ruled by a (semi-)authoritarian regime. Many targets of strategic investment projects as BRI fit this description, and might thus be easier to influence. (Huang, 2016). It would also be more China-centric in the sense that China would become a stronger normative power that sets the rules of the game for global governance (Callahan, 2016).

One might assert that multilateral cooperation through institutions, characterizing the western international architecture, did not yield very satisfactory results: several countries hardly grew (notably in Latin America and Africa), international conflicts remained present to a large extent (primarily in the Middle East), financial crises did not disappear... One of the main problems with multilateral intuitions, we argue, is that they increasingly tend to struggle to address the complex issues presented to them, such as reaching quick and steady economic growth in regions lagging behind, or effectively solving international conflicts. Instead, countries might want to focus more on “quick wins”, a situation in which cooperation through multilateral institutions and respect for rule of law may be exchanged for short-term gains. This tendency is certainly not limited to Chinese policy, as became clear by the withdrawal of the United States from the Paris Climate Agreement in 2017, the reduction of US funding to NATO in 2019 and the temporary suspension of US funding to the WHO in 2020. However, does this mean that strategies reducing the importance of multilateral institutions are desirable or beneficial, especially in the long run?

Unilateral action or bilateral agreements typically works more effectively in the short term, but can be detrimental for international cooperation and security on the longer term, especially when bilateralism comes down to siding with authoritarian regimes because of promising prospects. As mentioned before, the China-led development model portrays some of these characteristics (Huang, 2016). China is significantly more powerful than most of the countries they bilaterally interact with, which is likely to generate a certain degree of dependency of the weaker party. This could, for example, make it difficult for these countries to participate neutrally in international institutions or to provide an answer to global challenges. It is also not unthinkable that bilateralism leads to an unhealthy spiral of competition for Chinese investments (as an example, De Standaard (2019) claims that the new logistics hub of Alibaba in Liège has only been established there due to substantial concessions from the Belgian government). From these potential effects, we can see that an initial “quick win” for a country can undermine the international liberal order and multilateral cooperation.

As mentioned, China often approaches countries bilaterally rather than through multilateral institutions. Even though this might positively affect the effectiveness and implementation speed of projects, there is a risk of dominance of the smaller country by the more powerful China. This can especially be assumed concerning small countries with relatively weak economies. The EU consists of several countries fitting this description, especially amongst its newest member states. Furthermore, bilateralism may also undermine multilateral, institutional cooperation. The EU is exactly such multilateral cooperation institution. This raises the question of whether China’s growing interests in the EU has any major implications for the cohesion of the EU.

One of the ways China interacts with European nations is through the 17+1 platform, formerly known as the 16+1 platform, in which China aims to promote business and investment relations with 17 Central and Eastern European countries, 12 of which are EU member-states.. While the 17+1 platform is officially a multilateral cooperation, Pepermans (2018) and Przychodniak (2017) assert that it can be seen as a platform where China deals with CEE countries bilaterally, rather than in a multilateral fashion (Pepermans, 2018 and Przychodniak, 2017). Przychodniak (2017) argues that “the (16+1) initiative still serves as a tool to support Chinese interests in bilateral relations with separate CEE countries, rather than as a forum to accomplish common goals and projects.” Besides this, it may also weaken the EU’s cohesion by providing an alternative, not always compatible channel of international engagement. “China has used its economic leverage to divide European countries thus preventing the EU from developing some sort of unity” (Zeng, 2017). So far, Greece and Hungary have been some of the EU’s most fierce supporters of Chinese investments by serving as “China’s gateway to Europe”, by words of former prime minister Tsipras (Reuters, 2014) and by the “Opening to the East” policy aimed at tighter cooperation between Hungary and (mainly) China and Russia (Visegrád Post, 2018). Although it is hard to establish a direct link, Greece also has repeatedly blocked EU decision-making on issues related to China, including human rights statements and tougher screening of Chinese investments by the European Commission, which might be a result of the bilateralism and increased dependence on China we discussed in this section (The New York Times, 2017). Similarly, in March 2017, Hungary prohibited the EU to condemn the alleged torture of detained lawyers in China (Politico, 2018). In accordance with EU voting rules, such decisions have to be made by means of consensus.

8.3 Economic criticism

From an economic point of view, inward FDI is often seen as beneficial to the host country, especially when it additionally serves a trade-enhancing purpose. It is, however, not clear in which situations this logic does (not) apply. For inwards FDI by more efficient, large scale Chinese MNEs, some countries worry about negative consequences for their domestic economic situation when China begins to massively export its excess capacity to weak, uncompetitive economies (Blanchard and Flint, 2017 and Huang, 2016). Domestic firms would likely be outcompeted by big, Chinese companies, which could potentially lead to a deterioration of the economy in those countries (at least in the short term). Note that BRI’s main goal is to enhance international trade by expanding the Chinese export market to regions not yet fully touched by it, and is predominantly targeted to weaker countries. Easing the access for big foreign firms and for imports from an internationally very competitive country contradicts the typical infant industry argument that a country in its development phase needs to be able to develop its own competitive industries first before lowering foreign investment and international trade frictions in these industries.

Within the EU, this argument is especially relevant with respect to peripheral countries possessing relatively weak economies with few competitive industries, but may also to a lesser extent apply to member states in the EU’s core. First, Chinese companies, especially when these are state-backed, may outcompete European firms. They may also be able to acquire certain strategic assets. For these reasons, the EU implemented a new framework for the screening of FDI, which entered in force on April 10th, 2019 (European Commission, 2019b). Second, given the important market-access motivation of Chinese outward FDI, Chinese investments can be expected to be accompanied by increased export from China to the EU. The various anti-dumping measures the EU imposed on Chinese imports, for example, indicates that the European Commission believes that China exports certain goods below a fair, market value and by doing so negatively affects the position of European firms. In fact, of all 120 anti-dumping measures in force at the end of 2018, by far most measures were imposed on Chinese imports (85 measures), followed by Russia (9 measures) at a distance (European Commission, 2019a). We also refer to the widely cited article by Autor et al. (2013) analyzing the effect of Chinese import competition in the United States. In local US labor markets facing higher Chinese import competition, rising imports resulted in a negative impact on wages, unemployment and labor force participation, both in manufacturing and non-manufacturing

industries (Autor et al., 2013). This implies that aggregate welfare gains from trade with China may, under certain conditions, cause undesirable side effects, requiring extensive transfer mechanisms to compensate individuals for their lost employment or reduced wages. As Chinese investments in the EU are for a large extent determined by market-seeking motives, one may expect that similar negative effects on employment and wages also occur in the EU, in member states with advanced economies, but especially in peripheral member states (where most labor-intensive production is currently located), potentially hampering their long-term development. Similarly, Hall (2007) points towards the difficulties that go along with the structural adjustments needed in Europe to cope with increasing Chinese import competition. Especially problematic is that these adjustments are likely to leave certain regions or countries behind when displaced manufacturing in certain regions gives rise to new business opportunities in other regions or countries in Europe, which are, combined with the generally limited labor mobility in the EU, not accessible for those who lost their jobs.

Vital to BRI is the funding of its projects through institutions like the Asian Infrastructure Investment Bank (AIIB), the Silk Road Fund and the China Development Bank (CDB), according to Liu and Dunford (2016) and Rolland (2017). Easy and inexpensive funding, which can be understood as being quicker and having fewer conditions for the borrowing country, may be a strong incentive for certain countries to choose Chinese infrastructure investments over investments from other countries (CSIS: China Power, 2017). However, given the relatively easy way of obtaining funding through China's development banks and commercial banks, Steer Davies Gleave (2018) assert that investment projects with little economic viability may still be executed. This could be especially a problem in countries with few checks and balances to counter such spending. These kinds of projects are sometimes referred to as "White elephant projects": projects of which the cost is disproportionately high relative to the usefulness. Sometimes such projects are prestige projects to strengthen the leadership position of those in power.

It is uncertain to what extent this argument plays a crucial role within the EU, where governance structures are relatively good.⁵ More worrying in the EU, however, is the easy access and inexpensive funding of many Chinese firms, especially those being state-owned. Having access to such funding may offer these firms a competitive advantage over European firms.

Another common criticism, currently rising in importance, although perhaps less relevant within the EU, is the so-called 'debt-diplomacy' strategy allegedly followed by the Chinese government. Typically, the host country initiates a certain large-scale infrastructure construction project and finds funding by Chinese loans, usually with Chinese firms eventually guiding the construction project. This could be problematic when the economic viability of the project is questionable and when this project has been executed in financially weak states, both reasons for normal financing parties to refuse the loan in an early stage. However, when Chinese state investors, allegedly on purpose, do not make a proper risk assessment and let the funding and the construction project go on, the host country may not be able to fulfill its debt, which has sometimes led to the subsequent transfer of strategic assets to China. Some see this as a relatively easy and inexpensive way for China to buy its influence abroad. A well-known example is the Rajapaksa Port in Sri Lanka, which is now controlled by China for 99 years as the country could not service its debt (The New York Times, 2018). This likely makes the borrowing countries unilaterally dependent on China, both economically and politically, but perhaps also militarily in the future. It shall be clear that the above-mentioned example of Chinese investments in Sri Lanka is just one example. It can, however, be linked with the geopolitical motives mentioned before. When countries become more dependent on China, they will be less tempted to challenge China's actions in the international field. From this perspective, debt-diplomacy can undermine international cooperation and eventually the international liberal order characterized by multilateralism (Kudnani, 2017). Within the EU, there are currently no examples of such potential 'debt-diplomacy' tactics. However, we would like to refer to the Port of Piraeus in Greece which has been leased and later sold to the Chinese SOE Cosco following the debt crisis in 2009 which had severely plagued Greece (Reuters, 2019). While

⁵According to the Corruption Perceptions Index 2019 from Transparency International, the lowest-ranked EU country, Bulgaria, still ranks 74/180.

not entirely the same, this transaction is also an example of China buying international influence by smartly making use of the financially weak position of a country. As described in section 8.2, Greece does seem to have a fairly positive attitude towards China, which may jeopardize the Union's cohesion.

9 Discussion and conclusion

Over the last decades, Chinese firms increasingly invested abroad, including in the EU. In many countries, these Chinese investments sparked debates about the desirability of such investments. In this thesis, we attempted to investigate in a comprehensive way if and how Chinese investments in the EU differ from investments from elsewhere and, thus, whether EU countries should encourage Chinese investments or should be more cautious about them.

While we tried to assess this question from several perspectives, the empirical part of this thesis focused on which characteristics are important in the investment decisions of potential Chinese investors, and, more importantly, how Chinese ownership affects the size, performance and productivity of French firms. In our most advanced setup, we used a probit model to estimate the investment decisions, and fixed effects specifications to estimate the effects of Chinese ownership on the size, performance and productivity of French subsidiaries. These specifications included firm-level and year fixed effects to control for unobserved heterogeneity constant over time and across firms respectively. In both the probit and fixed effects models, we also accounted for endogeneity caused by reverse causality by instrumenting the dependent variables with their $t-2$ and $t-3$ lags. We also performed extensive robustness checks, including propensity score matching methodology as an alternative, non-parametric estimation technique. We found that Chinese owners tend to target recipient firms with more international experience, but also financially weaker recipient firms (as measured by the solvency ratio), and that Chinese ownership affects firms in France negatively: they are/become, on average, smaller, perform worse and are less productive than their other globally-owned counterparts, although this effect seems to become insignificant taking into account the level of democracy and (to a lesser extent) the annual growth rate of the owner's country. It should be noted, however, that these estimations are based on limited data from France and may not be representative of Chinese investments in other EU member states. We point towards the presence of a potential bias due to the fact that not all firms report the data required for our analysis, including ownership information. This may be especially worrying if the decision of firms to report data is non-random. It is possible, for example, that our data only includes a set of Chinese-owned firms with particular, non-representative characteristics.

Size, performance and productivity are not the only factors that one should take into account when assessing Chinese investments. A *leitmotiv* in this thesis was the allegedly "special" nature of Chinese investments, leading to the question of whether one should worry about them and treat Chinese investments differently? Throughout this thesis, we have observed this special nature on several occasions. First, in our literature review, we noted that several authors found that the internalization process of Chinese firms tends to be more rapid and experimental than has often been assumed. This could be the result of the position of China as a rapidly growing country attempting to catch up with firms from developed countries. Second, we also found that Chinese firms are less than is generally assumed subject to economic motives. They tend to be, for example, less risk-averse, which could be due to the important role of the state in Chinese outward FDI. From observing our data, we indeed found that a large share of Chinese-owned firms in France are owned by an SOE, although most of them are not particularly present in sensitive industries. Through probit estimation, we also found that Chinese investors are more likely to acquire French firms with a poorer financial health than other investors. Third, we found that Chinese-owned firms in France are smaller, perform worse and are less productive than their counterparts from other global owners, which could be indicative of non-economic motives behind the FDI decisions of some Chinese firms. This result is robust for a different, non-parametric estimation technique and for estimation restricted to various subsamples, although it does lose significance taking into account the level of democracy and (to a lesser extent) the annual growth rate of the owner's country, providing further evidence for what has previously

been described in the literature. Finally, there is also a substantial debate about the geopolitical implications of and motivations behind Chinese investments.

Are we therefore able to conclude that Chinese investments in France are indeed “special” in the sense that they need to be treated accordingly? Overall, Chinese presence in the EU sharply increased compared with the beginning of this millennium, but remains relatively modest in size compared with inward FDI from other countries, notably from other EU member states and from the US. In France, a considerable degree of Chinese owners are SOEs, which are often associated in literature with non-economic motives regarding their internalization. While this may be worrying and could be an explanation for the overall worse performance of Chinese-owned firms, it is important to point out that the majority of Chinese-owned firms in France operate in tourism-related industries, which is not particularly indicative of strategic motives that should worry the host country. The financial sector, another industry Chinese firms in France are relatively present in, is again not the most sensitive industry. Based on our data for France, we are therefore unable to strongly defend a China-specific treatment of inward FDI.

This should not come completely as a surprise since various scholars pointed towards the importance of market-access motives behind Chinese FDI in developed countries. An increase in Chinese import competition following market-seeking FDI, however, may nevertheless be problematic if this competition is due to unfair practices (as indicated by the various anti-dumping measures the European Commission imposed against Chinese imports), and may have substantial labor market effects, notably in peripheral EU member states with a high proportion of labor-intensive production. Furthermore, asset-seeking motives may remain present and should be assessed properly, especially given the large share of FDI performed by Chinese SOEs. Geopolitically, one should also safeguard the Union’s integrity with respect to cooperation with China, as China’s model of bilateral approaching may not be compatible with the multilateral setting of the EU and the institutionalized international order. This should also be the strategy to follow with respect to the BRI. As this thesis has been written during the outbreak of SARS-CoV-2, we especially warn for the possibility that Chinese actors make use of a potential economic downturn in the EU to strengthen China’s global influence.

Furthermore, we do not believe that it would be appropriate to handle investments from certain countries differently solely because of their country of origin. Not only would this be unfair towards the many (*in casu* Chinese) firms with legitimate, non-sensitive motivations, but a different treatment would also conflict with the non-discrimination principle the EU and many of its member states rightfully adhere to. Instead, we believe it would be beneficial to assess inward FDI on a case-by-case basis irrespective of its origin and we hope that the new screening mechanism of the European Commission may effectively achieve this goal. Additionally, the EU and its member states should also further insist on the principle of reciprocity in handling investments and concerning market openness, this by diplomatic channels.

Good policy ought to be based on proper research. Several attempts to treat Chinese investments more cautiously, including the EU-wide screening mechanism, are primarily political constructs and are yet to be backed by solid economic evidence. Despite the considerable political debate, empirical research about Chinese FDI in the EU remains limited. Future research should first attempt to verify the external validity of our findings both with respect to the country of destination and the data used. While this thesis limited the empirical analysis to France because of data limitations, it would be essential to extend our analysis to other EU member states. Similarly, other databases should be used attempting to replicate our findings. This may especially be important given the large number of firms not reporting certain information in Bureau van Dijk - ORBIS (2018). One should also try to better understand the “special” nature of Chinese investments compared with investments from countries with similar characteristics. While we found preliminary evidence for the importance of China being characterized as a non-democratic, fast-growing country, this should be assessed more rigorously. Furthermore, future research should also use firm-level data to assess whether Chinese firms indeed transfer technology to their parent firm, as has been hypothesized and found by country-level studies.

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